



**ENVIRONMENTAL IMPACTS ASSESSMENT**  
**of**  
**The Assembling, Manufacturing and Sales**  
**of**  
**Motor Vehicles**  
**by**  
**Aung Gabar Motor Services Co., Ltd**



**(Myanmar Environment Sustainable Conservation)**

**June, 2022**



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## CONTENTS

ACRONYMS AND ABBREVIATION.....	(I)
၁။အကျဉ်းချုပ် အစီရင်ခံစာ .....	(IV)
1. EXECUTIVE SUMMARY .....	1
2. INTRODUCTION .....	40
2.1 Presentation of the project proponent .....	40
2.2 Presentation of environmental and social experts.....	48
3. ENVIRONMENTAL POLICY, LEGAL AND INSTITUTIONAL FRAME WORK.....	53
3.1 Corporate environmental and social policy of Aung Gabar Services Co., Ltd.....	53
3.2 Policy and legal frame work .....	54
3.2.1 Applicable Laws and Rules .....	54
3.2.2 International convention, treaties and agreements (concerning environmental affairs) ..	91
3.2.3 National and international standards and guidelines.....	92
3.2.4 Standards and guidelines.....	95
3.3 Contractual and other commitments .....	96
3.3.1 Commitments made by the project proponent .....	96
3.3.2 Commitments by the consultant firm, MESC .....	97
3.4 Institutional frame work .....	98
3.5 Environmental and Social Standards (After IFC, 2012).....	102
3.6 Health standards for projects with health impacts .....	103
4. PROJECT DESCRIPTION AND ALTERNATIVE .....	105
4.1 Project background .....	105
4.2 Project location, overview map and layout maps location and size.....	105
4.3 Description of the project .....	114
4.3.1 Installation and infrastructure .....	114
4.3.2 Technology .....	121
4.3.3 Production processes .....	124
4.3.4 Uses of raw materials and resources.....	139
4.3.5 Main machinery and equipment .....	142
4.3.6 Other aspects of project .....	143
4.3.7 Generation of wastes, emission and disturbances.....	145
4.3.8 Project alternatives.....	149
5. DESCRIPTION OF THE SURROUNDING ENVIRONMENT .....	153
5.1 Setting the study limit.....	153

5.2	Methodology and objectives.....	156
5.3	Public administration and planning .....	157
5.4	Legally protected areas .....	158
5.5	Physical components of the surrounding environment.....	158
5.5.1	Climate.....	158
5.5.2	Topography.....	161
5.5.3	Local geology and soil.....	162
5.5.4	Hydrology .....	165
5.5.5	Water quality .....	165
5.5.6	Ambient air quality .....	166
5.5.7	Ambient noise and vibration.....	167
5.5.8	Potential natural hazard of the area.....	169
5.6	Biological components of the surrounding environment.....	170
5.6.1	Flora species .....	170
5.6.2	Fauna species .....	173
5.7	Infrastructure and services.....	177
5.8	Socio-economic components .....	180
5.9	Public health component of the surrounding environment .....	183
5.10	Cultural components of the surrounding environment (religious, cultural, historical, archeological attributes etc).....	184
5.11	Visual components of the surrounding environment .....	186
6.	IMPACTS AND RISKS ASSESSMENT AND MITIGATION MEASURES .....	187
6.1	Impacts and risk assessment methodology .....	187
6.2	Impact and risk identification, assessment and mitigation for each project phase .....	189
6.2.1	Identification and assessment of potential environmental impacts.....	189
6.2.1.1	Potential negative impacts during the Preconstruction Phase .....	189
6.2.1.2	Potential negative impact, during the Construction Phase .....	190
6.2.1.2.1	Impact: mobilization and preparation activities for construction .....	190
6.2.1.2.2	Occupational Health and Safety issue (Potential accidents at workplace) .....	190
6.2.1.2.3	Impact on air quality .....	190
6.2.1.2.4	Impact: noise and vibration.....	191
6.2.1.2.5	Potential impact on soil.....	191
6.2.1.2.6	Potential impact on water .....	192
6.2.1.2.7	Impact of waste (construction waste) .....	192
6.2.1.2.8	Potential social issue.....	192
6.2.1.2.9	Potential security issue.....	193

6.2.1.2.10	Positive (beneficial) impact during the Construction Phase .....	193
6.2.1.3	Potential negative impacts during the Operation Phase .....	194
6.2.1.3.1	Potential traffic issue .....	194
6.2.1.3.2	Impact on air quality .....	194
6.2.1.3.3	Noise and vibration.....	195
6.2.1.3.4	Impact of project on gridline electricity and vice versa (impact of electricity consumption and electricity outage) .....	196
6.2.1.3.5	Impact of waste.....	196
6.2.1.3.6	Occupational health and safety (potential accidents at workplace) .....	197
6.2.1.3.7	Potential social issue.....	198
6.2.1.3.8	Potential security issue.....	199
6.2.1.3.9	Positive (beneficial) impacts during the Operation Phase .....	199
6.2.1.4	Potential negative impacts during the Decommissioning Phase.....	200
6.2.1.4.1	Impact: Occupational health and safety (accidents at workplace).....	200
6.2.1.4.2	Potential residual impact.....	200
6.2.2	Identification and assessment of the likelihood and severity of the natural and industrial hazard related to the project.....	202
6.2.3	The design, layout, functioning, management and implementation of appropriate impact and risk mitigation measures.....	203
6.2.3.1	Mitigation measures to be taken during the Preconstruction Phase .....	203
6.2.3.2	Mitigation/corrective measures to be taken during the Construction Phase... ..	203
6.2.3.2.1	Mitigation for impact of mobilization and preparation activities for construction work .....	203
6.2.3.2.2	Mitigation for impact of Occupational Health and Safety issue (potential accidents at workplace).....	204
6.2.3.2.3	Mitigation for impact on air quality.....	205
6.2.3.2.4	Mitigation for noise and vibration .....	205
6.2.3.2.5	Mitigation for potential impact on soil .....	206
6.2.3.2.6	Mitigation for potential impact on ground water .....	207
6.2.3.2.7	Mitigation for impact of waste (construction waste) .....	207
6.2.3.2.8	Mitigation for potential social impact/issue.....	208
6.2.3.2.9	Mitigation for potential security issue .....	209
6.2.3.3	Mitigation/corrective measures to be taken during the Operation Phase .....	209
6.2.3.3.1	Mitigation for potential traffic issue .....	209
6.2.3.3.2	Mitigation for impact on air quality.....	210
6.2.3.3.3	Mitigation for noise and vibration .....	211
6.2.3.3.4	Mitigation for impact of project on gridline electricity and vice versa .....	212
6.2.3.3.5	Mitigation for impact of wastes (solid & liquid) .....	213

6.2.3.3.6	Mitigation for Occupational Health and Safety issue (Potential Accidents at workplace) .....	214
6.2.3.3.7	Mitigation for potential social impact.....	216
6.2.3.3.8	Mitigation for potential security issue .....	216
6.2.3.4	Mitigation/corrective measures to be taken during the Decommissioning/Rehabilitation Phase .....	217
6.2.3.4.1	Mitigation measures for potential accident at workplace (OHS issue). .....	217
6.2.3.4.2	Mitigation for potential residual issue .....	217
6.2.4	Characterization and assessment of residual impacts and risks and comparison with applicable regulations, standards and guidelines .....	218
6.2.5	Comprehensive monitoring plan.....	219
6.3	Location of sources of impacts and their potential spatial and temporal distribution .....	227
7.	CUMULATIVE IMPACTS ASSESSMENT .....	229
7.1	Methodology and approach .....	229
7.2	Cumulative Impact Assessment.....	231
7.2.1	Brief description and map of relevant existing and future private and public projects and development .....	231
7.2.2	Identification and assessment of the potential cumulative impacts on the components in the surrounding environment and the project contribution to such impact.....	233
7.2.3	Determination of the leverage and influence that the project may have over the significant and project related cumulative impacts .....	233
7.2.4	Description of measures to mitigate the project, contribution to the cumulative impacts .....	234
8.	ENVIRONMENTAL MANAGEMENT PLAN.....	235
8.1	Project description by project phase .....	235
8.2	Project environmental, socio-economic and where possible health policy, legal requirement and institutional arrangements .....	237
8.2.1	Health policy.....	238
8.2.1.1	National Environmental Health Agenda.....	239
8.2.1.2	Environmental, Health and Safety (EHS).....	239
8.2.1.3	Occupational Health and Safety (OHS) by ILO .....	240
8.2.2	Institutional Arrangement of National Health Committee (NHC).....	241
8.3	Summary of impacts and mitigation measures .....	243
8.4	Overall budget for implementation of the EMP .....	253
8.5	Management and monitoring sub-plans by project phase.....	255
8.5.1	Summary of overall EMP .....	264
8.5.2	EMP for safety and health aspects (Adopted from IFC guidelines and summarized) .....	267
8.6	Content for each subplan .....	279
8.6.1	Objective.....	279

8.6.2	Legal requirement .....	279
8.6.3	Overview maps and layout maps, images, aerial photos, satellite images .....	279
8.6.4	Implementation schedule .....	283
8.6.5	Management action .....	284
8.6.6	Monitoring plans .....	295
8.6.7	Projected budgets and responsibilities .....	300
9.	PUBLIC CONSULTATION AND INFORMATION DISCLOSURE .....	304
9.1	Methodology and approach .....	305
9.2	Preliminary public consultation meetings during the scoping study .....	305
9.3	Public consultation meetings during the EIA study .....	309
	REFERENCES .....	313
	ANNEX .....	315

## List of Tables

Table 1	SKD details, Specification .....	125
Table 2	For Model X 55.....	126
Table 3	For Model D 50.....	128
Table 4	For Model D 70.....	131
Table 5	For Model S 350 .....	134
Table 6	Process analysis.....	139
Table 7	List of machineries and equipment to be imported .....	142
Table 8	Monthly minimum and maximum temperature (°C) of Hmawbi Township during 2010-2021.....	159
Table 9	Monthly rainfall (mm) of Hmawbi Township during 2010-2021 .....	159
Table 10	Monthly humidity (%), Hmawbi Township (2010 – 2018) .....	160
Table 11	Prevailing wind speed (mile/hr) in Hmawbi Township during 2010-2021.....	160
Table 12	Analysis of water sample from the project site .....	165
Table 13	Ambient air quality (baseline data) results from the project site (in comparison with NEQEG guideline values).....	166
Table 14	Quality of ambient noise level (dBA) by sample site (compared with NEQEG guideline).....	167
Table 15	Inventory of species of flora (natural and artificial) of survey area .....	170
Table 16	Bird species recorded in the area .....	173
Table 17	Herpetofauna species recorded in the area.....	176
Table 18	Data on infrastructure and services .....	180
Table 19	Data on basic socio-economic aspects of village .....	181
Table 20	Summary of monitoring programme for Construction Phase in tabulated form (the pragmatic approach).....	220
Table 21	Summary of monitoring programme for Operation Phase (tabulated form).....	223
Table 22	Summary of monitoring programme for Decommissioning/Rehabilitation Phase (tabulated form).....	226
Table 23	During the Construction Phase.....	255
Table 24	During the Operation Phase .....	259
Table 25	During the Decommissioning/Rehabilitation Phase.....	264
Table 26	Summary of monitoring programme for Construction Phase in tabulated form (the pragmatic approach).....	295
Table 27	Summary of monitoring programme for Operation Phase (tabulated form) .....	297



## List of figures

Figure 1	Certificate of Incorporation .....	42
Figure 2	MIC Permit.....	43
Figure 3	Private Industrial Enterprise certificate .....	44
Figure 4	Export/Import permit.....	45
Figure 5	Scoping report approval by ECD.....	46
Figure 6	Scoping report approval by ECD.....	47
Figure 7	Certificate of consultant firm.....	52
Figure 8	Document of project site plot .....	106
Figure 9	Document of project site plot .....	107
Figure 10	Document of project site plot .....	108
Figure 11	Document of project site plot .....	109
Figure 12	Map of Hlegu Township.....	110
Figure 13	Satellite image showing project site .....	111
Figure 14	Satellite image showing project plot and corners (inflection points) .....	113
Figure 15	Layout plan of project site .....	115
Figure 16	Factory (assembly plant) .....	116
Figure 17	Office inside the assembly plant.....	116
Figure 18	Chassis assembly line.....	116
Figure 19	Interior assembly line .....	117
Figure 20	Final assembly line .....	117
Figure 21	Alignment .....	117
Figure 22	Body inspection line .....	118
Figure 23	Painting room .....	118
Figure 24	Light and mirror inspection room.....	118
Figure 25	Shower test .....	119
Figure 26	Loading area .....	119
Figure 27	Testing car on uneven road and bumpy road inside the factory compound .....	119
Figure 28	Family line.....	120
Figure 29	Bachelor line.....	120
Figure 30	Canteen.....	120
Figure 31	Toilets.....	121
Figure 32	Security gate .....	121
Figure 33	Model X55, 1.5.....	122
Figure 34	Model D50, 1.5 .....	123

Figure 35	Model D70, 1.5.....	123
Figure 36	Model S 350, 2.0 .....	124
Figure 37	Assembly line process .....	138
Figure 38	Water source (inside the factory compound).....	140
Figure 39	Ground tank.....	140
Figure 40	Elevated tank .....	140
Figure 41	Transformer .....	141
Figure 42	Generator .....	141
Figure 43	Garbage bins.....	147
Figure 44	Satellite image showing points for drainage line, disposal site and final discharge.....	148
Figure 45	Satellite image showing study area, in the south western outskirts of Sar Ta Linn village (the area of the irregularly shaped village is shown in blue line).....	155
Figure 46	The paddy fields in the vicinity of the site .....	161
Figure 47	Sar Ta Linn Chaung west of the project site .....	161
Figure 48	General geology of the region .....	163
Figure 49	Taking soil sample.....	164
Figure 50	Measuring ambient air quality.....	166
Figure 51	Measuring noise level.....	167
Figure 52	Satellite image showing spots where air quality and noise level were measured and soil and water samples were taken .....	168
Figure 53	Sar Ta Linn Village .....	177
Figure 54	Sar Ta Linn village administrative office .....	178
Figure 55	Yangon-Bago No.2 High Way Road.....	178
Figure 56	Village transformer.....	178
Figure 57	One of the village community water ponds.....	179
Figure 58	Affiliated High School (public school) at Sar Ta Linn.....	179
Figure 59	Village library.....	179
Figure 60	Village clinic .....	183
Figure 61	Hlegu Township Hospital.....	184
Figure 62	Kan Oo Mingalar Pagoda .....	185
Figure 63	Pari Yati Monastery.....	185
Figure 64	Thar Thanar Dipaka Religious Hall.....	185
Figure 65	Maha Atula - Tha Kyat Man Aung 5-tiered Pagoda (Hlegu Town).....	186
Figure 66	Village Guardian "Nat Shrine" .....	186
Figure 67	Monitoring spots/sites during Construction phase .....	222
Figure 68	Monitoring spots/sites during Operation phase .....	224
Figure 69	Satellite image showing project plot and corners (inflection points) .....	232

Figure 70	Schematic diagram showing fire fighting system.....	273
Figure 71	Satellite image showing project plot and corners (inflection points) .....	280
Figure 72	Layout map of project site.....	281
Figure 73	Satellite image showing study area, in the south western outskirts of Sar Ta Linn village (the area of the irregularly shaped village is shown in blue line).....	282
Figure 74	Generalized time frame for planning and implementation of EMP and MP during the four phases of project life.....	284
Figure 75	Preliminary public meeting at Village Administrator Office .....	306
Figure 76	KII interview .....	306
Figure 77	Public consultation meeting .....	309

## **ACRONYMS AND ABBREVIATION**

ACGIH	American Conference of Governmental Industrial Hygienist
ACM	Asbestos Containing Materials
ADB	Asian Development Bank
ASEAN	Association of South-East Asian Nations
BAT	Best Available Technology
BETP	Biomass Energy Technological Paradigm
BOD	Biochemical Oxygen Demand
BSEN	British Standard European Norm
CGM	Complaints and Grievances Mechanism
CHS	Community Health and Safety
CIA	Cumulative Impact Assessment
CI	Cumulative Impacts
CIA	Cumulative Impact Assessment
CIM	Cumulative Impacts Management
COD	Chemical Oxygen Demand
CSR	Corporate Social Responsibility
CPR	Cardiopulmonary Resuscitation
dBA	Decibel A- weighting
ECD	Environmental Conservation Department
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPS	Environmental Performance Standards
EU	European Union

FD	Forest Department
FGD	Focal Group Discussion
GAD	General Administration Department
GBH	Girth at Breast Height
GDP	Gross Domestic Products
GHGs	Green House Gases (Glass House Gases)
GRM	Grievance Redress Mechanisms
GIIP	Good International Industry Practices
GIS	Geographic Information System
HVAC	Heating, Ventilation, Air condition and Cooling
ID	Identity Card
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IREA	International Renewable Energy Agency
ISO	International Standard Organization
IUCN	International Union for Conservation of Nature and Natural Resources
KBA	Key Biodiversity Area
KII	Key Informant Interview
kWh	Kilo Watt Hour
MESC	Myanmar Environment Sustainable Conservation
MMSP	Management and Monitoring Sub-plans
MOECAF	Ministry of Environmental Conservation and Forestry
MONREC	Ministry of Natural Resources and Environmental Conservation
MP	Monitoring Plan
MSDS	Materials Safety Data Sheet
NCEA	National Commissions of Environmental Affairs

NECC	National Environmental Conservation Committee
NECCCCC	National Environmental Conservation and Climate Change Central Committee
NEQ	National Environmental Quality
NGO	Non-Government Organization
NO <sub>2</sub>	Nitrogen Dioxide
OHS	Occupational Health and Safety
PAP	Project Affected People
PFD	Personal Floation Devices
PM	Particulate Matter
PM <sub>2.5-10</sub>	Particulate Matter between 2.5-10 microns
PPE	Personnel Protection Equipment
RSPM	Respiratory Suspended Particulate Matter
4Rs	Reduce, reuse, recover and recycle
SIA	Social Impact Assessment
SO <sub>2</sub>	Sulphur Dioxide
SPM	Suspended Particulate Matter
SS	Secondary Source
STD	Sexually Transmitted Diseases
TDS	Total Dissolved Solids
TSS	Total Suspended Solid
TSPM	Total Suspended Particulate Matter
UXO	Unexploded Ordnance
WHO	World Health Organization
YCDC	Yangon City Development Committee

အခန်း(၁)

အကျဉ်းချုပ်အစီရင်ခံစာ

ဤ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း(EIA) အစီရင်ခံစာသည် အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်မှ မော်တော်ကား တပ်ဆင်၊ ဖြန့်ဖြူးရောင်းချခြင်းအတွက် ဖြစ်သည်။

အဆိုပါစီမံကိန်းအတွက် နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာကို ဇွန်လ၊ ၂၀၁၉ ခုနှစ်တွင် တင်သွင်းခဲ့ပြီး၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဥပဒေနှင့်ညီညွတ်စွာ ၂၀၂၁ ခုနှစ်၊ စက်တင်ဘာလ၊ ၉ ရက်နေ့တွင် အတည်ပြုခဲ့ပါသည်။ (စာအမှတ်၊ အီးအိုင်အေ - ၁/၄-ဆ (၁၅၀၅/၂၀၂၁)။ ဤပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (EIA)ကို ဆက်လက်တင်ပြခြင်းဖြစ်ပါသည်။

အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်သည် ဧပြီလ၊ ၂၀၁၄ ခုနှစ်တွင် တရားဝင် မှတ်ပုံတင်ထားသော ကုမ္ပဏီတစ်ခု ဖြစ်သည်။ (ကုမ္ပဏီမှတ်ပုံတင် အမှတ်- ၂၁၈/၂၀၁၄-၂၀၁၅၊ ရက်စွဲ ၁၀-၄-၂၀၁၄)။ ကုမ္ပဏီမှတ်ပုံတင်အသစ် အမှတ်မှာ ၁၀၈၂၂၇၃၃၈ ဖြစ်သည်။ (ရင်းနှီးမြှုပ်နှံမှုနှင့် ကုမ္ပဏီများညွှန်ကြားမှု ဦးစီးဌာန)

ကုမ္ပဏီသည် မြန်မာ့ရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ ခွင့်ပြုမိန့်ရရှိထားပြီး ဖြစ်ပါသည်။ (ခွင့်ပြုမိန့်အမှတ်- မလသ-၁၂၆၇/၂၀၁၇၊ ရက်စွဲ- ၂၀-၈-၂၀၁၇။

မော်တော်ကားများကို SKD စနစ်ဖြင့် တပ်ဆင်ထုတ်လုပ် ရောင်းချသွားမည် ဖြစ်သည်။ ကားအစိတ်အပိုင်းများကို တရုတ်နိုင်ငံမှ တင်သွင်းမည်ဖြစ်သည်။ (BAIC International Development ကုမ္ပဏီလီမိတက်၊ Beijing)

အဆိုပြုစီမံကိန်းနေရာသည် ဦးပိုင်အမှတ် - ၅၆/၂/က+ ၅၆/၂/ခ+ ၅၆/၂/ဃ နှင့် ၅၇/၂၊ မြေကွက်အမှတ်- ၁၀၈၂<sup>၀၀</sup> ဆားတလင်းကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိပါသည်။ စီမံကိန်းဧရိယာမှာ ၁၈.၆၄ ဧက (၇၅၄၃၃.၄၇ စတုရန်းမီတာ) ဖြစ်သည်။ မြေအမျိုးအစားမှာ ဂရမ်မြေဖြစ်ပြီး မြေငှားရမ်းမှုသက်တမ်းမှာ နှစ်(၅၀) ဖြစ်သည်။ (၅ နှစ် နှစ်ကြိမ်သက်တမ်းတိုးနိုင်သည်)

အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်သည် ၁၀၀ ရာခိုင်နှုန်း မြန်မာနိုင်ငံသားပိုင် ကုမ္ပဏီ ဖြစ်သည်။ အဆိုပြုစီမံကိန်းသည် BAIC ယာဉ်များ၏ မော်တော်ယာဉ်အစိတ်အပိုင်းများကို တပ်ဆင်ပြီး မြန်မာနိုင်ငံတွင် ရောင်းချမည် ဖြစ်သည်။

တရုတ်ကုမ္ပဏီဖြစ်သော BAIC International Development ကုမ္ပဏီလီမိတက်၊ Beijing နှင့် မြန်မာကုမ္ပဏီဖြစ်သော အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်တို့ အကြား အမျိုးမျိုးသော သဘောတူညီချက်များဖြင့် စီမံကိန်းကို လုပ်ဆောင်ပါမည်။

**စီမံကိန်းအဆိုပြုတင်ပြသူ**

- စီမံကိန်းအဆိုပြုတင်ပြသူ : အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်
- လိပ်စာ : အမှတ် (၇၄)၊ ၁ လမ်း၊ ၈ ရပ်ကွက်၊ တောင်ဥက္ကလာမြို့နယ်၊ ရန်ကုန်
- ဝဘ်ဆိုဒ် : [www.agb.com](http://www.agb.com)
- ဆက်သွယ်ရန်ပုဂ္ဂိုလ် : ဒေါ်ဖြူလင်းမြင့်၊ အထွေထွေမန်နေဂျာ
- ဖုန်း : ၀၉ ၅၁၅၉၁၆၅
- အီးမေးလ် : [miemie.agbs-miemie.agbs@aunggabar.com](mailto:miemie.agbs-miemie.agbs@aunggabar.com)
- စီမံကိန်းတည်နေရာ : ဦးပိုင်အမှတ် - ၅၆/၂/က+ ၅၆/၂/ခ+ ၅၆/၂/ဃ နှင့် ၅၇/၂၊ မြေကွက်အမှတ်- ၁၀၈၂<sup>၀</sup> ဆားတလင်းကျေးရွာ အုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်

**အုပ်ချုပ်မှုဆိုင်ရာပုဂ္ဂိုလ်များ**

အမည်	လူမျိုး၊ မှတ်ပုံတင်အမှတ်	လိပ်စာ	ရာထူး	အခြား စီးပွားရေး
ဦးအောင်စိန်	ဗမာ ၉/မရမ(နိုင်) ၀၇၈၃၂၄	ပန်းလှိုင်ဂေါက်ကွင်းလမ်း၊ အမှတ် ၇၉ ပန်းလှိုင်ဂေါက်ကွင်းအိမ်ရာ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်၊ မြန်မာ	အုပ်ချုပ်မှု ဒါရိုက်တာ	ကုန်သည်
ဒေါ်အိမျိုးမျိုးခိုင်	ဗမာ ၁၃/တကန (နိုင်) ၁၄၆၆၄၄	ပန်းလှိုင်ဂေါက်ကွင်းလမ်း၊ အမှတ် ၇၉ ပန်းလှိုင်ဂေါက်ကွင်းအိမ်ရာ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်၊ မြန်မာ	ဒါရိုက်တာ	ကုန်သည်
ဦးမြင့်သိန်း	ဗမာ ၉/မရမ (နိုင်) ၀၇၉၄၃၉	ပန်းလှိုင်ဂေါက်ကွင်းလမ်း၊ အမှတ် ၈၁ ပန်းလှိုင်ဂေါက်ကွင်းအိမ်ရာ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်၊ မြန်မာ	ဒါရိုက်တာ	ကုန်သည်
ဒေါ်သန္တာစိုး	ဗမာ ၉/မနမ (နိုင်) ၁၀၂၄၉၁	ပန်းလှိုင်ဂေါက်ကွင်းလမ်း၊ အမှတ် ၈၁ ပန်းလှိုင်ဂေါက်ကွင်းအိမ်ရာ၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်၊ မြန်မာ	ဒါရိုက်တာ	ကုန်သည်



အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်သည် ၁၀၀ ရာခိုင်နှုန်း မြန်မာနိုင်ငံသားပိုင် ကုမ္ပဏီ ဖြစ်သည်။

ရှယ်ယာပမာဏ : ကျပ် ၅,၀၀၀,၀၀၀

ရှယ်ယာအရေအတွက် : ၅၀

ပေးချေသောပမာဏ : ကျပ် ၁၀၀,၀၀၀

ရှယ်ယာရှင်များ

ဦးအောင်စိန် : ၂၅ ရှယ်ယာ

ဦးမြင့်သိန်း : ၂၅ ရှယ်ယာ

**ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ကျွမ်းကျင်သူများ၏ ရှင်းလင်းချက်**

မြန်မာ့ပတ်ဝန်းကျင် ရေရှည်တည်တံ့ရန်ထိန်းသိမ်းရေး ကုမ္ပဏီလီမိတက် (MESC)သည် အမျိုးသား စီမံကိန်းနှင့် စီးပွားရေးဖွံ့ဖြိုး တိုးတက်မှုဝန်ကြီးဌာနတွင် (စာအမှတ်။ ရက-စ(၀)၀၀၁/၂၀၁၄ (၀၀၄၇၂၀)၊ ရက်စွဲ။ ၆-၆-၂၀၁၄၊ မှတ်ပုံတင်လက်မှတ်အမှတ် ၈၃၀/၂၀၁၄-၂၀၁၅ (၂၀-၅-၂၀၁၄)ဖြင့် ၂၀၁၄ ခုနှစ်၌ တရားဝင်မှတ်ပုံတင်ထားသော အတိုင်ပင်ခံအဖွဲ့အစည်းတစ်ခု ဖြစ်သည်။ ကုမ္ပဏီမှတ်ပုံတင်အမှတ်အသစ် မှာ ၁၁၀၆၄၉၁၉၃ ဖြစ်သည်။

အတိုင်ပင်ခံအဖွဲ့အစည်း မြန်မာ့ပတ်ဝန်းကျင် ရေရှည်တည်တံ့ရန် ထိန်းသိမ်းရေးကုမ္ပဏီလီမိတက် (MESC)၏ ကြားကာလ အကြံပေးလိုင်စင်အမှတ်သည် ၀၀၀၃ ဖြစ်သည်။ (ရက်စွဲ။ ၁-၇-၂၀၁၇၊ ECD)

ဆက်သွယ်ရန်လိပ်စာ : အခန်း(၅-ခ)၊ တိုက်အမှတ်(၆၇/၆၉)၊ ပါရမီလမ်း၊ (၁၆)ရပ်ကွက်၊ လှိုင်မြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

ဆက်သွယ်ရန် ပုဂ္ဂိုလ် : ဦးမြင့်ကျော်သူရ

ဆက်သွယ်ရန်ဖုန်းနံပါတ် : +၉၅ ၉ ၄၂၀၁၀၅၀၇၁

: +၉၅ ၉ ၇၃၀၄၄၉၀၃

အီးမေးလ်လိပ်စာ : [myanmar.esc@gmail.com](mailto:myanmar.esc@gmail.com)

Facebook website : [www.myanmar.environment.sustainable.conservation.com](http://www.myanmar.environment.sustainable.conservation.com)

ဤ IEE/EIA စီမံကိန်းတွင်ပါဝင်သော MESC ၏ အဖွဲ့ဝင်များ IEE/EIA appraisers, သို့မဟုတ် IEE/EIA practitioner မှာ အောက်ပါအတိုင်း ဖြစ်သည်-

အမည်	နိုင်ငံသားနှင့် နိုင်ငံသား မှတ်ပုံတင် အမှတ်	ECD မှတ်ပုံတင် အမှတ်	ကျွမ်းကျင်ဘာသာရပ်
ဦးမြင့်ကျော်သူရ M.Sc (သတ္တဗေဒ)	မြန်မာ ၁၂/ ဒဂတ(နိုင်) ၀၂၈၃၄၉	၀၀၀၆	အုပ်ချုပ်မှုဒါရိုက်တာ၊ ဖီဝမျိုးစုံမျိုးကွဲပညာရှင်(Fauna), EIA practitioner ၊EIA Appraiser
ဦးစောဟန်ရှိန် B.Sc (ရုက္ခဗေဒ) M.Sc (အက္ခရာဝါ ဇီဝဗေဒ)	မြန်မာ ၁၀/ မလမ(နိုင်) ၀၀၈၁၇၃	၀၀၀၇	အငြိမ်းစားပါမောက္ခ EIA Practitioner and Appraiser
ဒေါက်တာ သီရိဒေဝီအောင် Ph.D (သတ္တဗေဒ)	မြန်မာ ၁၂/ ဒလန(နိုင်) ၀၂၉၄၃၃	၀၀၀၈	ဖီဝမျိုးစုံမျိုးကွဲပညာရှင် (Ornithologist)
ဦးတင်ထွန်းအောင် B.Sc (Engineering)	မြန်မာ ၁၂/ ဥတမ(နိုင်) ၁၇၂၁၁၁	၀၀၀၉	အင်ဂျင်နီယာ၊ EIA practitioner
ဒေါ်ခင်နွေနိုင် M.Sc (ရုက္ခဗေဒ)	မြန်မာ ၉/ ပကက(နိုင်) ၀၀၁၂၅၂	၀၀၀၁၀	ဖီဝမျိုးစုံမျိုးကွဲပညာရှင်(အပင်)၊ ပတ်ဝန်းကျင်သုတေသနလေ့လာ ရေးပညာရှင်
ဦးသန်းစိုးဦး M.Sc (သစ်တော)	မြန်မာ ၉/ မနမ (နိုင်) ၀၅၀၈၀၈	၀၀၀၁၁	EIA ပညာရှင်
ဦးဥက္ကာကျော်သူ B.Sc (ဘူမိဗေဒ)	မြန်မာ ၇/ ရတရ (နိုင်) ၀၉၀၃၇၁	၀၀၀၁၂	ဘူမိဗေဒပညာရှင်
ဒေါ်သင်းသင်းရီ B.Sc (ဓာတုဗေဒ)	မြန်မာ ၁၂/ သယက(နိုင်) ၀၃၉၂၉၂	၀၀၀၁၃	ဓာတုပတ်ဝန်းကျင်ဆိုင်ရာသုတေ သနပညာရှင်၊ ကွန်ပျူတာ

- ဦးမြင့်ကျော်သူသည် တိရစ္ဆာန်များ လေ့လာခြင်း နှင့် EIA လေ့ကျင့်ခြင်း နှင့် အကဲဖြတ်ခြင်း နှင့် အစီရင်ခံစာ ရေးသားခြင်း အပိုင်းတွင် ပါဝင်ပါသည်။
- ဦးစောဟန်ရှိန် သည် EIA လေ့ကျင့်ခြင်း နှင့် အကဲဖြတ်ခြင်း နှင့် အစီရင်ခံစာ ရေးသားခြင်း (အစီရင်ခံစာ ရေးသားခြင်း ခေါင်းဆောင်) အပိုင်းတွင် ပါဝင်ပါသည်။
- ဒေါက်တာ သီရိဒေဝီအောင် သည် avifauna လေ့လာခြင်း အစီရင်ခံစာ ရေးသားခြင်း အပိုင်းတွင် ပါဝင်ပါသည်။
- ဦးတင်ထွန်းအောင် သည် EIA လေ့ကျင့်ခြင်း နှင့် အစီရင်ခံစာ၏ အပိုင်းများ၊ သတင်း အချက်အလက်များ၊ အချက်အလက်များ ပံ့ပိုးပေးခြင်း နှင့် အစီရင်ခံစာ ရေးသားခြင်း အပိုင်းတွင် ပါဝင်ပါသည်။
- ဒေါ်ခင်နွေနိုင် သည် အပင်များ လေ့လာခြင်း နှင့် EIA အစီရင်ခံစာ ရေးသားခြင်း အပိုင်းတွင် ပါဝင်ပါသည်။
- ဦးသန်းစိုးဦး သည် EIA လေ့ကျင့်ခြင်း နှင့် အစီရင်ခံစာ ရေးသားခြင်း အပိုင်း အထူးသဖြင့် လူမှုစီးပွား အခြေအနေ ရေးသားခြင်း အပိုင်းတွင် ပါဝင်ပါသည်။
- ဦးဥက္ကာကျော်သူ သည် ဘူမိဗေဒ နှင့် ပထဝီဝင် ရှုထောင့်များ တွင် ပါဝင်သော desktop survey နှင့် ဒေသ ဘူမိဗေဒ ဆိုင်ရာ တစ်ဆင့်ခံ အချက်အလက်များကို စုဆောင်းခြင်းတို့ပါဝင်ပါသည်။
- ဒေါ်သင်းသင်းရီ သည် ရုပ်ပိုင်းဆိုင်ရာ အထူးသဖြင့် ပတ်ဝန်းကျင် လေထု၊ ရေအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှု နှင့် မြေအရည်အသွေး စသည်ဖြင့် နှင့် မိုးလေဝသ တစ်ဆင့်ခံ အချက်အလက်များ အပါအဝင် ရုပ်ပိုင်းဆိုင်ရာ အချက်အလက်များ စုစည်းမှုများ တွင် ပါဝင်ပါသည်။

MESC တွင် အချိန်ပိုင်း ဝန်ထမ်းများလည်း ရှိသည်။

အဖွဲ့အစည်းသည် အချိန်ပိုင်း အဖွဲ့ဝင်အားလုံးကို အမြဲတမ်း ဝန်ထမ်း အဖြစ် ငှားရမ်းနိုင်သည့် အခြေအနေ မဟုတ်ပါ။

ဤအတိုင်ပင်ခံအဖွဲ့အစည်းနှင့်အတူ ရုက္ခဗေဒပညာရှင်များ၊ သတ္တဗေဒပညာရှင်များ၊ ငှက်ပညာရှင်များ၊ ဂေဟဗေဒဆိုင်ရာ ပညာရှင်များ၊ ရေနေဂေဟဗေဒဆိုင်ရာ ပညာရှင်များ၊ လူမှုရေးဆိုင်ရာ ပညာရှင်များ၊ ကျန်းမာရေး ဝန်ထမ်းများ (ဆရာဝန်)၊ အင်ဂျင်နီယာများ၊ ဘူမိဗေဒပညာရှင်များနှင့် အချိန်ပိုင်းပညာရှင်များလည်း ပါဝင်လုပ်ကိုင် ကြသည်။

**မူဝါဒ၊ တရားရေးရာဖွဲ့စည်းပုံမူဘောင်**

ဤအရာများကို အခန်း (၃) တွင် ဖော်ပြမည်ဖြစ်ပြီး အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်၏ ပတ်ဝန်းကျင်နှင့်လူမှုရေးရာမူဝါဒ၊ ပတ်ဝန်းကျင်နှင့်သက်ဆိုင်သော ဥပဒေများ၊ နည်းဥပဒေများ၊ စည်းမျဉ်းများနှင့် လမ်းညွှန်ချက်များကို လိုက်နာပါမည်။

ကုမ္ပဏီသည် အောက်ပါအချက်များကို ကြိုးပမ်းအားထုတ်လိုက်နာပါမည်-

- ဥပဒေများနှင့်စည်းမျဉ်းများကိုလိုက်နာခြင်း၊ ပတ်ဝန်းကျင်နှင့်လူမှုရေးရာများကို တာဝန်ယူမှုဖြင့် ကားတပ်ဆင်ထုတ်လုပ်ခြင်း
- ပတ်ဝန်းကျင်ဧရိယာကို ညစ်ညမ်းမှုတားဆီးခြင်း၊ ပတ်ဝန်းကျင်ကာကွယ်ခြင်းအတွက် စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း
- ရေ၊ မြေ၊ လေ၊ ဆူညံသံ၊ ဖုန်မှုန့်နှင့် စွန့်ပစ်ပစ္စည်းများကြောင့် ညစ်ညမ်းမှုကို ဖြေလျော့ရန် အကျိုးသက်ရောက်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) လုပ်ဆောင်ခြင်း
- တင့်တော်သောနေရာလွတ်တွင် အစိမ်းရောင်နေရာ ဖန်တီးခြင်း
- တက်နိုင်သမျှ သဘာဝအရင်းအမြစ်နှင့်စွမ်းအင်များကို ထိန်းသိမ်းခြင်း
- အလုပ်သမားများနှင့် ဒေသအဖွဲ့အစည်းများအကြား ပတ်ဝန်းကျင်ဆိုင်ရာ အသိပညာပေးခြင်း၊ သင်တန်းပေးခြင်းနှင့် ဒေသအဖွဲ့အစည်းများအတွက် CSR အစီအစဉ်များ ဆောင်ရွက်ခြင်း

**သက်ဆိုင်သော ဥပဒေများ၊ နည်းဥပဒေများနှင့်စည်းမျဉ်း**

သက်ဆိုင်သော ဥပဒေများ၊ နည်းဥပဒေများနှင့် စည်းမျဉ်း (၄၇) ခုကို စာရင်းပြုစုထားပြီး အမည်များမှာ-

- ၁။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၂
- ၂။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ၊ ၂၀၁၄
- ၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆိုင်ရာလုပ်ထုံးလုပ်နည်း၊ ၂၀၁၅
- ၄။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (စွန့်ထုတ်မှု) လမ်းညွှန်ချက်၊ ၂၀၁၅
- ၅။ မြန်မာ့ရင်းနှီးမြှုပ်နှံမှုဥပဒေ၊ ၂၀၁၆
- ၆။ မြန်မာ့ရင်းနှီးမြှုပ်နှံမှုနည်းဥပဒေ၊ ၂၀၁၇
- ၇။ ပုဂ္ဂလိက စက်မှုလုပ်ငန်းဥပဒေ၊ ၁၉၉၀

၈။ အလုပ်သမားအဖွဲ့အစည်း ဥပဒေ၊ ၂၀၁၁

၉။ အလုပ်ရုံများအက်ဥပဒေ၊ ၁၉၅၁

၁၀။ မော်တော်ယာဉ်ဥပဒေ၊ ၂၀၁၅

၁၁။ ယာဉ်အန္တရာယ်ကင်းရှင်းရေးနှင့် မော်တော်ယာဉ်စီမံခန့်ခွဲမှု ဥပဒေ၊ ၂၀၂၀

ဥပဒေ၊ နည်းဥပဒေများ၊ စည်းမျဉ်းများမှ သက်ဆိုင်သော အခန်း၊ အပိုဒ်များကို စာရင်းပြုစု၍ကောက်နုတ်တင်ပြထားပါသည်။

မြန်မာနှင့် သဘောတူလက်မှတ်ထိုးထားသော အပြည်ပြည်ဆိုင်ရာ ကွန်ဗန်းရှင်း၊ နားလည်မှုစာချွန်လွှာနှင့် သဘောတူညီမှုများကိုလည်း စာရင်းပြုစုတင်ပြထားပါသည်။

**အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်တန်ဖိုးများ**

- လေအရည်အသွေးလမ်းညွှန်ချက်တန်ဖိုး၊ အမိန့်ကြော်ငြာစာအမှတ် ၆၁၅/၂၀၁၅၊ အမှတ် ၁.၁
- စွန့်ထုတ်မှု လမ်းညွှန်ချက်တန်ဖိုး၊ အမှတ် ၁.၂
- ဆူညံသံ လမ်းညွှန်ချက်တန်ဖိုး၊ အမှတ် ၁.၃
- ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့ သောက်သုံးရေ စံချိန်စံညွှန်း အစရှိသည်တို့ကို အခန်း (၃) တွင် ဖော်ပြထားပါသည်။

**ကတိကဝတ်**

စီမံကိန်းအဆိုပြုတင်ပြသူ (အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်) နှင့် အတိုင်ပင်ခံအဖွဲ့အစည်း (MESOC) တို့၏ ကတိကဝတ်များကို ဖော်ပြထားပါသည်။

**ဖွဲ့စည်းပုံမူဘောင်**

အမျိုးသားပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် ရာသီဥတုပြောင်းလဲခြင်းဆိုင်ရာဗဟိုကော်မတီ (NECCCC)။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန (ECD)၊ လုပ်ငန်းခွင်နှင့်ပတ်ဝန်းကျင်ကျန်းမာရေးဌာန (OEHD) တို့၏ ဖွဲ့စည်းပုံမူဘောင်များကိုလည်း ဖော်ပြထားပါသည်။ အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်၏ ဖွဲ့စည်းပုံကို ရေးဆွဲဖော်ပြထားပါသည်။

အပြည်ပြည်ဆိုင်ရာ ဘဏ္ဍာရေးကော်ပိုရေးရှင်း (IFC)မှ ချမှတ်ထားသော ပတ်ဝန်းကျင်နှင့်လူမှုရေး ဆိုင်ရာ စံချိန်စံညွှန်းများကိုဖော်ပြထားပါသည်။

အခန်း (၃)၏ နောက်ဆုံးအပိုင်းသည် စီမံကိန်းနှင့်သက်ဆိုင်သော ကျန်းမာရေး စံချိန်စံညွှန်းများ အကြောင်းကို အကျဉ်းချုပ်တင်ပြထားပါသည်။

ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာအခန်း (၃) တွင် ပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒ၊ တရားရေးရာဖွဲ့စည်းပုံမူဘောင် များကို အတော်အသင့် ပါဝင်ပါသည်။

စီမံကိန်းအကြောင်းအရာနှင့် အခြားဆောင်ရွက်နိုင်သောနည်းလမ်းများ

ဤအကြောင်းအရာများကို အခန်း (၄) တွင် အသေးစိတ် ဖော်ပြထားပါသည်။

အဆိုပြုတင်ပြသော စီမံကိန်းသည် မော်တော်ကားများကို SKD စနစ်ဖြင့် တပ်ဆင်ထုတ်လုပ် ရောင်းချသွားမည် ဖြစ်သည်။

အဆိုပြုစီမံကိန်းနေရာသည် ဦးပိုင်အမှတ် - ၅၆/၂/က+ ၅၆/၂/ခ+ ၅၆/၂/ဃ နှင့် ၅၇/၂၊ မြေကွက်အမှတ်- ၁၀၈၂<sup>၀</sup> ဆားတလင်းကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိပါသည်။

စီမံကိန်းဧရိယာမှာ ၁၈.၆၄ ဧက (၇၅၄၃၃.၄၇ စတုရန်းမီတာ) ဖြစ်သည်။ ကိုဩဒိနိတ်များမှာ မြောက်လတ္တီတွဒ် ၁၇ ဒီဂရီ၊ ၀၃ မိနစ် ၃၉.၄၇ စက္ကန့်၊ အရှေ့လောင်ဂျီတွဒ် ၉၆ ဒီဂရီ၊ ၁၈ မိနစ်၊ ၂၇.၂၃ စက္ကန့်တို့ဖြစ်သည်။

မြေအမျိုးအစားမှာ ဂရမ်မြေဖြစ်ပြီး မြေငှားရမ်းမှုသက်တမ်းမှာ နှစ်(၅၀) ဖြစ်သည်။ (၅ နှစ် နှစ်ကြိမ်သက်တမ်းတိုးနိုင်သည်)

အခြေခံအဆောက်အအုံ

ကားတပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းတွင် အောက်ပါ အဆောက်အအုံများပါဝင်ပါသည်။

- အဓိကတပ်ဆင်ရုံ၊ ရုံးခန်း၊ အဓိက သိုလှောင်ရုံ၊ ရေလုံမလုံစမ်းသပ်ခန်း၊ လမ်းစစ်ဆေးခြင်း ဧရိယာ၊ အလင်းနှင့် မှန် စမ်းသပ်ခန်း၊ ဆေးသုတ်ခန်း၊ အတင်အချ ဧရိယာ၊ ကားပါကင်များ၊ ကားဂိုဒေါင်၊ ထရန်ဖော်မာ၊ မီးစက်၊ မိသားစုလိုင်းခန်း၊ လူပျိုဆောင်၊ စားသောက်ခန်း။

နည်းပညာမှာ Semi-Knock Down (SKD) စနစ်ဖြစ်ပြီး ကားအစိတ်အပိုင်းများကို တရုတ်နိုင်ငံမှ တင်သွင်း၍ စီမံကိန်းနေရာတွင် တပ်ဆင်ထုတ်လုပ်မည်ဖြစ်သည်။

BAIC တံဆိပ် မှာ မော်ဒယ်လ် (၃) မျိုး ထုတ်လုပ်မည်ဖြစ်ပြီး၊ JMC တံဆိပ်မှာ မော်ဒယ်လ် (၁) မျိုး (BAIC မော်ဒယ်လ်များ X55၊ D50၊ D70၊ JMC မော်ဒယ်လ် S350) တို့ဖြစ်သည်။ မျှော်မှန်းထုတ်လုပ်မှုမှာ ပထမနှစ်တွင် အစီးရေ ၁၅၀၀၊ ၆ နှစ်နောက်ပိုင်းတွင် မျှော်မှန်းထုတ်လုပ်မှုမှာ ၅၀၀၀ ဖြစ်သည်။ ကားအားလုံးသည် ဘယ်မောင်းအမျိုးအစားဖြစ်သည်။

လုပ်ငန်းစဉ်

အောက်ပါ SKD အစိတ်အပိုင်းများကို တင်သွင်းပြီး တပ်ဆင်မည်ဖြစ်သည်။

- ကိုယ်ထည်နှင့် အောက်ခံထည်၊ အင်ဂျင်၊ ထရန်စမစ်ရှင်းနှင့် ကလပ်စနစ်၊ ရှေ့နှင့်နောက် တန်းများ၊ ဝင်ရိုးများပေါ်တွင် ယာဉ်ကို ထောက်ကန်ထားသည့် စပရင်များ၊ စတီယာရင်၊ အိပ်ဇောစနစ်၊ ဘီးများနှင့်တာယာများ၊ ထိုင်ခုံနှင့် တံခါးများ

အထက်မှာရှင်းပြသကဲ့သို့ ကားမော်ဒယ်လ်တစ်ခုစီအတွက် အစိတ်အပိုင်းများကို တင်သွင်းပြီး စီမံကိန်းနေရာတွင် တပ်ဆင်ထုတ်လုပ်မည်ဖြစ်သည်။

တပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းစဉ်များကို ရိုးရှင်းစွာ အကျဉ်းချုပ်ကို အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။

- (၁) ကိုယ်ထည်စစ်ဆေးခြင်း : ကားကိုယ်ထည်များကို စစ်ဆေးပြီးတပ်ဆင်ခြင်း
- (၂) အောက်ခံထည် တပ်ဆင်ခြင်း : အောက်ပိုင်းများကို တပ်ဆင်ခြင်း ဥပမာ-ပိုင်ယာများ၊ ဆီပိုက်များ၊ ဘရိတ်များ၊ ပါဝါစတီယာရင်၊ အင်ဂျင်ပိုင်ကန်၊ အောက်ခံထည်၊ ရှေ့နောက် စပရင်များ၊ ဘီးများ
- (၃) နောက်ဆုံးတပ်ဆင်ခြင်း : နောက်ဆုံးတပ်ဆင်ခြင်းအဆင့် ဥပမာ- အင်ဂျင်အတွင်းပိုင်းများ တပ်ဆင်ခြင်း၊ ပိုင်ယာများနှင့် ပိုက်များ၊ ထိုင်ခုံများ၊ တံခါးများ၊ အင်ဂျင်ပိုင်၊ ဘရိတ်ဆီ အစရှိသည်တို့ ဖြည့်ခြင်း
- (၄) စမ်းသပ်ခြင်း : စမ်းသပ်သည့်လုပ်ငန်း ဥပမာ- ဖြောင့်တန်းမှုစစ်ဆေးခြင်း၊ မီးသီးများစစ်ဆေးခြင်း၊ အရှိန်စစ်ဆေးခြင်း၊ ABS ဘရိတ်စနစ်စစ်ဆေးခြင်း၊ CO<sub>2</sub> ထွက်ရှိမှုစစ်ဆေးခြင်း
- (၅) ရေးဖြန်းခြင်း : မိုးလုံမလုံစစ်ဆေးခြင်း
- (၆) ရောင်းဝယ်ခြင်းဧရိယာ : ရောင်းချရန်အတွက် နောက်ဆုံးစစ်ဆေးခြင်း
- (၇) ပြင်ဆင်ခြင်းဧရိယာ : စမ်းသပ်လိုင်းများတွင်စစ်ဆေးခြင်း၊ မိုးလုံမလုံစစ်ဆေးခြင်း၊ ရောင်းချရန်အတွက်စစ်ဆေးခြင်း ပြီးနောက်၊ ကားတစ်စီးကိုစိတ်တိုင်းမကျလျှင် ၎င်းကို ပြင်ဆင်ပါသည်။
- (၈) လမ်းကြမ်းစစ်ဆေးခြင်း : လမ်းကြမ်းဧရိယာတွင် နောက်ဆုံးစမ်းသပ်ခြင်းဖြစ်သည်။ အဆိုပါကားသည် ဤနောက်ဆုံးအဆင့်စမ်းသပ်ခြင်းကို ဖြတ်ကျော်ပြီးလျှင် ၎င်းသည် ရောင်းချရန်အဆင့်သင့်ဖြစ်ပါသည်။

ကုန်ကြမ်းပစ္စည်းများနှင့် အရင်းအမြစ်အသုံးပြုမှု

အမှန်တစ်ကယ်တွင် ကုန်ကြမ်းပစ္စည်းများ မလိုအပ်ပေ။ ကုန်ကြမ်းပစ္စည်းသည် တရုတ်နိုင်ငံမှ တင်သွင်းသော အမျိုးမျိုးကားအစိတ်အပိုင်းများဖြစ်သည်။

လိုအပ်သော အရင်းအမြစ်များမှာ ရေနှင့်လျှပ်စစ်ဖြစ်သည်။ နှစ်စဉ်ရေလိုအပ်ချက်မှာ (စီမံကိန်းလည်ပတ်စဉ်ကာလတွင်) ၃၀၀,၀၀၀ ဂါလံဖြစ်သည်။ အဓိကအားဖြင့် ရေလုံမလုံစမ်းသပ်ခြင်း အတွက်ဖြစ်သည်။

ရေကို အနီးနားရှိ သဘာဝကန်မှ ရယူသုံးစွဲပါမည်။

နှစ်စဉ်လျှပ်စစ်လိုအပ်ချက်မှာ ၁.၅ မီလီယမ် KV ဖြစ်ပြီး အစိုးရလျှပ်စစ်မီးမှ ရယူပါမည်။ အရေးပေါ်အသုံးပြုမှုအတွက် အရန် မီးစက် (၅၀၀ KVA) ကို တပ်ဆင်ထားပါသည်။

နှစ်စဉ်လောင်စာဆီလိုအပ်ချက်မှာ ဒီဇယ် (၃၆၀၀) ဂါလံ၊ ဓါတ်ဆီ (၅၀၀၀) ဂါလံနှင့် အင်ဂျင်ပိုင် (၁၀၀) ဂါလံတို့အသီးသီးဖြစ်ပါသည်။

ခန့်မှန်းဘတ်ဂျက်မှာ အမေရိကန်ဒေါ်လာ ၁.၆၂ မီလီယမ် အပါအဝင် ကျပ် ၂၈၆၃.၆၂ မီလီယမ်ဖြစ်သည်။

ဝန်ထမ်း

တည်ဆောက်ရေးကာလအတွင်းတွင် ဝန်ထမ်း (၁၀၀)ဦးနှင့် စီမံကိန်းလည်ပတ်စဉ် ကာလအတွင်းတွင် (နိုင်ငံခြားသား သုံးယောက်) အပါအဝင် ဝန်ထမ်း (၁၃၅) ဦးခန့်အပ်မည်။

အလုပ်လုပ်ချိန်မှာ တစ်ရက် ၈ နာရီ၊ တစ်ပတ် ၄၀ နာရီ၊ တစ်နှစ် ၂၅၀ ရက် ဖြစ်သည်။

ဒေသဝန်ထမ်းများအတွက် လစာမှာ ကျပ် ၁၈၀,၀၀၀ မှ ၂,၁၀၀,၀၀၀ ဖြစ်သည်။ နိုင်ငံခြားသားပညာရှင်အတွက် အမေရိကန်ဒေါ်လာ ၂၅၀၀ မှ ၄၀၀၀ ဖြစ်သည်။ လစာများကို နှစ်နှစ်တစ်ခါ တိုးမည်။

စွန့်ပစ်ပစ္စည်းများ၊ မီးခိုးထွက်ရှိမှုများနှင့် နောက်ယုတ်မှုများ ထွက်ရှိမှု

အမှန်တစ်ကယ်တွင် ကားတပ်ဆင်ထုတ်လုပ်ခြင်းစက်ရုံသည် မီးခိုးမဲ့စက်ရုံ၊ စွန့်ပစ်ပစ္စည်း မထွက်သော စက်ရုံဖြစ်သည်။

လိုအပ်သော ကားအစိတ်အပိုင်းများကို တရုတ်နိုင်ငံမှ တင်သွင်းပြီး တပ်ဆင်၍ ကားအဖြစ်သို့ ပြုလုပ်ပါသည်။ (အမှန်တစ်ကယ် စက်မှုဆိုင်ရာစွန့်ပစ်ပစ္စည်းမထွက်ရှိပါ)



ပန်းများနှင့် မီးစက်အသုံးပြုကြောင့် မီးခိုးထွက်ရှိနိုင်ပါသည်။ သို့ပေမယ့် မပြောပလောက်ပေ။ ရေလုံမလုံစမ်းသပ်ခြင်းကြောင့် ရေအနည်းငယ်သုံးစွဲရမည်။ ကားပစ္စည်းအစိတ်အပိုင်းများ တပ်ဆင်ချိန်တွင် ဆူညံသံအနည်းငယ် ထွက်ရှိမည်။ အနံ့မထွက်ပေ။

အစိုင်အခဲနှင့်စွန့်ပစ်ပစ္စည်းများ

တည်ဆောက်ရေးကာလအတွင်းတွင် တည်ဆောက်ရေး စွန့်ပစ်ပစ္စည်းများ အများအပြား ကျန်ရစ်မည်။ တည်ဆောက်ရေးကာလပြီးဆုံးလျှင် စီမံကိန်းနေရာကို ဤအရာများအား ရှင်းလင်း၍ သန့်ရှင်းစေရန် ထားမည်။

စီမံကိန်းလည်ပတ်ချိန်အတွင်းတွင် ကားတပ်ဆင်ထုတ်လုပ်ခြင်းအတွက် အဓိကအစိုင်အခဲ စွန့်ပစ်ပစ္စည်းများမှာ ထုတ်ပိုးထားသော အဟောင်းပစ္စည်းများ (သစ်သားများ၊ ပလတ်စတစ်များ၊ သုံးထပ်သားပြားများ) ဖြစ်သည်။ ဤအရာမှ အချို့ကို ပြန်လည်အသုံးပြု (သို့မဟုတ်) ရောင်းချပါသည်။ အနည်းငယ်သော အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများဖြစ်သော ဘတ်ထရီအိုးအဟောင်းများ၊ မီးသီးအဟောင်းများ၊ စကာအဟောင်းများ အစရှိသည်တို့ကို ထွက်ရှိမည်။ ဤအရာများကို အမှိုက်ပုံးနှစ်ခုတွင် ပြန်လည်အသုံးပြုနိုင်နှင့် ပြန်လည်အသုံးမပြုနိုင်ဟူ၍ သိုလှောင်ထားပြီး အသုံးမပြုနိုင်သော စွန့်ပစ်ပစ္စည်း များကို စက်ရုံ၏မြောက်ဘက်ရှိ စွန့်ပစ်သည့်နေရာတွင် စွန့်ပစ်ပါမည်။

မီးဖိုချောင်၊ စားဖိုဆောင် မှ ထွက်ရှိသော အစားအသောက် စွန့်ပစ်ပစ္စည်းများကို အမှိုက်ပုံးများတွင် စုဆောင်းပြီး စွန့်ပစ်ပါမည်။ (၀န်ထမ်း ၄ ဦး မိသားစုနှင့် လူပျို(၀န်ထမ်း (၇) ဦးတို့မှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းများမှာ မပြောပလောက်ပေ။ အများစုမှာ စက်ရုံကို အသွားအပြန်လုပ်ကြမည်။)

အနည်းငယ်သော ဓါတုပစ္စည်း (thinner နှင့် မှုတ်ဆေး) သာရှိပါသည်။ ကားများသည် တရုတ်နိုင်ငံတွင် ဆေးမှုတ်ပြီးသားဖြစ်ပါသည်။ ကားအစိတ်အပိုင်းများကို တပ်ဆင်ပြီးနောက် နောက်ဆုံးတွင် အနည်းငယ်ကားကိုထိခိုက်မိလျှင် ဆေးမှုတ်ရန်လိုပါသည်။

အရည်စွန့်ပစ်ပစ္စည်းများ

တည်ဆောက်ရေးကာလအတွင်းတွင် ဆောက်လုပ်ရေးလုပ်ငန်းအတွက် ရေအဓိကအသုံးပြုရသည်။ ဥပမာ-ဘိလပ်မြေဖျော်ခြင်း၊ ထို့ကြောင့် စက်မှုဆိုင်ရာ အရည်စွန့်ပစ်ပစ္စည်း မထွက်ရှိပေ။

နေ့ဘက်တွင် စီမံကိန်းနေရာ၌ တည်ဆောက်ရေးလုပ်သား ၁၀၀ ဦးအလုပ်လုပ်ပြီး ညနေတွင်သူတို့၏ အိမ်ကိုပြန်ကြပါသည်။ လူသုံးအရည်စွန့်ပစ်ပစ္စည်းမှာ မပြောပလောက်ပေ။

စီမံကိန်းလည်ပတ်စဉ်ကာလအတွင်းတွင် ကားတပ်ဆင်ထုတ်လုပ်ခြင်းသည် ရေမလိုအပ်ပေ။ (ကားများကို မိုးလုံမလုံ ရေးစမ်းသပ်ခြင်းမှ အပ)။ အသုံးပြုပြီးသော ရေသည် မြောင်းစနစ်သို့ စီးဆင်းပါသည်။

စီမံကိန်းနေရာအတွင်းရှိနေအိမ်တွင် ဝန်ထမ်း (၁၁) ဦးသာနေထိုင်ပါသည်။ (ဝန်ထမ်းအများစုမှာ စက်ရုံကို အသွားအပြန် လုပ်ပါသည်။) ထို့ကြောင့် လူသုံးစွန့်ပစ်ရေမှာ အနည်းငယ်သာဖြစ်ပါသည်။

စီမံကိန်းနေရာတွင် လုံလောက်သော သန့်စင်ခန်းများ ရှိပါသည်။ ထို့ကြောင့် သန့်စင်ခန်းများမှ ထွက်သော မိလ္လာအညစ်အကြေး များသည် မိလ္လာကန်တွင် အဆုံးသတ်သွားမည်။ အခြား လူသုံးစွန့်ပစ်ရေ (အနည်းငယ်) မြောင်းထဲသို့ စီးဝင်ပြီး ခြောက်သွေ့သွားမည်။ မိုးရေများသည်လည်း မြောင်းအတွင်းသို့ စီးဝင်ပြီး နောက်ဆုံးစွန့်ပစ်နေရာသို့ ရောက်ရှိမည်။

အထူးသန့်စင်ခြင်း စနစ်မရှိပေ။

စီမံကိန်းအခြားဆောင်ရွက်နိုင်သောနည်းလမ်း

နေရာအခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : စီမံကိန်းနေရာသည် ကားဖြင့်သွားလာနိုင်ပြီး အစိုးရလျှပ်စစ်မီးရရှိပါသည်။ ရေကို သဘာဝကန်မှ ရယူသုံးစွဲနိုင်ပါသည်။ ဤအရာသည် ဤစီမံကိန်းနေရာကို ရွေးချယ်ခြင်းဖြစ်သည်။ အကျိုးအမြတ်ကိုကြည့်ပြီး ဤနေရာကိုရွေးချယ်ခဲ့ပါသည်။

တည်ဆောက်ရေးအခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : သစ်ကိုအသုံးပြုခြင်းအစား သံကိုယ်ထည်၊ သွပ်နှင့် နံရံများကို အသုံးပြုခြင်းသည် သစ်တောကိုထိန်းသိမ်းရာ ရောက်ပါသည်။

နည်းပညာအခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : အလုံးစုံသော ကားထုတ်လုပ်ခြင်းကို မြန်မာနိုင်ငံတွင် မလုပ်နိုင်သေးပါ။ ထို့ကြောင့် SKD နည်းပညာကို ရွေးချယ်ခြင်းဖြစ်ပါသည်။

စွမ်းအင်အခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : မီးပြတ်တောက်ခဲ့လျှင် စွမ်းအင်အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းအဖြစ် ၅၀၀ KVA မီးစက်တစ်လုံးကို တပ်ဆင်ထားပါသည်။

အထောက်အပံ့အခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : ရေ၊ လောင်စာဆီနှင့်စွမ်းအင် သုံးစွဲမှုကို ထိန်းသိမ်းမှုနည်းစဉ်အတွင်း ဘောင်ဝင်စေရန်သုံးစွဲပါမည်။

လုပ်ဆောင်မှုအခြားဆောင်ရွက်နိုင်သောနည်းလမ်း : ဝန်ထမ်းများကို "တအားပင်ပန်းစေရန် လုပ်မည့်အစား မပင်ပန်းပဲအလုပ်ပြီးမြောက်စေရန်" လုပ်ပါဟု ပညာပေးထားပါသည်။

ဘာမှမလုပ်လျှင်ဘာမှမဖြစ် အခြားဆောင်ရွက်နိုင်သောနည်းလမ်း: ဤအရာအား အခြားဆောင်ရွက် နိုင်သောနည်းလမ်းမစဉ်းစားထားပေ။ ဘာမှမလုပ်လျှင် နိုင်ငံနှင့် အဆိုပါဧရိယာတွင် ဘာမျှဖွံ့ဖြိုးမည် မဟုတ်။ မော်တော်ယာဉ်စက်မှုကဏ္ဍလည်း ဖွံ့ဖြိုးမည်မဟုတ်။ စီမံကိန်းသာမပြုလုပ်လျှင် စီမံကိန်း လည်ပတ်စဉ်ကာလအတွင်းတွင် ၁၃၅ ဦးအလုပ်အကိုင်ရရှိမည့် အခွင့်အလမ်းလည်း မရှိတော့ပေ။ နိုင်ငံတော်အတွက် GDP၊ အခွန်များလည်း တိုးလာမည်မဟုတ်။

ဤအကြောင်းအရာကို အခန်း (၄) တွင် အသေးစိတ်ဖော်ပြထားပါသည်။

## ပတ်ဝန်းကျင်အကြောင်းအရာအသေးစိတ်

အဆိုပြုစီမံကိန်းနေရာသည် ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ ဆားတလင်းကျေးရွာ၏ အနောက်တောင်ဘက်အစွန်းတွင် တည်ရှိပါသည်။ ၎င်းသည် အရှေ့ဘက်တွင် အမှတ် (၂) လမ်းမကြီး (ရန်ကုန်-ပဲခူးလမ်းမကြီး)နှင့် အနောက်ဘက်တွင် ဆားတလင်းချောင်းကြားတွင် ရှိပါသည်။ ၎င်းသည် လှည်းကူးမြို့မှ အရှေ့ဘက် ၆.၁၉ မိုင်နှင့် ရန်ကုန်မြို့မှ ၂၁.၂၃ မိုင်အကွာအဝေးတွင် ရှိပါသည်။

လေ့လာသည့်ဧရိယာသည် ၂ မိုင်ပတ်လည် (၁၂.၆ စတုရန်းမိုင်) ဖြစ်ပါသည်။ ကားအစိတ်အပိုင်းတပ်ဆင်စက်ရုံမှ သက်ရောက်မှုများသည် မပြောပလောက်ပေ။ အကယ်၍ရှိခဲ့လျှင် အတွင်း ၁ မိုင်အတွင်းတွင်သာ အကျိုးသက်ရောက်မည်ဖြစ်ပြီး အပြင် ၁ မိုင်သည် ကြားခံနယ်အဖြစ် စဉ်းစားနိုင်ပါသည်။

ဆားတလင်းကျေးရွာ၏ ပတ်ဝန်းကျင်ဧရိယာသည် အဓိကအားဖြင့် စပါးခင်းများနှင့် လယ်များဖြစ်ကြပြီး သစ်တောမရှိပေ။ အနီးနားတွင် အခြားစီမံကိန်း သို့မဟုတ် စက်ရုံမရှိပေ။ လေ့လာသည့် ဧရိယာအတွင်းတွင် ဆားတလင်းကျေးရွာတစ်ရွာသာ ပါဝင်ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) လေ့လာသည့် ဧရိယာတွင်လည်း ပါဝင်ပါသည်။

အနီးပတ်ဝန်းကျင်၏ ရုပ်ပိုင်းဆိုင်ရာ၊ ဇီဝပိုင်းဆိုင်ရာ၊ လူမှုစီးပွားရေးဆိုင်ရာ၊ ယဉ်ကျေးမှုဆိုင်ရာ၊ မျက်စိပဒေသာဖြစ်သော ရှုခင်းရှုကွက်ဆိုင်ရာ များကိုလေ့လာမှတ်တမ်းတင်ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာထဲတွင် ထည့်သွင်းဖော်ပြထားပါသည်။

### ရုပ်ပိုင်းဆိုင်ရာ

မိုးလေဝသအချက်အလက်များကို မှော်ဘီ မိုးလေဝသဌာနမှ ရယူခဲ့ပါသည်။ လအလိုက် အပူချိန်အမြင့်ဆုံးမှာ ဧပြီလ၊ ၂၀၁၉ တွင် (၃၉.၅ ဒီဂရီ စင်တီဂရိတ်)၊ အမြင့်ဆုံး မိုးရေချိန် ဇူလိုင်လ၊ ၂၀၁၅ တွင် (၈၂၈ မီလီမီတာ) ဖြစ်သည်။

အခြားရုပ်ပိုင်းဆိုင်ရာ လက္ခဏာရပ်များမှာ ဥပမာ-မြေမျက်နှာသွင်ပြင်အနေအထား၊ ဘူမိဗေဒ၊ မြေဆီလွှာ၊ ရေ၊ လေ၊ ဆူညံသံတို့ကိုလည်း လေ့လာမှတ်တမ်းတင်ခဲ့ပါသည်။ ဘူမိဗေဒအချက်အလက်များမှာ တစ်ဆင့်ခံအချက်အလက်များဖြစ်ပြီး ဧရိယာသည် Quaternary ကာလ၊ ကျောက်များသည် နန်းမြေအနည်ပို့ချခြင်း ဖြစ်သည်။

ထိတွေ့လေ၊ ဆူညံသံ၊ မြေဆီလွှာ အရည်အသွေးများကို ပညာရှင်များ၏ အကူအညီဖြင့် တိုင်းတာခဲ့ပါသည်။ ရလဒ်များမှာ အောက်ပါအတိုင်းဖြစ်သည်။

မြေဆီလွှာရလဒ်

စဉ်	မြေနမူနာရယူသည့်နေရာ	pH	Texture	Total N	Available Nutrient
					P
၁	စီမံကိန်းနေရာ	Moderately acid	Loamy sand	Low	Low

မြေဆီလွှာဆန်းစစ်ခြင်းအချက်အလက်

စဉ်	မြေနမူနာရယူသည့်နေရာ	Moisture %	pH soil: Water 1: 2.5	Texture				Total N %	Available Nutrient
				Sand %	Silt %	Clay %	Total %		P ppm
၁	စီမံကိန်းနေရာ	၀.၃၆	၅.၈၃	၈၆.၉၄	၀.၆၈	၁၂.၃၈	၁၀၀	၀.၁၁	၀.၂၀

B = Bray & Kurtz နည်းလမ်း

မှတ်ချက် - မြေနမူနာများသည် Hydrocarbon၊ SO<sub>2</sub> ညစ်ညမ်းမှုများ မရှိပေ။

စီမံကိန်းနေရာမှ ရေနမူနာဆန်းစစ်ခြင်းရလဒ်

စဉ်	ပါရာမီတာများ	ကန်ရေ	ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့လမ်းညွှန်ချက်တန်းဖိုးများ
၁	pH	၇.၃	၆.၅ - ၈.၅
၂	Turbidity	၃၈ NTU	၅ NTU
၃	Total Hardness	၂၀ mg/l	၅၀၀ mg/l
၄	Total Alkalinity	၃၄ mg/l	-
၅	Iron	၂.၇၀ mg/l	၀.၃ mg/l
၆	Chloride (CL)	၁၄ mg/l	၂၅၀ mg/l
၇	Sulphate (SO <sub>4</sub> )	၁၀ mg/l	၂၀၀ mg/l
၈	Total Solids	၁၁၂ mg/l	၁၅၀၀ mg/l
၉	Salinity	၀.၁ ppt	-
၁၀	Nitrate	၀.၇ mg/l	၅၀ mg/l

**စီမံကိန်းနေရာမှ ထိတွေ့လေ (အခြေခံအချက်အလက်) ရလဒ်များ (NEQEG လမ်းညွှန်ချက်တန်းဖိုးများဖြင့် နှိုင်းယှဉ်ချက်)**

စဉ်	ပါရာမီတာများ	ကာလ	တန်းဖိုးများ	NEQEG လမ်းညွှန်ချက်တန်းဖိုးများ
၁	Nitrogen dioxide (NO <sub>2</sub> )	၁ နာရီ	၆.၉၅ µg/m <sup>3</sup>	၂၀၀ µg/m <sup>3</sup>
၂	Ozone (O <sub>3</sub> )	၈ နာရီ	၃၆.၃၄ µg/m <sup>3</sup>	၁၀၀ µg/m <sup>3</sup>
၃	Particulate matter (PM <sub>10</sub> )	၂၄ နာရီ	၁၅၈.၆၆ µg/m <sup>3</sup>	၅၀ µg/m <sup>3</sup>
၄	Particulate matter (PM <sub>2.5</sub> )	၂၄ နာရီ	၉၅.၁၂ µg/m <sup>3</sup>	၂၅ µg/m <sup>3</sup>
၅	Sulphur dioxide (SO <sub>2</sub> )	၂၄ နာရီ	၆.၃၉ µg/m <sup>3</sup>	၂၀ µg/m <sup>3</sup>
၆	Carbon dioxide (CO <sub>2</sub> )	၂၄ နာရီ	၃၅၈.၅၇ ppm	NEQEG - (NA)
၇	Volatile organic compound (VOC)	၂၄ နာရီ	၀.၃၇ ppm	NEQEG - (NA)
၈	Ammonia	၂၄ နာရီ	၃.၀၇ ppm	NEQEG - (NA)

**စီမံကိန်းနေရာမှ ဆူညံသံအဆင့် (dBA) ရလဒ်များ (NEQEG လမ်းညွှန်ချက်တန်းဖိုးများဖြင့် နှိုင်းယှဉ်ချက်)**

	စီမံကိန်းနေရာ		NEQEG လမ်းညွှန်ချက်	
	နေ့	ည	နေ့	ည
(လူနေဧရိယာ၊ အဖွဲ့အစည်း၊ ပညာရေး)	၅၁.၈၅	၅၂.၃၆	၅၅	၄၅
စက်မှုဆိုင်ရာလုပ်ငန်းခွင်ရော	-	-	၇၀	၇၀

ဇီဝပိုင်းဆိုင်ရာ

ဇီဝမျိုးစုံမျိုးကွဲလေ့လာမှုကို ၂ မိုင်းအတွင်းသာမက လိုအပ်လျှင် ၂ မိုင်းအပြင်ပါ လေ့လာခဲ့ပါသည်။

အောက်ပါတို့မှတ်တမ်းထားသော အကောင်များကို ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာထဲတွင် ဖော်ပြထားပါသည်။

အပင်

အပင် (သဘာဝနှင့်စိုက်ပင်) ၈၅ မျိုးစိတ်၊ မျိုးရင်း ၃၉ မျိုး။

သားရဲတိရစ္ဆာန်

ငှက် မျိုးစိတ် ၇၉ မျိုး၊ မျိုးရင်း ၃၈ မျိုး

ကုန်းနေရေနေတွားသွားသတ္တဝါ မျိုးစိတ် ၁၁ မျိုး၊ မျိုးရင်း ၈ မျိုး

နို့တိုက်သတ္တဝါ အသေး ၂ မျိုးစိတ် (ကြွက်)

ငါး မျိုးစိတ် ၇ မျိုး (ဒေသခံများမှ တစ်ဆင့်ခံ သတင်းအချက်အလက်)။ ဤငါးများသည် ဆားတလင်းချောင်းတွင် နေထိုင်ကျက်စားသော မျိုးစိတ်များဖြစ်သည်။

လူမှုစီးပွားရေးဆိုင်ရာ

ဆားတလင်းကျေးရွာသည် တောင်မှ မြောက်သို့ သွားလာနေသော အမှတ် (၂) လမ်းမကြီး (ရန်ကုန်-ပဲခူးလမ်းမကြီး) ရှိပြီး ယာဉ်များဖြင့် အလွယ်တကူသွားလာနိုင်ပါသည်။ ၎င်းသည် အမှတ် (၂) လမ်းမကြီးနှင့် လှည်းကူး-ဒါးပိန်လမ်းဆုံရာ တွင်တည်ရှိပါသည်။

ကျေးရွာသည် အစိုးရလျှပ်စစ်မီး ရရှိပါသည်။

ကျေးရွာသူ/သားများသည် ရေကို တွင်းများ သို့မဟုတ် အများသုံးရေကန် (မိုးရေကန်) များမှ ရရှိပါသည်။

ကျေးရွာတွင် လူဦးရေ ၅၂၅၃ ဦး (ကျား ၁၆၀၇၊ မ ၁၆၄၆) ရှိပါသည်။ ၁၀၀ ရာခိုင်နှုန်း ဗမာများဖြစ်ကြပြီး ၉၇ ရာခိုင်နှုန်းမှာ ဗုဒ္ဓဘာသာ၊ ၃ ရာခိုင်နှုန်းမှာ ခရစ်ယာန်များဖြစ်ကြပါသည်။

အဓိကအလုပ်အကိုင်များမှာ စပါးစိုက်ပျိုးခြင်းဖြစ်ပြီး အချို့မှာ ပဲစိုက်ကြပါသည်။ အများစုမှာ မွေးမြူရေးလုပ်ကိုင်ကြပြီး အချို့မှာ ရန်ကုန်ရှိ စက်ရုံများတွင် အလုပ်လုပ်ကိုင်ကြပါသည်။ အချို့မှာ ထိုင်းနိုင်ငံသို့ သွားရောက်လုပ်ကိုင်ကြသည်။ ဆရာ/ဆရာမ (၈) ယောက်၊ သူနာပြုနှင့် မီးဖွားဆရာမ (၁၅) ယောက်၊ စစ်သား (၅) ယောက်တို့ရှိပါသည်။ နေ့စဉ်ဝင်ငွေမှာ ကျပ် ၅၀၀၀-၇၀၀၀ ဖြစ်သည်။

ကျေးရွာတွင် အခြေခံပညာအထက်တန်းကျောင်း(ခွဲ) ကျောင်းသား/သူ ၉၉၇ ဦးနှင့် ဆရာ/ဆရာမ ၃၂ ဦးရှိပါပြီး ကျေးရွားဆေးပေးခန်း (၁) ခန်းရှိပါသည်။ (အများစုမှာ လှည်းကူးမြို့နယ် ဆေးရုံ သို့မဟုတ် ရန်ကုန်အထွေထွေဆေးရုံကြီး သို့သွားကြပါသည်)

ကျေးရွာဘုရားတစ်ဆူရှိပြီး ဘုန်းကြီး (၁၇)ပါး ရှိသော ဘုန်းကြီးကျောင်းတစ်ကျောင်း ရှိပါသည်။ ကျေးရွာနတ်စင် တစ်ခုရှိပါသည်။ ဧရိယာတစ်ခုလုံးသည် ကျန်ပြန်ပြီး နိမ့်သော များစွာသော လယ်ကွင်းများ ရှိပါသည်။

ဤ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ အခန်း (၅) တွင် ပတ်ဝန်းကျင်အကြောင်းအရာများကို အသေးစိတ်ဖော်ပြထားပါသည်။

သက်ရောက်မှုများ၊ ဆန်းစစ်အကဲဖြတ်ခြင်းနှင့် ဖြေလျော့နိုင်မည့်နည်းလမ်းများ

နည်းလမ်း

ခန့်မှန်းခြင်းနှင့် လက်တွေ့အတွေ့အကြုံများကို အခြေခံ၍ ရေးသားထားပါသည်။

Experts Consensus Method (Ad hoc method) နှင့် IFC ၏ ဆန်းစစ်အကဲဖြတ်ခြင်း ဇယားနှင့် ဆန်းစစ်အမှတ်ပေးခြင်းမတ်ထရစ် နည်းလမ်း (ဖြစ်နိုင်ခြေ X အကျိုးဆက် = ရလဒ်) တို့ပေါင်းစပ် တွက်ချက်ထားပါသည်။

သက်ရောက်မှုများနှင့် ဖြေလျော့နိုင်မည့်နည်းလမ်းများ

စီမံကိန်းကာလအခြေအနေ(၄)ခုလုံးအတွက် အမျိုးအစားခွဲ ဆန်းစစ်ထားသော သက်ရောက်မှုများနှင့် သက်ရောက်မှုတစ်ခုစီတိုင်း အတွက် ဖြေလျော့နိုင်မည့် နည်းလမ်းအမျိုးမျိုးများကို အနှစ်ချုပ်၍ အောက်တွင် ဇယားဖြင့် ဖော်ပြထားပါသည်။

**၁။ အကြိုတည်ဆောက်ရေးကာလအတွင်းတွင်**

ဤကာလအတွင်းတွင် အမှန်တကယ် သက်ရောက်မှုများမဖြစ်ပေ။ ထို့ကြောင့် ဖြေလျော့နိုင်မည့်နည်းလမ်းများ မလိုအပ်ပေ။

**၂။ တည်ဆောက်ရေးကာလအတွင်းတွင်**

စဉ်	သက်ရောက်မှု	ဖြေလျော့နိုင်မည့်နည်းလမ်းများ
၁	တည်ဆောက်ရေးလုပ်ငန်းများအတွက် လမ်းဖောက်ခြင်းကြောင့် သက်ရောက်မှု	<ul style="list-style-type: none"> <li>- ပြင်ဆင်ခြင်းလုပ်ငန်းများကို သေချာစွာ စီမံခြင်း</li> <li>- ဆောက်လုပ်ရေးသုံးပစ္စည်းများ တင်ဆောင်လာသော ယာဉ်ကြီးများအတွက် သယ်ယူပို့ဆောင်ရေး အစီအမံ ထားရှိခြင်း</li> <li>- လုပ်ငန်းခွင်အတွင်းတွင် ဆောက်လုပ်ရေးသုံးပစ္စည်းများ အားလုံးစနစ်တကျ သိုလှောင်ထားရှိခြင်း</li> <li>- သူခိုးများ ရန်မှကာကွယ်နိုင်ရန် သင့်တော်သော နံရံ သို့မဟုတ် ခြံစည်းရိုးထားရှိခြင်း</li> <li>- စက်ရုံဝန်းအပြင်ဘက် သို့မဟုတ် အမှတ် (၂) ရန်ကုန်-ပဲခူးလမ်းမကြီးပေါ်တွင် ဆောက်လုပ်ရေးသုံးပစ္စည်းများ လျှို့ဝှက်မှုမရှိစေရန် တားဆီးခြင်း</li> </ul>
၂	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ပြဿနာ (လုပ်ငန်းခွင်တွင် ဖြစ်နိုင်ခြေရှိသော မတော်တဆမှု)	<ul style="list-style-type: none"> <li>- မတော်တဆမှုလုံးဝမဖြစ်စေရေး စီမံဆောင်ရွက်ခြင်း</li> <li>- အလုပ်သမားများ အလွယ်တကူမြင်နိုင်သည့် နေရာများတွင် "အန္တရာယ်ကင်းရှင်းရေး ဦးစားပေး" ဆိုသည့် ကြော်ငြာ ဆိုင်းဘုတ်များ တပ်ဆင်ခြင်း</li> </ul>

		<ul style="list-style-type: none"> <li>- အလုပ်သမားများအားလုံးအတွက် ဘေးအန္တရာယ် ကင်းရှင်းသည့် အခြေအနေဖြစ်စေရန် ဖန်တီးပေးခြင်း၊ မတော်တဆမှု ကင်းရှင်းသည့်ပတ်ဝန်းကျင်ဖြစ်စေရန် ဖန်တီးခြင်း</li> <li>- တည်ဆောက်ရေးလုပ်သားများကို ကောင်းမွန်သော လုပ်ငန်းခွင်သန့်ရှင်းရေး အလေ့အထ၊ ကောင်းမွန်သော အင်ဂျင်နီယာအလေ့အထ၊ ကောင်းမွန်သော ဘေးအန္တရာယ်ကင်းရှင်းရေး အလေ့အထများကို အလုပ်သမားများ၏ စိတ်ထဲတွင်စွဲထင်စေရန် ပညာပေး၊ သင်တန်းပေးခြင်း</li> <li>- လိုအပ်လျှင် လုံလောက်သော PPE ထောက်ပံ့ပေးခြင်း</li> <li>- ဆေးနှင့်ဆေးဝါးများပါသော ရှေးဦးသူနာပြုပုံး ထားရှိခြင်း</li> <li>- အကျိုးသက်ရောက်သော အရေးပေါ်တုန့်ပြန်မှုအတွက် စီမံထားရှိခြင်း</li> <li>- မီးသတ်ပစ္စည်း ကိရိယာများ ထားရှိခြင်း</li> <li>- လုံလောက်သော သန့်စင်ခြင်းများ ထားရှိခြင်း ဥပမာ- အိမ်သာများ၊ သန့်စင်သောရေ</li> <li>- လောင်စာဆီနှင့် ဓါတုပစ္စည်းများ သိုလှောင်ခြင်းအတွက် ဘေးအန္တရာယ်ကင်းရှင်းစေရန် ထားရှိခြင်း၊ သတိပေး ဆိုင်းဘုတ်ထားရှိခြင်း</li> </ul>
၃	လေအရည်အသွေးအပေါ် သက်ရောက်မှု	<ul style="list-style-type: none"> <li>- အကြိုတည်ဆောက်ရေးကာလတွင် မီးခိုးထွက်ရှိမှု နည်းသော ယာဉ်များကို ဝယ်ယူရန် စီမံခြင်း</li> <li>- စက်ကိရိယာနှင့် ယာဉ်များကို ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ပြုပြင်နှင့် ပုံမှန်ဆီထိုးခြင်းများ ပြုလုပ်ခြင်း</li> <li>- အမှိုက်သရိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းအား ရှောင်ရှားခြင်း</li> <li>- ဖုန်မှုန့်များကို ရေဖြန်းခြင်း</li> <li>- ယာဉ်ရွေ့လျားမှုများကို ကန့်သတ်ခြင်း၊ ရွံ့နှင့် ဖုန်များ ကင်းသော လမ်းဖြစ်စေရန် ပြုလုပ်ခြင်း</li> <li>- မီးခိုး သို့မဟုတ် ဖုန်မှုန့်နေရာတွင် အလုပ်ကြာရှည် လုပ်သည့် ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း</li> </ul>
၄	ဆူညံသံနှင့်တုန်ခါမှု အရည်အသွေး	<ul style="list-style-type: none"> <li>- အကြိုတည်ဆောက်ရေးကာလတွင် ဆူညံမှုနည်းသော စက်ကိရိယာ၊ ယာဉ်ယန္တရားများကို ရွေးချယ်ဝယ်ယူရန် စီမံထားရှိခြင်း (ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေ ရှိသော စက်ကိရိယာများ)</li> </ul>



		<ul style="list-style-type: none"> <li>- ဆူညံသံနှင့် တုန်ခါမှုအတွက် အမျိုးသားပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်အညီ ရှိစေရန် စီမံခြင်း</li> <li>- ညအချိန်တွင် တည်ဆောက်ရေးလုပ်ငန်းများ လုပ်ကိုင်ခြင်းအား ရှောင်ရှားခြင်း</li> <li>- နေ့အချိန်တွင်သာ ဆူညံသံ မြင့်မားသော လုပ်ဆောင်ချက်များကို လုပ်ဆောင်ရန် အစီအစဉ်ဆွဲခြင်း</li> <li>- ပတ်ဝန်းကျင်နှင့်မသင့်တော်သော အချိန်တွင် ဆူညံသံ လျော့ချရန် သယ်ယူပို့ဆောင်ခြင်းကို သတ်မှတ်ခြင်း</li> <li>- အသုံးမပြုသော အချိန်များတွင် စက်ကိရိယာများကို ပိတ်ထားခြင်း</li> <li>- ဆူညံသံနှင့် တုန်ခါမှုလျော့ချရန် ယာဉ်အရှိန်ကို သတ်မှတ်ခြင်း</li> <li>- ဖြစ်နိုင်လျှင် အသံစုပ်ယူကိရိယာများ၊ ဆူညံသံလျော့ချပေးသော ပန်ကာများ တပ်ဆင်ခြင်း</li> <li>- ဆူညံသံလျော့ချရန် ယာဉ်ယန္တရားနှင့် စက်ကိရိယာများကို ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ပြုပြင်၊ ပုံမှန်ဆီထိုးပြုလုပ်ပေးခြင်း</li> <li>- ဆူညံသံမြင့်သည့် နေရာတွင် အလုပ်လုပ်ရသော ဝန်ထမ်းများကို PPE၊ နားကြပ်၊ နားအကာများ ထောက်ပံ့ပေးခြင်း</li> <li>- ဆူညံသံ၊ တုန်ခါမှုနှင့်ပတ်သပ်၍ ဒေသအဖွဲ့အစည်းမှ ပြဿနာများကို မှတ်သားထားခြင်း</li> </ul>
၅	<p>ဖြစ်နိုင်ခြေရှိသော မြေဆီလွှာအပေါ် သက်ရောက်မှု</p>	<ul style="list-style-type: none"> <li>- မြေဆီလွှာပျက်စီးခြင်းကို ရှောင်ရှားခြင်း</li> <li>- တည်ဆောက်ရေးလုပ်ငန်းမှ ထွက်လာသော အပေါ်ယံ မြေဆီလွှာကို သီးခြားထားခြင်း (အပင်စိုက်ပျိုးခြင်းအတွက်)</li> <li>- မြေဆီလွှာညစ်ညမ်းမှုကို ကာကွယ်တားဆီးရန် အစီအမံ ရေးဆွဲခြင်း</li> <li>- လောင်စာဆီနှင့် ဓါတုပစ္စည်းများ လျှို့ဝှက်မှုကို တားဆီးခြင်း၊ စုပ်ယူသည့်ပစ္စည်းဖြင့်သာ သန့်စင်စေခြင်း (ရေဖြင့်မဆေးချရ)</li> <li>- လောင်စာဆီနှင့် ဓါတုပစ္စည်းများ ကိုင်တွယ်ခြင်းနှင့် လျှို့ဝှက်မှုကို ဆေးကြောရာတွင် သေသေချာချာ လုပ်ကိုင်ရန် ဝန်ထမ်းများကို ညွှန်ကြားခြင်း</li> </ul>

		<ul style="list-style-type: none"> <li>- (မိုးရာသီ) မြေဆီလွှာ တိုက်စားခြင်းကို ကာကွယ်ရန် မြေဆီလွှာ ထိန်းသိမ်းခြင်းကို ဆောင်ရွက်ခြင်း</li> <li>- ဆေးချသောရေများဖြင့် မြေကြီးများနှင့် ပစ္စည်းများ မြောင်းအတွင်းသို့ ပါလာခြင်းကို တားဆီးခြင်း</li> <li>- မိုးရာသီတွင် မြေပြင်ကို ဟင်းလင်းပြင်အဖြစ် အချိန်ကြာ မြင့်စွာ ထားရှိမှုကို ရှောင်ရှားခြင်း</li> <li>- စွန့်ပစ်ပစ္စည်းအားလုံး (တည်ဆောက်ရေးလုပ်ငန်းနှင့် လူသုံးပစ္စည်း) ကို သတ်မှတ်ထားသော အမှိုက်ပုံတွင် စွန့်ပစ်ခြင်း</li> <li>- တွေ့သည့်နေရာတွင် အမှိုက်မစွန့်ပစ်ရန် ဝန်ထမ်းများကို သင်ကြားထားခြင်း</li> </ul>
၆	<p>ဖြစ်နိုင်ခြေရှိသောရေအပေါ် သက်ရောက်မှု</p>	<ul style="list-style-type: none"> <li>- ရေချွေတာသုံးစွဲခြင်း အစီအမံများ ပြုလုပ်ခြင်း</li> <li>- သဘာဝကန်ထဲတွင် ရေညစ်ညမ်းမှုကို တားဆီးခြင်း</li> <li>- တည်ဆောက်ရေးလုပ်ငန်းခွင်အတွင်းတွင် ရေကို လိုသည်ထက် ပိုမိုမသုံးစွဲခြင်း</li> <li>- ရေကိုချွေတာသုံးစွဲရန် ဝန်ထမ်းများကို စည်းကမ်း သတ်မှတ်ထားခြင်း</li> <li>- တည်ဆောက်ရေးလုပ်ငန်းခွင်တွင် ရေသုံးစွဲမှုကို နေ့စဉ် စစ်ဆေးခြင်း</li> <li>- လောင်စာဆီလျှံကျမှုကြောင့် မြေဆီလွှာညစ်ညမ်းခြင်းနှင့် မြေအောက်ညစ်ညမ်းမှုကို ရှောင်ရှားခြင်း</li> <li>- အကယ်၍ လျှံကျမှုခွဲလျှင်၊ စုပ်ယူသည့်ပစ္စည်းဖြင့်သာ သန့်စင်စေခြင်း (ရေဖြင့်မဆေးချရ)</li> <li>- လောင်စာဆီထားရှိသည့် ဧရိယာကို တားဆီးထားခြင်း</li> <li>- စွန့်ပစ်ပစ္စည်း (အစိုင်အခဲနှင့်အရည်)များကို ကန်၊ ဆားတလင်းချောင်းထဲသို့ စွန့်ပစ်ခြင်းကို ရှောင်ရှားခြင်း</li> </ul>
၇	<p>စွန့်ပစ်ပစ္စည်းများကြောင့် သက်ရောက်မှု (တည်ဆောက်ရေး စွန့်ပစ်ပစ္စည်း)</p>	<ul style="list-style-type: none"> <li>- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှုကို အစီအစဉ် ရေးဆွဲခြင်း</li> <li>- အမှိုက်များအား ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းကို ရှောင်ရှားခြင်း</li> <li>- မြေပြင်ကိုပုံမှန် သန့်ရှင်းရေးလုပ်ခြင်း၊ သတ်မှတ်ထားသော အမှိုက်ပုံတွင် အမှိုက်စွန့်ပစ်ခြင်း</li> </ul>

		<ul style="list-style-type: none"> <li>- ဝန်ထမ်းများကို ကောင်းမွန်သော သန့်ရှင်းရေးကို ပညာပေးခြင်း၊ အမှိုက်မစွန့်ပစ်ခြင်း</li> <li>- ကျန်ရစ်သော တည်ဆောက်ရေးလုပ်ငန်းသုံးပစ္စည်းများကို ပြန်လည်အသုံးပြုခြင်းနှင့် စွန့်ပစ်ခြင်းအတွက် အစီအမံ ရေးဆွဲခြင်း</li> <li>- တည်ဆောက်ရေးကာလပြီးဆုံးချိန်တွင် ကျန်ရစ်သော ပစ္စည်းများကို ရောင်းချခြင်း</li> <li>- တည်ဆောက်ရေးကာလပြီးနောက်တွင် ကန်ထရိုက်တာငှားရမ်းပြီး စီမံကိန်းနေရာကို သန့်ရှင်း စေခြင်း</li> </ul>
၈	ဖြစ်နိုင်ခြေရှိသော လူမှုရေးပြဿနာ	<ul style="list-style-type: none"> <li>- လူမှုရေးပြဿနာများကို စီမံခန့်ခွဲနိုင်ရန် အစီအစဉ်ရေးဆွဲ ထားခြင်း</li> <li>- ဝန်ထမ်းများကို စည်းကမ်းလိုက်နာစေရန် ပညာပေး ထားခြင်း</li> <li>- ဒေသခံများနှင့် ကောင်းမွန်သော ဆက်ဆံရေး တည်ဆောက်ရန် ကြိုးစားခြင်း</li> <li>- ဒေသခံများနှင့်လူထုတွေ့ဆုံပွဲပြုလုပ်ခြင်း၊ ထိုသို့ပြုလုပ်ခြင်းမှာ ဒေသခံများသည် စီမံကိန်းအပေါ် ကောင်းမွန်သော အမြင်ရရှိလာမည်။</li> <li>- ဒေသခံများနှင့် ဆက်ဆံလျှင် သူတို့၏ ယဉ်ကျေးမှုနှင့် ရိုးရာများကို လေးစားလိုက်နာရန် ဝန်ထမ်းများကို ပညာပေးခြင်း</li> <li>- ဝန်ထမ်းများ၏ မကောင်းသော အကျင့်များကို စီမံခန့်ခွဲခြင်း</li> <li>- ဝန်ထမ်းများနှင့်ကောင်းမွန်သော ဆက်ဆံရေး လုပ်ဆောင်ခြင်း</li> <li>- ကုမ္ပဏီနှင့်ဒေသခံများအကြား ကောင်းမွန်သော ဆက်ဆံ ရေးကို ထိန်းသိမ်းထားခြင်း</li> <li>- ဝန်ထမ်းများအတွက် လုံလောက်သော ဝန်ထမ်းသက်သာ ချောင်ချိရေး အစီအစဉ်များ ထောက်ပံ့ခြင်း</li> </ul>
၉	ဖြစ်နိုင်ခြေရှိသော လုံခြုံရေးပြဿနာ	<ul style="list-style-type: none"> <li>- လုံခြုံရေးစီမံခန့်ခွဲမှု အစီအစဉ်ရေးဆွဲခြင်း</li> <li>- စီမံကိန်းနေရာကို အကျိုးသက်ရောက်သော နံရံများ ခြံခတ်ထားရှိခြင်း</li> <li>- လုံခြုံရေးဂိတ်များထားရှိခြင်း၊ လုံခြုံရေးဝန်ထမ်းများ ထားရှိခြင်း</li> </ul>

	<ul style="list-style-type: none"> <li>- စတီနှင့် အဆောက်အဦများကို တက်နိုင်သလောက် သော့များခတ်ထားခြင်း</li> <li>- လိုအပ်လျှင် ဝန်ထမ်းများကို အလုပ်မှထုတ်ပယ်ခြင်း သို့မဟုတ် အပြစ်ပေးခြင်း များလုပ်ဆောင်ခြင်း</li> <li>- အလွယ်တကူ ခွဲခြားနိုင်စေရန် ဝန်ထမ်းများအားလုံး ID ကဒ်များ ထောက်ပံ့ပေးခြင်း</li> </ul>
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**၃။ စီမံကိန်းလည်ပတ်စဉ်ကာလအတွင်းတွင်**

စဉ်	သက်ရောက်မှု	ဖြေလျော့နိုင်မည့်နည်းလမ်းများ
၁	ဖြစ်နိုင်ခြေရှိသော ယာဉ်ကြောပိတ်ဆို့မှု ပြဿနာ	<ul style="list-style-type: none"> <li>- ယာဉ်ကြောပိတ်ဆို့မှုကို သေချာစွာ အစီအမံများ ရေးဆွဲခြင်း</li> <li>- ယာဉ်သွားလာခြင်းကို စီစဉ်ခြင်း၊ အမြန်လိုခြင်းကို ရှောင်ရှားခြင်း၊ ဖြစ်နိုင်လျှင် ယာဉ်ကြောပိတ်ဆို့သည့် လမ်းများကို ရှောင်ရှားခြင်း</li> <li>- ယာဉ်မောင်းများကို ပညာပေးခြင်း၊ ဝန်ထမ်းများထဲမှ မော်တော်ဆိုင်ကယ်မောင်းသူများကို အမြန်မောင်းခြင်းအား ရှောင်ရှားစေခြင်း၊ လမ်းစည်းကမ်းများကို လိုက်နာစေခြင်း</li> <li>- စီမံကိန်း၏အဝင်ဝနှင့်သင့်တော်သော နေရာများတွင် သတိပေး ဆိုင်းဘုတ်များထားရှိခြင်း</li> <li>- မည်သည့်ယာဉ်မဆို ပိုလျှံအောင် တင်ခြင်းကို ရှောင်ရှားခြင်း</li> <li>- ကားများနှင့် ဆိုင်ကယ်များကို ပုံမှန်စစ်ဆေးခြင်း</li> <li>- ယာဉ်တစ်စီးစီအတွက် မှတ်တမ်းစာအုပ်ထားရှိခြင်း</li> <li>- မတော်တဆမှုမရှိစေရေး ရည်မှန်းချက်ထားရှိခြင်း</li> </ul>
၂	လေအရည်အသွေးအပေါ် သက်ရောက်မှု	<ul style="list-style-type: none"> <li>- ရေရှည် စီမံကိန်းလည်ပတ်စဉ်ကာလအတွင်းတွင် လေအရည်အသွေးစီမံခန့်ခွဲမှုကို အစီအစဉ်ရေးဆွဲခြင်း</li> <li>- ဖုန်များကို ရေဖြန်းခြင်း</li> <li>- ဖုန်မှုန့်များကို သန့်ရှင်းစေရန် လုပ်ဆောင်ခြင်း</li> <li>- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းအား ရှောင်ရှားခြင်း</li> </ul>

		<ul style="list-style-type: none"> <li>- စက်ကိရိယာနှင့် ယာဉ်ယန္တရားများကို ပုံမှန် ထိန်းသိမ်းခြင်းနှင့် ပုံမှန်ပြုပြင်ခြင်း</li> <li>- မီးခိုးထွက်နည်းသော၊ လောင်စာဆီသုံးစွဲမှုနည်းသော ယာဉ်များနှင့် စက်များကို အသုံးပြုခြင်း (ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေဖြစ်သော ယာဉ်များ၊ စက်ကိရိယာများကို ဝယ်ယူခြင်း)</li> <li>- လောင်စာဆီထိန်းသိမ်းစွာ သုံးစွဲခြင်းသည် မလိုအပ်သော မီးခိုးထွက်မှု ကိုတားဆီးခြင်း</li> <li>- အပင်များစိုက်ပျိုးခြင်း၊ အစိမ်းရောင်နေရာ ဖန်တီးပေးခြင်း၊ အပင်များသည် CO<sub>2</sub> ကို စုပ်ယူခြင်း</li> <li>- ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း မျက်နှာအကာ၊ နှာခေါင်းနှင့် ပါးစပ်အကာများ</li> </ul>
၃	ဆူညံသံနှင့်တုန်ခါမှု အရည်အသွေး	<ul style="list-style-type: none"> <li>- ဆူညံသံနှင့် တုန်ခါမှုအတွက် အကျိုးသက်ရောက်သော စီမံခန့်ခွဲမှု အစီအစဉ်ရေးဆွဲခြင်း</li> <li>- ယာဉ်ရွေ့လျားမှုများကို ကန့်သတ်ခြင်း</li> <li>- သင့်တော်သော (ဆူညံမှုနည်းသော) စက်နှင့်ယာဉ်များကို ရွေးချယ်ခြင်း</li> <li>- ဖြစ်နိုင်လျှင် silencers၊ အသံစုပ်ယူကိရိယာများ၊ ဆူညံသံလျော့ချပေးသော ပန်ကာများ တပ်ဆင်ခြင်း</li> <li>- ယာဉ်နှင့်စက်ကိရိယာများကို ဆူညံသံနည်းစေရန် ပုံမှန် ထိန်းသိမ်း၊ ပုံမှန် ပြုပြင်ခြင်း</li> <li>- စက်ရုံပတ်လည်တွင် အစိမ်းရောင်နေရာများ (အပင်များ) ဖန်တီးပေးခြင်း၊ အပင်များသည် အသံစုပ်ယူသည်</li> <li>- ယာဉ်ရွေ့လျားသည့်အခါတွင် ဆူညံမှုနှင့်တုန်ခါမှု သက်သာစေရန် လမ်းမျက်နှာပြင်ကို ချောမွေ့အောင် ပြုလုပ်ခြင်း</li> <li>- တုန်ခါမှုကို လျော့နည်းစေရန် စက်ကိရိယာနှင့် ယာဉ်ယန္တရားများအတွက် သင့်တော်သော အောက်ခံ ဒီဇိုင်းများ ဖန်တီးပေးခြင်း</li> <li>- လိုအပ်လျှင် တုန်ခါမှုကို လျော့ကျစေသည့်စက် တပ်ဆင်ခြင်း</li> </ul>

		<ul style="list-style-type: none"> <li>- ဆူညံသည့်နေရာနားတွင် ကြာရှည်စွာ အလုပ်လုပ်ရသော ဝန်ထမ်းများအတွက် လုံလောက်သော PPE ထောက်ပံ့ပေးခြင်း၊ မီးစက်နှင့်ပန်းများတွင် ပုံမှန်အသံအဆင့်ကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း (၈၅-၉၀ dBA ထက် မကျော်လွန်ရ)</li> </ul>
၄	<p>စီမံကိန်းကြောင့် အစိုးရလှုပ်စစ်မီးအပေါ် သက်ရောက်မှု</p>	<ul style="list-style-type: none"> <li>- ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေရှိသော နည်းပညာဖြင့် လှုပ်စစ်မီးကိုရယူရန် ထည့်သွင်းစဉ်းစားခြင်း</li> <li>- စက်ရုံဒီဇိုင်းအဆင့်မှာတွင် စွမ်းအင်ထိန်းသိမ်းခြင်း အသိပညာ လိုအပ်ခြင်း</li> <li>- လှုပ်စစ်စွမ်းအင်ထိန်းသိမ်းခြင်းကို အစီအမံများ ရေးဆွဲခြင်း</li> <li>- နေရောင်ခြည်နှင့်လေတိုက်နှုန်းမှ အကျိုးသက်ရောက်မှု ရရှိသော အဆောက်အဦဒီဇိုင်း ဆောက်လုပ်ခြင်း</li> <li>- ယခင်ကဖော်ပြခဲ့သော လှုပ်စစ်မီးသုံးစွဲမှု ဘောင်ထဲဝင် စေခြင်း</li> <li>- လှုပ်စစ်မီးသုံးစွဲမှုကို အပတ်စဉ် စောင့်ကြပ်စစ်ဆေးခြင်း</li> <li>- စွမ်းအင်လုံလောက်သော လှုပ်စစ်ပစ္စည်းများ အသုံးပြုခြင်း</li> <li>- တက်နိုင်သလောက် နေ့အလင်းကို အသုံးပြုခြင်း</li> <li>- မီးပြတ်တောက်ခဲ့လျှင် အော်တိုစနစ်ဖြင့် မီးစက်ချက်ချင်း ရသည့် စနစ်ကိုအသုံးပြုခြင်း</li> <li>- အချိန်နှင့်အမျှ လှုပ်စစ်မီးတာဝန်ရှိသူနှင့် တွေ့ဆုံ ဆက်ဆံခြင်း</li> </ul>
၅	<p>စွန့်ပစ်ပစ္စည်းများကြောင့် သက်ရောက်မှု (အစိုင်အခဲနှင့်အရည်)</p>	<ul style="list-style-type: none"> <li>- ပစ္စည်းများ စီမံခန့်ခွဲမှုကို အစီအစဉ်ရေးဆွဲခြင်း</li> </ul> <p><b>အရည်စွန့်ပစ်ပစ္စည်းများအတွက်</b></p> <ul style="list-style-type: none"> <li>- အချိန်နှင့်အမျှ စွန့်ပစ်ရေမြောင်းကို စစ်ဆေးခြင်း၊ အထူးသဖြင့် လူသုံးရေနှင့်မိုးရေ</li> <li>- အိမ်ယာမှာနေထိုင်သည့် အလုပ်သမားအနည်းငယ် (မိသားစုဝင် (၄) ဦးနှင့် လူပျို (၇) ဦးတို့ မှ ထွက်သော လူသုံးရေ သည် မြောင်းအတွင်းသို့ စီးဝင်ပြီး ခြောက်သွေ့ခြင်း (အထူးသန့်စင်သည့်နည်းစနစ် မလိုပေ)</li> </ul>

		<ul style="list-style-type: none"> <li>- အိမ်သာများမှ ထွက်ရှိသော မိလ္လာရေသည် မိလ္လာကန်အတွင်းတွင် အဆုံးသတ်ခြင်း</li> <li>- စွန့်ပစ်ရေကို ဆားတလင်းချောင်းအတွင်းသို့ မစွန့်ပစ်ခြင်း</li> </ul> <p>အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများအတွက် (ယေဘုယျ)</p> <ul style="list-style-type: none"> <li>- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများကို သတ်မှတ်ထားသော စက်ရုံဝန်းအတွင်းရှိ သတ်မှတ်ထားသောအမှိုက်ပုံတွင် အမှိုက်စွန့်ပစ်ခြင်း</li> <li>- ဝန်ထမ်းများကို ကောင်းမွန်သော သန့်ရှင်းရေးကို ပညာပေးခြင်း၊ အမှိုက်မစွန့်ပစ်ခြင်း</li> <li>- အမှိုက်သရိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းအား ရှောင်ရှားခြင်း</li> </ul> <p><b>စက်ရုံအတွင်း၊ ရုံးခန်းနှင့် စားသောက်ခန်းများရှိ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ</b></p> <ul style="list-style-type: none"> <li>- မီးဖိုချောင်မှ ထွက်ရှိသော အော်ဩန်စွန့်ပစ်ပစ္စည်းများကို စိုက်ပျိုးခြင်းတွင် မြေဩဇာအဖြစ် ပြန်လည်သုံးစွဲခြင်း</li> <li>- စွန့်ပစ်ပစ္စည်းများကို ၄ R နိယာမဖြစ်သော လျော့ချ၊ ပြန်သုံး၊ ပြန်လည်သုံးစွဲ၊ ပြန်လည်ပြုပြင်သုံးစွဲခြင်း</li> <li>- စွန့်ပစ်ပစ္စည်းများအားလုံးကို သတ်မှတ်ထားသော အမှိုက်ပုံတွင် စွန့်ပစ်ခြင်း</li> <li>- ထုတ်ပိုးသော ပစ္စည်းများဖြစ်သော ပလတ်စတစ်၊ စက္ကူတို့ကို ပြန်လည်ရောင်းချခြင်း</li> <li>- ဦးစားပေးအနေဖြင့် အစိုင်အခဲ စွန့်ပစ်ပစ္စည်းများကို ပြန်လည်အသုံးပြုခြင်း</li> </ul>
၆	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ပြဿနာ (လုပ်ငန်းခွင်မတော်တဆမှု)	<ul style="list-style-type: none"> <li>- အလုပ်သမားများအားလုံးအတွက် ဘေးအန္တရာယ် ကင်းရှင်းသည့် အခြေအနေဖြစ်စေရန်အတွက် အစီအမံ များ ရေးဆွဲခြင်း</li> <li>- ဝန်ထမ်းများကို ကောင်းမွန်သော လုပ်ငန်းခွင်သန့်ရှင်းရေး အလေ့အထ၊ ကောင်းမွန်သော အင်ဂျင်နီယာအလေ့အထ၊ ကောင်းမွန်သော ဘေးအန္တရာယ်ကင်းရှင်းရေး အလေ့အထများကို အလုပ်သမားများ၏ စိတ်ထဲတွင်စွဲထင်စေရန် ပညာပေး၊ သင်တန်းပေးခြင်း။</li> </ul>

	<p>အထူးသဖြင့် စက်များ၊ ယာဉ်များကို ကိုင်တွယ် တပ်ဆင် သည့်နေရာတွင် မှန်ကန်သောနည်းလမ်းများဖြစ်စေရန် ကြီးကြပ်ခြင်း</p> <ul style="list-style-type: none"> <li>- စက်ကိရိယာကိုင်တွယ်ခြင်းနှင့် ဓါတုဗေဒပစ္စည်းများ ကိုင်တွယ်ခြင်း အထူးသဖြင့် အန္တရာယ်ရှိစေသော အရာကို ကိုင်တွယ်ခြင်းအတွက် ပညာပေးခြင်း</li> <li>- ကောင်းမွန်သော ကျန်းမာရေးအလေ့အထ၊ သန့်ရှင်းသော အလေ့အထ၊ ပတ်ဝန်းကျင်ဆိုင်ရာအသိပညာ၊ လုပ်ငန်းခွင် ဘေးအန္တရာယ် အစရှိသည်တို့ကို သင်ကြားပေးခြင်း</li> <li>- အလုပ်သမားများအားလုံး အလုပ်လာလုပ်လျှင် ဆေးစစ် ဆေးခြင်းကို ပြုလုပ်ခြင်း</li> <li>- အလုပ်သမားများကို တစ်နှစ်တစ်ခါ ဆေးစစ်ဆေးပေးခြင်း</li> <li>- အလုပ်သမားများ၏ ကျန်းမာရေးကို စောင့်ကြပ်ကြည့်ရှု ဆောင်ရွက်ရန်အတွက် အစီအမံများ ထားရှိခြင်း</li> <li>- အလုပ်သမားများအတွက် ဆေးဝါးများ အခမဲ့ ထောက်ပံ့ပေးခြင်း</li> <li>- အလုပ်သမားများအား လုပ်ငန်းခွင်ထိခိုက်ခြင်း၊ လုပ်ငန်းခွင်နှင့် သက်ဆိုင်သော ရောဂါများ ခံစားရလျှင် လျော်ကြေးပေးခြင်း၊ ပြန်လည်ရှင်သန်စေရန် ပြုလုပ် ပေးခြင်း</li> <li>- အဆိပ်အတောက်နှင့် ဘေးအန္တရာယ်ဖြစ်စေသော ဓါတုဗေဒပစ္စည်းများ ရှိခဲ့လျှင် လုံခြုံသည့်နေရာတွင် သိုလှောင်ခြင်း၊ ဆိုင်းဘုတ်ထောင်ခြင်း</li> <li>- သိုလှောင်ထားသော နေရာကို ပုံမှန်စစ်ဆေးခြင်း</li> <li>- စက်ကိရိယာနှင့်ယာဉ်ယန္တရားအားလုံးကို ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ပြုပြင်ခြင်း၊ ပုံမှန်ဆီထိုးခြင်းများ ပြုလုပ်ခြင်း</li> <li>- မတော်တဆမှုများကို တားဆီးနိုင်ရန် စက်များပေါ်ရှိ အော်တို safe guard များကို စစ်ဆေးခြင်း</li> <li>- အပေါ်မှာ ရှင်းပြထားသော ဖြစ်လေ့ဖြစ်ထရှိသည့် မတော်တဆမှုများကို သတိထားခြင်း၊ တစ်ခုစီအတွက် တားဆီးခြင်း၊ ကာကွယ်ခြင်းနှင့် ဖြေလျော့ခြင်း</li> <li>- ဝန်ထမ်းများကို လုံလောက်သော PPE ထောက်ပံ့ပေးခြင်း</li> </ul>
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		<ul style="list-style-type: none"> <li>- ဆေးနှင့်ဆေးဝါးများပါသော ရှေးဦးသူနာပြုပုံး ထားရှိခြင်း</li> <li>- လုံလောက်သော သန့်စင်ခြင်းများ ထားရှိခြင်း ဥပမာ- အိမ်သာများ၊ သန့်စင်သောရေ၊ ရေချိုးခန်းများ</li> <li>- လူဖြင့်လုပ်ရသော အလုပ်ကိုလျော့ချ၍ စက်ဖြင့်လုပ်ရသောအလုပ်ကို တိုးမြှင့်ခြင်း</li> </ul>
၇	ဖြစ်နိုင်ခြေရှိသော လူမှုရေးပြဿနာ	<ul style="list-style-type: none"> <li>- ကုမ္ပဏီနှင့်ဒေသခံများအကြား ကောင်းမွန်သောဆက်ဆံရေးကို ထိန်းသိမ်းထားခြင်း</li> <li>- ဒေသခံများနှင့်လူထုတွေ့ဆုံပွဲပြုလုပ်ခြင်း၊ ထိုသို့ပြုလုပ်ခြင်းမှာ ဒေသခံများသည် စီမံကိန်းအပေါ် ကောင်းမွန်သော အမြင်ရရှိလာမည်။</li> <li>- ဒေသခံများနှင့် ဆက်ဆံလျှင် သူတို့၏ ယဉ်ကျေးမှုနှင့် ရိုးရာများကို လေးစားလိုက်နာရန် ဝန်ထမ်းများကို ပညာပေးခြင်း</li> <li>- ဝန်ထမ်းများကို စည်းကမ်းလိုက်နာစေရန် ပညာပေးထားခြင်း</li> <li>- အမှားလုပ်ထားလျှင် ဝန်ထမ်းများကို အလုပ်မှ ထုတ်ပယ်ခြင်း သို့မဟုတ် အပြစ်ပေးခြင်းများ လုပ်ဆောင်ခြင်း</li> <li>- အလုပ်သမားများနှင့် ဒေသခံများအကြား ငြင်းခုံခြင်း၊ ရန်ဖြစ်ခြင်းများကို တားဆီးခြင်း</li> <li>- အလုပ်ချိန်အတွင်းတွင် အရက်သေစာသောက်စားခြင်းကို တင်းကြပ်စွာ တားမြစ်ခြင်း၊ ဆေးသုံးစွဲခြင်းကို လုံးဝ တားမြစ်ခြင်း</li> <li>- ဝန်ထမ်းများနှင့်ကောင်းမွန်သော ဆက်ဆံရေး လုပ်ဆောင်ခြင်း</li> </ul>
၈	ဖြစ်နိုင်ခြေရှိသော လုံခြုံရေးပြဿနာ	<ul style="list-style-type: none"> <li>- စီမံကိန်းလုံခြုံရေးအတွက် စီမံခန့်ခွဲမှု အစီအစဉ်ရေးဆွဲခြင်း</li> <li>- စီမံကိန်းနေရာကို နံရံများ/ခြံစည်းရိုးခတ်ထားခြင်း</li> <li>- စက်ရုံသည် အကြမ်းဖက်သမားများအတွက် ပစ်မှတ် မဖြစ်စေခြင်း</li> <li>- တက်နိုင်သလောက် လုံခြုံရေးများကို စည်းကမ်း တင်းကြပ်စွာ ဆောင်ရွက်စေခြင်း</li> <li>- လုံလောက်သော လုံခြုံရေးဝန်ထမ်းများထားရှိခြင်း</li> <li>- စက်ရုံအဝင်အထွက်များတွင် လူတိုင်းကို စစ်ဆေးခြင်း</li> <li>- အလွယ်တကူ ခွဲခြားနိုင်စေရန် ဝန်ထမ်းများအားလုံး ID ကဒ်များ ထောက်ပံ့ပေးခြင်း</li> </ul>

၄။ စီမံကိန်းပိတ်သိမ်းစဉ်ကာလအတွင်းတွင်

စဉ်	သက်ရောက်မှု	ဖြေလျှော့နိုင်မည့်နည်းလမ်းများ
၁	<p>ဖြစ်နိုင်ခြေရှိသော လုပ်ငန်းခွင်မတော်တဆမှု (လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ပြဿနာ)</p>	<ul style="list-style-type: none"> <li>- စီမံကိန်းပိတ်သိမ်းခြင်း လုပ်ငန်းအတွက် ဘေးအန္တရာယ် ကင်းရှင်းသည့် အခြေအနေဖြစ်စေရန် အတွက် အစီအမံများ ရေးဆွဲခြင်း</li> <li>- ဖျက်သိမ်းခြင်းလုပ်ငန်းများအတွက် ကန်ထရိုက်တာ ငှားရမ်းပြီး စီမံကိန်းဖျက်သိမ်းခြင်းနှင့် စီမံကိန်းနေရာကို သန့်ရှင်းသပ်ရပ်စွာ ဆောင်ရွက်ခြင်း</li> <li>- သတ်မှတ်ထားသော နေရာတွင် အသုံးမပြုနိုင်သော ပစ္စည်းများ စွန့်ပစ်ခြင်း</li> <li>- အသုံးမဝင်တော့သော စက်ကိရိယာနှင့် စက်ယန္တရားများကို အရည်ကျိုစက်ရုံသို့ ပို့ဆောင်ခြင်း</li> <li>- အသုံးပြု၍ရသော ပစ္စည်းများကို ပြန်လည်ရောင်းချခြင်း</li> <li>- လောင်စာဆီနှင့်ဓါတုဗေဒပစ္စည်းများ လျှို့ဝှက်ခြင်းရှိခဲ့လျှင် အဆိုပါညစ်ညမ်းမြေကို ယူ၍သတ်မှတ်နေရာတွင် စွန့်ပစ်ခြင်း</li> </ul>
၂	<p>ဖြစ်နိုင်ခြေရှိသော ကြွင်းကျန်သက်ရောက်မှုပြဿနာ</p>	<ul style="list-style-type: none"> <li>- ကြွင်းကျန်ရစ်သော ပစ္စည်းများကို သန့်စင်ရှင်းလင်းခြင်း ဥပမာ-ဓါတုဗေဒပစ္စည်းများ ရှိလျှင်</li> <li>- လောင်စာဆီဖိတ်စင်ကျခြင်းကြောင့် မြေဆီလွှာ ညစ်ညမ်း လျှင်ဖယ်ရှားခြင်း</li> <li>- မြေဆီလွှာညစ်ညမ်းမှုရှိမရှိ သိစေရန် နောက်ဆုံးအနေဖြင့် မြေဆီလွှာစမ်းသပ်ခြင်း</li> <li>- လေနှင့်ရေကိုလည်း နောက်ဆုံးအနေဖြင့် စမ်းသပ်ခြင်း</li> <li>- မြေနေရာကို ယခင်ပုံစံအခြေအနေအတိုင်းဖြစ်စေရန် ပြုလုပ်ခြင်း</li> <li>- မြေနေရာကို ပြန်လည်ရှင်းသန့်ခြင်း သို့မဟုတ် ပြန်လည် စိုက်ပျိုးခြင်း</li> </ul>

တည်ဆောက်ရေးကာလအတွင်းတွင် ကောင်းကျိုးသက်ရောက်မှု

စီမံကိန်းသည် ဒေသစီးပွားရေးနှင့် ဒေသခံများ၏ အဆောက်အဦ ပစ္စည်းများ ဥပမာ-သဲ၊ ကျောက်၊ အုတ်၊ သစ် ရောင်းဝယ်ခြင်းဖြင့် စီးပွားရေး အကျိုးအမြတ် ယူဆောင်ပေးပါသည်။

အလုပ်အကိုင်အခွင့်အလမ်းများအနေဖြင့် တည်ဆောက်ရေးလုပ်သား (၁၀၀) ဦးအလုပ်အကိုင်ရရှိပြီး နိုင်ငံခြားသားများဆီမှ ဗဟုသုတနှင့် ကျွမ်းကျင်မှုများလည်း ရရှိပါသည်။ နိုင်ငံအနေဖြင့် (အမေရိကန်ဒေါ်လာ ၁.၆၂ သန်း အပါအဝင်) ကျပ် ၂၈၆၃.၆၂ သန်း တိုက်ရိုက်ရင်းနှီးမြှုပ်နှံခြင်းကြောင့် တိုင်းပြည်၏ GDP တိုးတက်လာပါသည်။

စီမံကိန်းလည်ပတ်စဉ်ကာလအတွင်းတွင် ကောင်းကျိုးသက်ရောက်မှု

စီမံကိန်းလည်ပတ်စဉ်ကာလအတွင်းတွင် ဝန်ထမ်း (၁၃၅) ဦး ရေရှည်အလုပ်အကိုင်ရရှိပြီး လစာအားဖြင့် ကျပ် ၁၈၀,၀၀၀ မှ ၂၁၀,၀၀၀ ရရှိပါသည်။ (လစာများကို ၂ နှစ်တစ်ခါတိုးသွားမည်)။ စီမံကိန်းမှ အကျိုးအမြတ်များရလာလျှင် ကုမ္ပဏီသည် ဝင်ငွေခွန် များထမ်းဆောင်ပါမည်။

အဆိုပါစီမံကိန်းသည် တိုင်းပြည်၏စက်မှုကဏ္ဍဖွံ့ဖြိုးတိုးတက်လာမည်ဖြစ်သည်။

သဘာဝနှင့်စက်မှုဆိုင်ရာဘေးအန္တရာယ်များ၏ဖြစ်နိုင်ခြေနှင့်ဖြစ်ပွားမှု

ဧရိယာသည် နိမ့်သောမြေပြန့်နေရာဖြစ်ပြီး ပင်လယ်ကမ်းခြေမှ မိုင် (၁၀၀) ခန့်ဝေးပါသည်။ တောင်တန်းမရှိပေ။ ရခိုင်နှင့်ဧရာဝတီ ဧရိယာများ၏ ကမ်းခြေဒေသများသည် ဆိုင်ကလုန်းများ ဖြစ်ပွားပါသည်။ သို့ပေမယ့် ဤဧရိယာသည် အတော်အသင့် ဘေးအန္တရာယ်ကင်းပါသည်။ ဧရိယာသည် စတုဂံပုံရှိပြီး ကြော၏ တောင်ဘက်အစွန်းမှ သိပ်မဝေးပေ (၁၀ မိုင်ခန့်)။ သို့ပေမယ့် ငလျင်မဖြစ်ပွားပေ။ အသေးစားတုန်ခါခြင်း တစ်ခါတစ်ရံဖြစ်တက်ပါသည်။

စက်မှုဆိုင်ရာဘေးအန္တရာယ်အနေဖြင့် ကားတပ်ဆင်စက်ရုံသည် မည်သည့်စက်မှုဆိုင်ရာ ဘေးအန္တရာယ်မှ မထွက်ရှိပေ။ မီးခိုး၊ စွန့်ထုတ်ရေ၊ ဓာတ်ပေးပစ္စည်းများ သို့မဟုတ် ဘေးအန္တရာယ်များသော ပစ္စည်းများ မထွက်ရှိပေ။

ဤအကြောင်းအရာအားလုံးကို အခန်း (၆) တွင် အသေးစိတ်ဖော်ပြထားပါသည်။

**ဆက်စပ်သက်ရောက်မှုဆန်းစစ်အကဲဖြတ်ခြင်း**

စီမံကိန်းနေရာတွင် အခြားစီမံကိန်းမရှိသောကြောင့် မည်သည့်ဆက်စပ်သက်ရောက်မှု မျှမရှိပေ (သက်ရောက်မှုသည် အခြားအရင်းအမြစ်မှ တစ်ချိန်တည်းတွင်ဖြစ်ပျက်ခြင်း)။ အဆိုပါဧရိယာတစ်ခုလုံးတွင် ဤကားတပ်ဆင်ထုတ်လုပ်ခြင်း စက်ရုံသာရှိပါသည်။

အဆိုပါကားတပ်ဆင်ထုတ်လုပ်ခြင်းစက်ရုံသည် "မီးခိုးမဲ့စက်ရုံ" နှင့် "မစွန့်ထုတ်သောစက်ရုံ" တစ်ခုဖြစ်ပါသည်။ သက်ရောက်မှုများမှာ အများအားဖြင့် မပြောပလောက်ပေ။ သက်ရောက်မှုများ အားလုံးကို ဖြေလျော့မည်ဖြစ်သဖြင့် ဆက်စပ်သက်ရောက်မှုသည် နှစ်ပေါင်းကြာလာသည်နှင့်အမျှ မထင်ရှားပေ။

သက်ရောက်မှုတစ်ခုစီတိုင်းအတွက် ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ထည့်သွင်းထား သောကြောင့် နှစ်ပေါင်းများစွာကြာလာလျှင် ဆက်စပ်သက်ရောက်မှု မဖြစ်နိုင်ပေ။

သို့ပေမယ့် စက်ရုံသည် တစ်နှစ်ကို ကား ၅,၀၀၀ စီးထုတ်လုပ်ဖြစ်ပါသည်။ (၅) နှစ်ကြာပြီး နောက်တွင် အဆိုပါ ကားအစီးရေ ၅,၀၀၀ မှ မီးခိုးများထွက်နိုင်ပါသည်။ (အခြားတနည်းအားဖြင့်) ကားတပ်ဆင်ထုတ်လုပ်သည့်စက်ရုံသည် နှစ်ပေါင်းများစွာတွင် လေပတ်ဝန်းကျင်အပေါ် သွယ်ဝိုက်နည်းဖြင့် ဆက်စပ်သက်ရောက်လိမ့်မည်။

**ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP)**

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) သည် စီမံကိန်းဆောင်ရွက်ခြင်းကြောင့် ဧရိယာ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးကို ဆုတ်ယုတ်မသွားစေရန် အဓိကအချက်ဖြစ်သည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) သည် ရုပ်ပိုင်းဆိုင်ရာ၊ ဇီဝပိုင်းဆိုင်ရာ၊ လူမှုစီးပွားရေးဆိုင်ရာ၊ ယဉ်ကျေးမှုဆိုင်ရာနှင့် မျက်စိပဒေသာဖြစ်သော ရှုခင်းရှုကွက်ဆိုင်ရာ ပြဿနာများပါဝင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများကို စီမံခန့်ခွဲခြင်းဖြစ်သည်။

EMP သည် ကားတပ်ဆင်ထုတ်လုပ်ခြင်း စက်ရုံလည်ပတ်ခြင်းအား ပတ်ဝန်းကျင်နှင့် လိုက်လျောညီထွေ ဖြစ်စေရန် ဖြစ်သည်။ EMP သည် စီမံကိန်းသက်တမ်းတစ်လျှောက် အကျိုးသက်ရောက်သော မရှိမဖြစ်အရေးပါပါသည်။ ထို့အပြင် ပတ်ဝန်းကျင်ဆိုင်ရာ ပါရာမီတာများ၏ စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်းသည် အကျိုးသက်ရောက်သော လုပ်ဆောင်ချက်ဖြစ်သည်။ စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်းအစီအစဉ် (MP) သည်အလွန်အရေးပါပါသည်။

ဤရှည်လျားသော EMP အခန်းတွင် ကျန်းမာရေးဆိုင်ရာမူဝါဒနှင့် ကတိကဝတ်များကို ရှင်းပြထားပါသည်။ (စီမံကိန်းနှင့်သက်ဆိုင်သည့် ပတ်ဝန်းကျင်ဆိုင်ရာ၊ လူမှုစီးပွားရေးဆိုင်ရာနှင့် တရားရေးရာလိုအပ်ချက်နှင့် ဖွဲ့စည်းပုံမူဘောင်ကိုလည်း အခန်း (၃) တွင် ဖော်ပြထားပါသည်။)

သက်ရောက်မှုများနှင့် ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို အနှစ်ချုပ်၍ ဇယားဖြင့် ထပ်မံရှင်းပြထားပါသည်။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ဆောင်ရွက်ရန်အတွက် လွှမ်းခြုံဘတ်ဂျက်

EMP ရန်ပုံငွေအဖြစ် ဘတ်ဂျက်၏ ၅ ရာခိုင်နှုန်း (၂၀၈,၈၉၆,၉၆၅ ကျပ်) ကို သတ်မှတ်ထားပါသည်။

EMP နှင့် MP အောက်ရှိ အစီအစဉ် တစ်ခုစီအတွက် အသေးစိတ် ကုန်ကျစရိတ်မှာ အောက်ပါအတိုင်းဖြစ်ပါသည်-

- EMP အဖွဲ့ ဖွဲ့စည်းရန်အတွက် ကုန်ကျစရိတ်	၂ ရာခိုင်နှုန်း	(ကျပ် ၄,၁၇၇,၉၃၉)
- EMP အတွက် အမှန်တကယ် ကုန်ကျမည့် ကုန်ကျစရိတ်		
(က) ဖြေလျော့နိုင်မည့် နည်းလမ်းများအတွက်	၂၅ ရာခိုင်နှုန်း	(ကျပ် ၅၂,၂၂၄,၂၄၁)
(ခ) စောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်းအတွက်	၂၅ ရာခိုင်နှုန်း	(ကျပ် ၅၂,၂၂၄,၂၄၁)
- ပစ္စည်းကိရိယာဝယ်ယူမှုအတွက် ကုန်ကျစရိတ်	၂၀ ရာခိုင်နှုန်း	(ကျပ် ၄၁,၇၇၉,၃၉၃)
- စွမ်းဆောင်ရည်မြှင့် သင်တန်းများအတွက် ကုန်ကျစရိတ်	၇ ရာခိုင်နှုန်း	(ကျပ် ၁၄,၆၂၂,၇၈၇)
- အရေးပေါ် အစီအစဉ်အတွက် ကုန်ကျစရိတ်	၁၀ ရာခိုင်နှုန်း	(ကျပ် ၁၆၃,၂၃၆,၃၉၀)
- အစီရင်ခံတင်ပြခြင်း လုပ်ငန်းအတွက် ကုန်ကျစရိတ်	၈ ရာခိုင်နှုန်း	(ကျပ် ၁၃၀,၅၈၉,၁၁၂)
- အထွေထွေ ကုန်ကျစရိတ်	၃ ရာခိုင်နှုန်း	(ကျပ် ၆,၂၆၆,၉၀၈)
(EMPအဖွဲ့ဝင်ဖြစ်သော ရွာသား နှစ်ယောက်အတွက် အပါအဝင်)		

EMP ရန်ပုံငွေသည် စီမံကိန်း၏ သက်တမ်းတစ်ခုလုံးဖြစ်သော နှစ် (၃၀) ကို မလွှမ်းခြုံနိုင်ပေ။ ရန်ပုံငွေသည် အချိန်နှင့်အမျှ လိုအပ်လျှင် ထပ်ထည့်မည်ဖြစ်သည်။ အလုပ်သမားကုန်ကျစရိတ် အနည်းဆုံးဖြစ်စေရန် လုပ်ဆောင်ပါမည်။ ပန်ထမ်းများသာလျှင် EMP နှင့် MP လုပ်ဆောင်ခြင်းအတွက် ပါဝင်စေမည်။ ပန်ထမ်းများကို အဆိုပါရည်ရွယ်ချက်အတွက် ကနဦးအစကတည်းက သင်တန်းပေးမည်။ (EMP ကန်ထရိုက်တာသည် မြန်မာနိုင်ငံတွင် မရှိသေးပေ။)

စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်ခွဲ (MMSP)၏ ရှည်လျားသောအပိုင်း ကို စီမံကိန်းကာလ အလိုက် ဖော်ပြထားပါသည်။ အောက်ပါသက်ဆိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာနှင့် လူမှုရေးရာ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်းပြဿနာများကို ပါဝင်စေပါသည်။

- ဆူညံသံနှင့်တုန်ခါမှု၊ စွန့်ပစ်ပစ္စည်း၊ ဘေးအန္တရာယ်ဆိုင်ရာ စွန့်ပစ်ပစ္စည်း၊ စွန့်ပစ်ရေနှင့် မိုးရေ၊ လေအရည်အသွေး၊ အနံ့၊ ဓါတုဗေဒပစ္စည်းများ၊ ရေအရည်အသွေး၊ တိုက်စားခြင်းနှင့် အနည်ထိုင်ခြင်း၊ ဇီဝမျိုးစုံမျိုးကွဲ၊ လုပ်ငန်းခွင်ဆိုင်ရာနှင့် ဒေသဆိုင်ရာကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ ယာဉ်ကျေးမှုဆိုင်ရာအမွေအနှစ်၊ အလုပ်အကိုင်ရရှိရေးနှင့် သင်တန်းပေးခြင်း၊ အရေးပေါ်တုန့်ပြန်မှု၊ ယာဉ်ကြောပိတ်ဆို့မှုနှင့် လူမှုရေးပြဿနာများ

အစီအစဉ်ခွဲတစ်ခုစီ၏ပါဝင်သော အကြောင်းအရာ များတွင် ရည်ရွယ်ချက်များ၊ တရားရေးရာလိုအပ်ချက်၊ လွှမ်းမိုးမှုမြေပုံနှင့် အဆောက်အဦအပြင်အဆင်ပုံ၊ လုပ်ဆောင်ချက်အချိန်ဇယား၊ စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ၊ စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း အစီအစဉ်၊ စီမံကိန်းဘတ်ဂျက်နှင့် တာဝန်ဝတ္တရားများတို့ ဖြစ်သည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ၊ စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း အစီအစဉ် တို့ကို စူးစိုက်၍ အဆိုပါအကြောင်းအရာ အားလုံးကို အကျဉ်းချုပ် ဖော်ပြထားပါသည်။ EMP အဖွဲ့ငယ်ကိုဖွဲ့စည်း၍ EMP ဆောင်ရွက်ခြင်းအတွက် EMP အဖွဲ့ခေါင်းဆောင်နှင့် EMP အဖွဲ့ဝင်များ၏ တာဝန်ဖြစ်ပါသည်။

**အစီအစဉ်ခွဲတစ်ခုစီအတွက် စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက်များ**

ပတ်ဝန်းကျင်ဆိုင်ရာနှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်များနှင့် စီမံကိန်းလုပ်ဆောင်ခြင်း၏ အစီအစဉ်များကို အခန်း (၈) တွင် ဇယားဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန မှ ချမှတ်ထားသော ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း၊ ၂၀၁၅ အရ ဖော်ပြထားပါသည်။

လက်တွေ့စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက်အစီအစဉ်များအတွက်-

- လေအရည်အသွေးနှင့်ထုတ်လွှတ်မှု
- ဆူညံသံနှင့် တုန်ခါမှု
- ရေအရည်အသွေးနှင့် စွန့်ပစ်ရေ
- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ
- မြေဆီလွှာ (ထုတ်လွှတ်မှုနှင့် အနည်ကျခြင်း) နှင့်
- လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးတို့ဖြစ်သည်။

တည်ဆောက်ရေးကာလနှင့် စီမံကိန်းလည်ပတ်ခြင်းကာလအတွက် အောက်ပါအတိုင်းဖြစ်ပါသည်။

တည်ဆောက်ရေးကာလအတွင်းတွင်

၁။ လေအရည်အသွေးနှင့် ထုတ်လွှတ်မှု စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်သည် ထုတ်လွှတ်မှု (မီးခိုး သို့မဟုတ် ဂတ်စ်ထုတ်လွှတ်မှု) ကိုလျော့ချရန်နှင့် တက်နိုင်သလောက် လေအရည်အသွေးကို ထိန်းချုပ်ရန်ဖြစ်သည်။

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : တည်ဆောက်ရေးကာလအတွင်းတွင် ထုတ်လွှတ်မှု အားလုံးအတွက် (မီးခိုးနှင့်ဖုန်မှုန့်) အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅ ကိုလိုက်နာခြင်း
- လိုအပ်သည်ထက် အပင်များကို ပိုမရှင်းလင်းခြင်း
- မီးခိုးထွက်နည်းပြီး ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေဖြစ်သော ကိရိယာများကို ဝယ်ယူခြင်း
- မီးခိုးထွက်ရှိမှု လျော့နည်းစေရန် ယာဉ်နှင့် စက်ကိရိယာများကို ပုံမှန် ပြုပြင်၊ ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ဆီထိုးပြုလုပ်ခြင်း
- ဖြစ်နိုင်လျှင် ဆာလဖာနည်းသောလောင်စာဆီကို အသုံးပြုခြင်း
- အမှိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းကို ရှောင်ရှားခြင်း
- ဖုန်များကို ရေဖြန်းခြင်း
- ယာဉ်သွားလာမှုကို ကန့်သတ်ခြင်း
- မြေကြီးနှင့်သဲများကို ဟင်းလင်းပွင့်တွင် စုပုံခြင်းကို သတ်မှတ်ခြင်း
- လိုအပ်လျှင် ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း
- လေအရည်အသွေးအတွက် ပညာရှင်များဌာနရမ်းပြီး ပုံမှန် (တစ်နှစ်နှစ်ကြိမ်) လေ့လာစောင့်ကြပ်ကြည့်ရှုခြင်း များလုပ်ဆောင်ခြင်း

**၂။ ဆူညံသံနှင့် တုန်ခါမှုစီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : တည်ဆောက်ရေးကာလ လုပ်ဆောင်ချက်များမှ ထွက်ရှိလာသော ဆူညံနှင့် တုန်ခါမှုများကို လျော့ချရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၃ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : တည်ဆောက်ရေးကာလအတွင်းတွင် လုပ်ဆောင်ချက်များမှ ထွက်ရှိသော ဆူညံသံနှင့်တုန်ခါမှုများကို လျော့ချရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။

ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၃ ကိုလိုက်နာခြင်း
- ဆူညံမှုနည်းသော ယာဉ်ယန္တရားများကို ဝယ်ယူခြင်း
- ဖြစ်နိုင်လျှင် ဆူညံသံထွက်သောစက်များတွင် muffler သို့မဟုတ် silencer များတပ်ဆင်ခြင်း
- တုန်ခါမှုကို လျော့ချနိုင်ရန် စက်ကိရိယာများအတွက် အောက်ခံနေရာများကို တည်ငြိမ်စေခြင်း
- ထရပ်ကားများ ရွေ့လျားခြင်းကို ကန့်သတ်ခြင်း
- လမ်းမျက်နှာပြင်ကို ညီညာပြီး ချောမွေ့စေရန် ပြုလုပ်ခြင်း
- နေ့ဘက်တွင်သာ တည်ဆောက်ရေးလုပ်ဆောင်ချက်များ လုပ်ဆောင်ခြင်း (ညအချိန် တွင် တည်ဆောက်ရေးလုပ်ငန်းမပြုလုပ်ပါ)
- ဆူညံသံကို စုပ်ယူနိုင်ရန် ကြီးမားသော သစ်ပင်များကို ထိန်းသိမ်းခြင်း
- လိုအပ်လျှင် ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း
- ပညာရှင်များဌာနရမ်းပြီး ပုံမှန် (တစ်နှစ်နှစ်ကြိမ်) လေ့လာစောင့်ကြပ်ကြည့်ရှုခြင်း များလုပ်ဆောင်ခြင်း

**၃။ ရေအရည်အသွေးနှင့် စွန့်ပစ်ရေစီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : မည်သည့် အပေါ်ယံရေ သို့မဟုတ် မြေအောက်ရေ အရည်အသွေးကို သက်ရောက်မှု မရှိစေရန် နှင့် စွန့်ပစ်ရေ (စွန့်ထုတ်ရေ) ကို စီမံခန့်ခွဲရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၂ ကိုလိုက်နာပါမည်။



စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : ရေအရည်အသွေးနှင့် စွန့်ထုတ်ရေကို ထိန်းချုပ်ရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။

ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅ ကိုလိုက်နာခြင်း
- ရေထုတ်လွှတ်ခြင်းကို ကာကွယ်ခြင်း၊ တည်ဆောက်ရေးလုပ်ငန်းများကြောင့် အပေါ်ယံရေ သို့မဟုတ် မြေအောက်ရေ အရည်အသွေးကို သက်ရောက်မှု မဖြစ်စေခြင်း
- တည်ဆောက်ရေးလုပ်ငန်းခွင်တွင် အသုံးပြုပြီးသော ရေများကို ထိန်းချုပ်နိုင်ရန် ရေမြောင်းများ စနစ်တကျ ပြုလုပ်ခြင်းနှင့် မိုးရေအတွက်လည်း ရေမြောင်းစနစ် ပြုလုပ်ဖန်တီးခြင်း
- လမ်းဖောက်ခြင်းကြောင့် ဧရိယာရှိ သဘာဝ ရေမြောင်းများကို မထိခိုက်ခြင်း၊ စက်ရုံစီမံကိန်းနေရာသည် သဘာဝမြောင်းများကို မထိခိုက်ခြင်း
- လောင်စာဆီနှင့် အသုံးပြုပြီးသော ဆီများကို သိုလှောင်စဉ်တွင် သေချာစွာထားရှိခြင်း
- အပေါ်ယံရေ သို့မဟုတ် မြေအောက်ရေ ညစ်ညမ်းခြင်းကို ရှောင်ရှားခြင်း
- မတော်တဆ လျှံကျခြင်းကို ရှောင်ရှားခြင်း၊ လျှံကျခဲ့လျှင်တောင်မှ ရေဖြင့်မဆေးကြောရ သို့မဟုတ် စုပ်ယူနိုင်သည့် သို့မဟုတ် လွှစာမှုန့်ဖြင့် ချက်ချင်း စုပ်ယူဖယ်ရှားခြင်း
- စွန့်ပစ်ပစ္စည်းများကို မည်သည့်ရေရှိသည့် နေရာတွင်မှ စွန့်ပစ်ခြင်းကို ရှောင်ရှားခြင်း
- ရေထိန်းသိမ်းခြင်းကို ဝန်ထမ်းများအား ပညာပေးခြင်း
- တည်ဆောက်ရေးကာလအတွင်းတွင် မည်သည့် စွန့်ပစ်ရေ သန့်စင်သည့်နည်းလမ်းမျှ မလိုအပ်ပေ။
- ပညာရှင်များဌာရမ်းပြီး ခြောက်လတစ်ကြိမ် ရေအရည်အသွေး စစ်ဆေးခြင်း

**၄။ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : တည်ဆောက်ရေးစွန့်ပစ်ပစ္စည်းနှင့် လူသုံးစွန့်ပစ်ပစ္စည်းများ ကို လျော့ချရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ ၂၀၁၂ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ ၂၀၁၄ တို့ကိုလိုက်နာပါမည်။ (စွန့်ပစ်ပစ္စည်းများအား ပတ်ဝန်းကျင် မညစ်ညမ်းစေရန် ပတ်ဝန်းကျင်နှင့် လိုက်လျောညီထွေရှိစေသော နည်းလမ်းနှင့်အတူ စွန့်ပစ်ရန်)

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။

ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ ၂၀၁၂၊ ပုဒ်မ ၁၄၊ ၁၅၊ ၃၂ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ၊ ၂၀၁၄၊ ပုဒ်မ ၆၉ တို့ကို လိုက်နာခြင်း
- စွန့်ပစ်ပစ္စည်းများ ကိုယ်တွယ်ခြင်းအတွက် သင့်တော်သော သင်တန်းများပေးခြင်း
- ပြန်လည်အသုံးပြုနိုင်သည့် စွန့်ပစ်ပစ္စည်းနှင့် အသုံးမပြုနိုင်သည့် စွန့်ပစ်ပစ္စည်း ဟူ၍ ခွဲခြားခြင်း၊ အမှိုက်ပုံးများကို သီးသန့်ခွဲထားခြင်း
- တည်ဆောက်ရေးစွန့်ပစ်ပစ္စည်းများ အနေဖြင့် တည်ဆောက်ရေးလုပ်ငန်းခွင်တွင် ယာယီပုံသည့် အခါ စနစ်တကျ ထားခြင်း
- နောက်ပိုင်းတွင် ပိုလျှံသော ပစ္စည်းများကို ပြန်လည်ရောင်းချခြင်း
- တည်ဆောက်ရေးလုပ်ငန်းပြီးနောက် ကန်ထရိုက်တာဌာန၍ စီမံကိန်းနေရာကို သပ်ရပ်စွာထားရှိခြင်း
- ပစ္စည်းများကို သတ်မှတ်ထားသော နေရာတွင် စွန့်ပစ်ခြင်း
- မည်သည့်အကြောင်းပြချက်နှင့်မဆို အမှိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းအား ရှောင်ရှားခြင်း

**၅။ မြေဆီလွှာ စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ် (တိုက်စားခြင်းနှင့် အနည်ကျခြင်း)**

ရည်ရွယ်ချက် : မြေဆီလွှာတိုက်စားခြင်းကို တားဆီးခြင်း၊ တည်ဆောက်ရေးလုပ်ငန်းများကြောင့် မြေဆီလွှာ တည်ဆောက်မှုပျက်စီးခြင်းအား ကာကွယ်ခြင်း၊

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ ၂၀၁၂ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : မြေဆီလွှာ စီမံခန့်ခွဲရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။

ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- တည်ဆောက်ရေးလုပ်ငန်းများ လုပ်သောအခါတွင် မြေဆီလွှာဖွဲ့စည်းပုံကို လိုသည်ထက်ပို၍ မဖျက်စီးခြင်း
- အပေါ်ယံမြေဆီလွှာကို သီးသန့်ခွဲခြားထားခြင်း (အပင်ပြန်စိုက်ပျိုးရန်အတွက် အပေါ်ယံမြေဆီလွှာကို ပြန်လည်အသုံးပြုခြင်း)
- တက်နိုင်သလောက် မြေဆီလွှာ ညစ်ညမ်းမှုကို ရှောင်ရှားခြင်း၊ လောင်စာဆီ မလျှံကျစေခြင်း သို့မဟုတ် မယိုစိမ့်စေခြင်း၊ အကယ်၍ လျှံကျခဲ့လျှင် ရေဖြင့်မဆေးချခြင်း (မြေဆီလွှာညစ်ညမ်းမှုကို ကာကွယ်ရန်)၊ စုပ်ယူနိုင်သော ပစ္စည်းများ (လွှာစာမှုန့်) ဖြင့် ချက်ချင်းဖယ်ရှားခြင်း၊ လျှံကျခြင်းကို တားဆီးခြင်း
- မုတ်သုန်ရာသီအတွင်းတွင် ကျန်ပြန်သော မြေနေရာကို အလွတ်အတိုင်းမထား၍ တည်ဆောက်ရေးလုပ်ငန်းကို အစီအစဉ်ရေးဆွဲခြင်း
- မြေကြီးလုပ်ငန်းပြီးဆုံးပြီးနောက် မြေပြင်ကို ပြန်လည်ညှိခြင်း
- ထရပ်ကား/စက်ယန္တရားဖြင့် မြေဆီလွှာကို ပြန်လည်ထိန်းသိမ်းခြင်း
- အထူးသဖြင့် မုတ်သုန်ရာသီအတွင်းတွင် မြေဆီလွှာတိုက်စားခြင်းနှင့်အနည်ထိုင်ခြင်းကို တားဆီးခြင်း
- စီမံကိန်းနေရာအနီးနား ဧရိယာမှ ရေများကို စီးဆင်းစေခြင်း

**၆။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : တက်နိုင်သလောက် လုပ်ငန်းခွင်တွင် မတော်တဆမှု မရှိစေရေး လုပ်ဆောင်ရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ဥပဒေ၊ ၂၀၁၉ ကိုလိုက်နာပါမည်။ (အခန်း ၃ တွင် ဖော်ပြထားပါသည်)

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : အောက်ပါအချက်များကို လုပ်ဆောင်ပါမည်။

ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- မတော်တဆမှု မရှိစေရေး အစီအစဉ်ဆွဲခြင်း
- ဘေးအန္တရာယ်ကင်းရှင်းသော အလုပ်လုပ်သော နေရာနှင့် အခြေအနေ ဖန်တီးပေးခြင်း
- ဝန်ထမ်းများကို ကောင်းမွန်သော အလုပ်လုပ်ခြင်း အလေ့အထ၊ ကောင်းမွန်သော ဘေးအန္တရာယ်ကင်းရှင်းသော အလေ့အထ၊ ကောင်းမွန်သော သန့်ရှင်းစေသော အလေ့အထ၊ ဤအလေ့အထကောင်းများကို အလုပ်သမားတစ်ဦး တစ်ယောက်စီတိုင်း၏ စိတ်ထဲတွင်စွဲမြဲစေရန် သင်ကြားပေးခြင်း

- လုံလောက်သော အိမ်သာ၊ ရေချိုးခန်း၊ အဝတ်လျှော်ဧရိယာနှင့် သောက်ရေ ထောက်ပံ့ပေးခြင်း
- လိုအပ်လျှင် လုံလောက်သော PPE ထောက်ပံ့ပေးခြင်း
- ဝန်ထမ်းအချို့အတွက် ရှေးဦးသူနာပြုသင်တန်းပေးခြင်း၊ ဆေးဝါးများနှင့် ရှေးဦးသူနာပြုဆေးပုံးများ ထောက်ပံ့ထားပေးခြင်း
- မည်သည့် မမျှော်လင့်သော မတော်တဆမှုများနှင့် ထိခိုက်ဒဏ်ရာရမှုများအတွက် အရေးပေါ် တုန့်ပြန်မှု အစီအစဉ် ရေးဆွဲထားခြင်း
- အရေးပေါ်ဝန်ဆောင်မှု၊ ကြတ်ခြေနီအဖွဲ့၊ ဆေးရုံ၊ မီးသတ် အစရှိသော ဖုန်းနံပါတ်များကို ပြသထားခြင်း
- လူဖြင့်လုပ်ရသောအလုပ်ထက် စက်ဖြင့်လုပ်ရသော အလုပ်ကို မြှင့်တင်ခြင်း၊ တက်နိုင်သလောက် လိုအပ်သည်ထက်ပိုပင်ပန်းမှု၊ ထပ်ကာထပ်ကာ လှုပ်ရှားမှုများနှင့် မောပန်းနွမ်းနယ်ခြင်းနှင့် ထိခိုက်ဒဏ်ရာရမှုများကို လျော့ချခြင်း
- တည်ဆောက်ရေးကာလအတွင်းတွင် အရာဝတ္ထုများ မတော်တဆပြုတ်ကျခြင်းမှ ကာကွယ်နိုင်ရန် တည်ဆောက်နေသည့်နေရာများကို ပိုက်ကွယ်များဖြင့် ကာရန်ထားခြင်း

**စီမံကိန်းလည်ပတ်ခြင်းကာလအတွင်းတွင်**

**၁။ လေအရည်အသွေးနှင့် ထုတ်လွှတ်မှု စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်သည် ထုတ်လွှတ်မှု ကိုလျော့ချရန်နှင့် တက်နိုင်သလောက် လေအရည်အသွေးကို ထိန်းချုပ်ရန်ဖြစ်သည်။

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၁ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : စီမံကိန်းကာလအတွင်းတွင် ထုတ်လွှတ်မှု အားလုံးအတွက် (မီးခိုးနှင့်ဖုန်မှုန့်) အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အထက်မှာရှင်းပြထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅ ကိုလိုက်နာခြင်း
- မီးခိုးထွက်နည်းပြီး ပတ်ဝန်းကျင်နှင့်လိုက်လျောညီထွေဖြစ်သော ကိရိယာများကို ဝယ်ယူခြင်း
- ခြောက်သွေ့သောကာလများတွင် ဖုန်မှုန့်ထွက်ခြင်းအတွက် လိုအပ်လျှင် နေ့တိုင်းရေဖြန်းခြင်း

- ယာဉ်သွားလာမှုကို ကန့်သတ်ခြင်း (သတ်မှတ်နှုန်း တစ်နာရီ မိုင် ၂၀)
- အမှိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းကို ရှောင်ရှားခြင်း
- ဖုန်မှုန့်များကို စုပ်ယူနိုင်ရန် အတွက် အစိမ်းရောင် (ကြီးမြန်သစ်ပင်များ) ဖန်တီးခြင်း
- မီးခိုးထွက်ရှိမှု လျော့နည်းစေရန် ယာဉ်နှင့် စက်ကိရိယာများကို ပုံမှန် ပြုပြင်၊ ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ဆီထိုးပြုလုပ်ခြင်း
- လိုအပ်လျှင် ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း
- ဒေသခံများမှ ဖုန်မှုန့်များ၊ မီးခိုးများနှင့်ပတ်သက်၍ တိုင်ကြားလျှင် GRM ဆောင်ရွက်ခြင်း
- လေအရည်အသွေးအတွက် ပညာရှင်များဌာနရမ်းပြီး ပုံမှန် (တစ်နှစ်နှစ်ကြိမ်) လေ့လာစောင့်ကြပ်ကြည့်ရှုခြင်း များလုပ်ဆောင်ခြင်း
- မီးခိုးနှင့် ဖုန်မှုန့်အခြေအနေကို မျက်မြင်ဖြင့် နေ့တိုင်းစစ်ဆေးခြင်း
- အပတ်စဉ် သို့မဟုတ် လအလိုက် ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို လေ့လာစောင့်ကြပ်ကြည့်ရှု စစ်ဆေးခြင်း

**၂။ ဆူညံသံနှင့် တုန်ခါမှုစီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်သည် စက်ရုံ စီမံကိန်းလည်ပတ်ခြင်းမှ ထွက်ရှိလာသော ဆူညံနှင့် တုန်ခါမှုအဆင့်များကို လျော့ချရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၃ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : စက်ရုံ စီမံကိန်းလည်ပတ်ခြင်းမှ ထွက်ရှိလာသော ဆူညံနှင့် တုန်ခါမှုအဆင့်များကို လျော့ချရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၃ ကိုလိုက်နာခြင်း
- ဆူညံမှုနည်းသော ယာဉ်ယန္တရားများကို ဝယ်ယူခြင်း
- ဖြစ်နိုင်လျှင် ဆူညံသံထွက်သောစက်များတွင် muffler သို့မဟုတ် silencer များတပ်ဆင်ခြင်း
- တုန်ခါမှုကို လျော့ချနိုင်ရန် စက်ကိရိယာများအတွက် အောက်ခံနေရာများကို တည်ငြိမ်စေခြင်း

- ဆူညံသံနှင့်တုန်ခါမှု လျော့နည်းစေရန် ယာဉ်နှင့် စက်ကိရိယာများကို ပုံမှန် ပြုပြင်၊ ပုံမှန်ထိန်းသိမ်း၊ ပုံမှန်ဆီထိုးပြုလုပ်ခြင်း
- ကားတပ်ဆင်ခြင်းလုပ်ငန်းကို ညအချိန်တွင် မပြုလုပ်ခြင်း
- တုန်ခါမှုကို လျော့ချရန် ယာဉ်များ ရွေ့လျားခြင်းကို ကန့်သတ်ခြင်း
- တုန်ခါမှုလျော့ချရန် လမ်းမျက်နှာပြင်ကို ညီညာပြီး ချောမွေ့စေရန် ပြုလုပ်ခြင်း
- ဆူညံသံကို စုပ်ယူနိုင်ရန် စက်ရုံပတ်ပတ်လည်လည်တွင် အစိမ်းရောင် (ကြီးမြန်သစ်ပင်များ) ကို ဖန်တီးခြင်း
- လိုအပ်လျှင် ဝန်ထမ်းများကို PPE ထောက်ပံ့ပေးခြင်း
- GRM ဆောင်ရွက်ထားရှိခြင်း (ဒေသခံများမှ ဆူညံသံနှင့်ပတ်သက်၍ တိုင်ကြားနိုင်ရန်)
- အပတ်စဉ် သို့မဟုတ် လအလိုက် ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ပုံမှန် လေ့လာစောင့်ကြပ် ကြည့်ရှုစစ်ဆေးခြင်း

**၃။ ရေအရည်အသွေးနှင့် စွန့်ပစ်ရေစီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်သည် မည်သည့် အပေါ်ယံရေ သို့မဟုတ် မြေအောက်ရေ အရည်အသွေးကို သက်ရောက်မှု မရှိစေရန် နှင့် စွန့်ပစ်ရေ (စွန့်ထုတ်ရေ) ကို စီမံခန့်ခွဲရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၂ (အထွေထွေ ဆောင်ရွက်ချက်) ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : စွန့်ပစ်ရေကြောင့် သက်ရောက်မှုကို ရှောင်ရှားရန်နှင့် စွန့်ပစ်ရေကို ထိန်းချုပ်ရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (NEQEG) ၂၀၁၅၊ အမှတ်စဉ် ၁.၂ ကိုလိုက်နာခြင်း
- ဝန်ထမ်းများကို သောက်ရေထောက်ပံ့ပေးခြင်း
- မည်သည့်လုပ်ဆောင်ချက်များကြောင့်မျှ ချောင်းရေကို မထိခိုက်ခြင်း
- ရေတိုက်စားခြင်းကို ကာကွယ်ခြင်း (အထူးသဖြင့် မိုးရာသီအတွင်းတွင် ဆားတလင်းချောင်းကမ်းဘေး)

- စွန့်ပစ်ပစ္စည်းများ (အစိုင်အခဲနှင့်အရည်) ကို မည်သည့်ရေရှိသည့် နေရာတွင်မှ စွန့်ပစ်ခြင်းကို ရှောင်ရှားခြင်း
- ရေထိန်းသိမ်းခြင်းကို ဝန်ထမ်းများအား ပညာပေးခြင်း
- ကားတပ်ဆင်ထုတ်လုပ်ခြင်းတွင် စက်မှုဆိုင်ရာစွန့်ပစ်ရေမရှိပေ။ လူသုံးရေသာရှိခြင်း
- လူသုံးစွန့်ပစ်ရေနှင့် မိုးရေများအတွက် ရေမြောင်းများ စနစ်တကျ ပြုလုပ်ခြင်း
- ရုံးခန်း၊ အဆောင်၊ မီးဖိုချောင်၊ ရေးချိုးခန်း အစရှိသော လူသုံးစွန့်ပစ်ရေများမှာ မြောင်းအတွင်းတွင် ခြောက်သွေ့ခြင်း (အထူးသန့်စင်ခြင်းစနစ်မလိုအပ်ပေ)
- အိမ်သာများမှ ရေသည် မိလ္လာကန်ထဲတွင် အဆုံးသတ်ခြင်း
- ပုံမှန် ရေအရည်အသွေးကို စောင့်ကြပ်ကြည့်ရှု စစ်ဆေးခြင်း (ပညာရှင်များ ငှားရမ်း၍ ခြောက်လတစ်ကြိမ်)
- ရေအခြေအနေကို အပတ်စဉ် မျက်မြင်ဖြင့် စစ်ဆေးခြင်း
- အပတ်စဉ် သို့မဟုတ် လအလိုက် ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ပုံမှန် လေ့လာစောင့်ကြပ်ကြည့်ရှု စစ်ဆေးခြင်း

**၄။ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်မှာ စက်မှုဆိုင်ရာစွန့်ပစ်ပစ္စည်းနှင့် လူသုံးစွန့်ပစ်ပစ္စည်းများ ကို လျော့ချရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ ၂၀၁၂ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ ၂၀၁၄ တို့ကိုလိုက်နာပါမည်။ စွန့်ပစ်ပစ္စည်းများအား ပတ်ဝန်းကျင် မညစ်ညမ်းစေရန် ပတ်ဝန်းကျင်နှင့် လိုက်လျောညီထွေရှိစေသော နည်းလမ်းနှင့်အတူ စွန့်ပစ်ရန်ဖြစ်သည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ ၂၀၁၂၊ ပုဒ်မ ၁၄၊ ၁၅၊ ၃၂ နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေ၊ ၂၀၁၄၊ ပုဒ်မ ၆၉ တို့ကို လိုက်နာခြင်း
- စွန့်ပစ်ပစ္စည်းများ ကိုယ်တွယ်ခြင်းအတွက် သင့်တော်သော သင်တန်းများပေးခြင်း၊ ကောင်းမွန်သော သန့်ရှင်းရေးနှင့် စွန့်ပစ်ပစ္စည်းများ လျော့ချခြင်းကိုလည်း ပညာပေးခြင်း
- ကားတပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းတွင် အဓိကစက်မှုဆိုင်ရာ စွန့်ပစ်ပစ္စည်းသည် အိုဟောင်းသော ပါကင်ပုံးပစ္စည်းများ ဥပမာ-သစ်သား၊ ပလတ်စတစ်၊ သုံးထပ်သားပြားများ

- လူသုံးစွန့်ပစ်ပစ္စည်းများကို နေ့စဉ်စုဆောင်းပြီး အမှိုက်ပုံးအသေး သို့မဟုတ် အမှိုက်ပုံးအကြီးများ (ရုံးခန်းနှင့် အဆောင်ထဲမှ အမှိုက်ပုံးများ၊ မီးဖိုချောင်မှ အမှိုက်ပုံးများနှင့် စက်ရုံဝန်အတွင်းရှိ အခြား အမှိုက်ပုံးများ) ထဲသို့ စွန့်ပစ်ခြင်း
- ပြန်လည်အသုံးပြုနိုင်သည့် စွန့်ပစ်ပစ္စည်းနှင့် အသုံးမပြုနိုင်သည့် စွန့်ပစ်ပစ္စည်း ဟူ၍ ခွဲခြားခြင်း၊ အမှိုက်ပုံးများကို သီးသန့်ခွဲထားခြင်း
- အမှိုက်များကို ဟင်းလင်းပွင့်တွင် မီးရှို့ခြင်းအား ရှောင်ရှားခြင်း
- လစဉ် စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှုကို စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်း
- အကျိုးသက်ရောက်သော ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်း
- GRM ဆောင်ရွက်ထားရှိခြင်း (ဒေသခံများမှ စွန့်ပစ်ပစ္စည်းနှင့်ပတ်သပ်၍ တိုင်ကြားနိုင်ရန်)

**၅။ မြေဆီလွှာ စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ် (တိုက်စားခြင်းနှင့် အနည်ကျခြင်း)**

ရည်ရွယ်ချက် : အဓိကရည်ရွယ်ချက်သည် မြေဆီလွှာတိုက်စားခြင်းကို တားဆီးခြင်း၊ စီမံကိန်းလုပ်ငန်းများကြောင့် မြေဆီလွှာ တည်ဆောက်မှုပျက်စီးခြင်းအား ကာကွယ်ခြင်း၊

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ ၂၀၁၂ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : မြေဆီလွှာတိုက်စားခြင်းနှင့် ပျက်စီးခြင်းမှကာကွယ်နိုင် ရန်အတွက် အောက်ပါများကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- မြေဆီလွှာ ညစ်ညမ်းမှုကို ရှောင်ရှားခြင်း၊ လောင်စာဆီများ မြေဆီလွှာပေါ်သို့ လျှံကျခြင်းမှ ရှောင်ရှားခြင်း၊ လျှံကျခဲ့လျှင် ချက်ချင်း ဖယ်ရှားခြင်း
- (မိုးရာသီအတွင်းတွင်) စီမံကိန်းလုပ်ဆောင်ခြင်းကြောင့် မြေဆီလွှာတည်ဆောက်မှု အပေါ် သက်ရောက်မှု မဖြစ်စေခြင်း
- မြေဆီလွှာတည်ငြိမ်ခြင်းနှင့် အလွယ်တကူ တိုက်စားမှုမဖြစ်စေရန် တက်နိုင်သလောက် မြေဆီလွှာကို ကျစ်လစ်သိပ်သည်းစေရန် ပြုလုပ်ထားခြင်း
- ဧရိယာကို မြေပြင်အတိုင်းထားခြင်းကို လျော့ချခြင်း (တက်နိုင်သလောက် မြေတိုက်စားခြင်းကို ကာကွယ်ရန် အပင်၊ မြက်များကို စိုက်ပျိုးခြင်း)
- စီးဆင်းရေနှင့် မိုးရေကို ထိန်းချုပ်ခြင်း (သင့်တော်သော မြောင်းစနစ် ဖန်တီးခြင်း၊ မိုးရေများကို ဆားတလင်းချောင်းထဲသို့ လွှဲလပ်စွာစီးဆင်းစေခြင်း)
- ဆားတလင်းချောင်း၏ ကမ်းစပ်တစ်လျှောက် မြေတိုက်စားခြင်းနှင့် အနည်ထိုင်ခြင်း မဖြစ်စေရန်ပြုလုပ်ခြင်း



- အနည်ထိုင်ခြင်းမဖြစ်ပေါ်စေရန် အမှိုက်များကို မြောင်းအတွင်းသို့ ဝင်ရောက်ခြင်းကို တားဆီးခြင်း
- အပတ်စဉ် သို့မဟုတ် လအလိုက် မြေဆီလွှာအခြေအနေကို စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်း
- (မိုးရာသီအတွင်းတွင် အပတ်စဉ် သို့မဟုတ် လအလိုက်) အကျိုးသက်ရောက်သော ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးခြင်း

**၆။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး စီမံခန့်ခွဲမှု လုပ်ဆောင်ချက် အစီအစဉ်**

ရည်ရွယ်ချက် : ဝန်ထမ်းများအပေါ် ကျန်းမာရေးသက်ရောက်မှုကို တားဆီးရန်နှင့် တက်နိုင်သလောက် လုပ်ငန်းခွင်တွင် မတော်တဆမှု မရှိစေရေး လုပ်ဆောင်ရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ဥပဒေ၊ ၂၀၁၉ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : အောက်ပါအချက်များကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည့်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- ဘေးအန္တရာယ်ကင်းရှင်းသော အလုပ်လုပ်သော နေရာနှင့် အခြေအနေ ဖန်တီးပေးခြင်း
- ဝန်ထမ်းများကို ကောင်းမွန်သော အလုပ်လုပ်ခြင်း အလေ့အထ၊ ကောင်းမွန်သော ဘေးအန္တရာယ်ကင်းရှင်းသော အလေ့အထ၊ ကောင်းမွန်သော သန့်ရှင်းစေသော အလေ့အထ၊ ဤအလေ့အထကောင်းများကို အလုပ်သမားတစ်ဦး တစ်ယောက်စီတိုင်း၏ စိတ်ထဲတွင်စွဲမြဲစေရန် သင်ကြားပေးခြင်း
- လူဖြင့်လုပ်ရသောအလုပ်ထက် စက်ဖြင့်လုပ်ရသော အလုပ်ကို တက်နိုင်သလောက် လုပ်ဆောင်ခြင်း
- ဘေးအန္တရာယ်ကင်းရှင်းရေးအတွက် ပစ္စည်းများ၊ စက်ကိရိယာနှင့် ယာဉ်ယန္တရားများအားလုံး ကိုယ်တွယ်ခြင်းအတွက် သင်တန်းပေးခြင်း
- အကျိုးသက်ရောက်သောသင်တန်းပေးခြင်း၊ ဘေးအန္တရာယ်ကင်းရှင်းစွာ လုပ်ဆောင်နိုင်ရန် ထောက်ပံ့ပေးခြင်း
- ဝန်ထမ်းများအား OHS သင်တန်းပေးထားခြင်း
- မည်သည့်အကြောင်းနှင့်မျှ မီးလောင်ခြင်းနှင့် ပေါက်ကွဲခြင်းကို ရှောင်ရှားခြင်း
- အချက်ပြစနစ်များ တပ်ဆင်ခြင်း

- ဝန်ထမ်းအချို့အတွက် ရှေးဦးသူနာပြုသင်တန်းနှင့် မီးသတ်သင်တန်းပေးခြင်း၊ လုံလောက်သော ကိရိယာ ထောက်ပံ့ပေးခြင်း
- အရေးပေါ်တုန့်ပြန်မှုအတွက် အစီအစဉ်ရေးဆွဲထားခြင်း
- စက်ရုံအတွက်အာမခံထားရှိခြင်းနှင့် ဝန်ထမ်းများအတွက် အသက်အာမခံထားရှိခြင်း

**စီမံကိန်းပိတ်သိမ်းစဉ်ကာလအတွင်းတွင်**

ရည်ရွယ်ချက် : စနစ်တကျပိတ်သိမ်းခြင်းလုပ်ဆောင်ရန်နှင့် စီမံကိန်းနေရာကို ပြန်လည်ရှင်သန်စေရန်

တရားရေးရာလိုအပ်ချက် : တရားရေးရာလိုအပ်ချက်အနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၂ နှင့် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး ဥပဒေ၊ ၂၀၁၉ ကိုလိုက်နာပါမည်။

စီမံခန့်ခွဲမှုလုပ်ဆောင်ချက်များ : အောက်ပါအချက်များကို လုပ်ဆောင်ပါမည်။ ဤအရာများကို အခန်း (၆၊ ၆.၂) နှင့် (၈၊ ၈.၅) ဇယားများမှ ဖြေလျော့နိုင်မည်နည်းလမ်းများကို ကောက်နုတ်ထားပြီး အောက်ပါအတိုင်း အကျဉ်းချုပ်ဖော်ပြထားပါသည်။

- အကျိုးသက်ရောက်ပြီး ဘေးအန္တရာယ်ကင်းရှင်းသော ပိတ်သိမ်းခြင်းလုပ်ငန်းဖြစ်စေရန် စီမံခြင်း
- ပိတ်သိမ်းခြင်းကန်ထရိုက်ငှားရမ်းခြင်း၊ အဆောက်အဦဖျက်သိမ်းခြင်းအတွက် ငှားရမ်းခြင်းနှင့် ကိရိယာတန်ဆာပလာများကို ဖျက်သိမ်းခြင်း၊ စီမံကိန်းနေရာကို သန့်ရှင်းသပ်ရပ်စွာထားခြင်း
- အသုံးပြုနိုင်သောနှင့် ပြန်လည်ရောင်းချနိုင်သော ပစ္စည်းများကို ပြန်လည်ရောင်းချခြင်း၊ အသုံးမပြုနိုင်သော ပစ္စည်းများကို စွန့်ပစ်ခြင်း
- မြေဆီလွှာညစ်ညမ်းခဲ့လျှင် ဖယ်ရှား၍ စွန့်ပစ်ခြင်း
- လေ၊ ရေနှင့် မြေအရည်အသွေးများကို နောက်ဆုံးအကြိမ် စမ်းသပ်ခြင်း၊ အဆိုပါရလဒ်များသည် လမ်းညွှန်ချက်တန်ဖိုးများအတွင်း ရှိနေခြင်း (လေ၊ ရေနှင့်မြေဆီလွှာသည် မညစ်ညမ်းပေ၊ မြေဆီလွှာ မတိုက်စားပေ)
- ပြန်လည်ရှင်သန်ခြင်းလုပ်ငန်းအတွက် အပင်များကို စိုက်ပျိုးခြင်း၊ စီမံကိန်းနေရာကို ဂေဟဗေဒဆိုင်ရာ ပြန်လည်ရှင်သန်စေရန်ဆောင်ရွက်ခြင်း
- အကျိုးသက်ရောက်သော ပြန်လည်ရှင်သန်ခြင်းဖြစ်စေရန် ဆောင်ရွက်ခြင်း၊ ပြန်လည်စိုက်ပျိုးသောအပင်အားလုံး ကောင်းမွန်စွာရှင်သန်စေခြင်း
- အကျိုးသက်ရောက်သော ပိတ်သိမ်းခြင်းနှင့် ပြန်လည်ရှင်သန်ခြင်းလုပ်ငန်းများကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း
- ပိတ်သိမ်းခြင်းနှင့် ပြန်လည်ရှင်သန်ခြင်းပြီးနောက် စီမံကိန်းနေရာသည် ဒေသအဖွဲ့အစည်းအတွက် ဘေးအန္တရာယ်ကင်းရှင်းသော နေရာဖြစ်စေခြင်း

**စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း အစီအစဉ်**

စီမံကိန်းကာလတစ်ခုစီအတွက် ပြီးပြည့်စုံသော စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း အစီအစဉ်ကို အသေးစိတ် ဇယားဖြင့် အခန်း (၆၊ ၆.၂.၅) တွင်ဖော်ပြထားပါသည်။

ရုပ်ပိုင်းဆိုင်ရာ အတွက် စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်းအစီအစဉ်ကို ဇယားဖြင့် ထပ်မံဖော်ပြထားပါသည်။

တည်ဆောက်ရေးကာလအတွက် စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်းအစီအစဉ် ဇယားဖြင့် အကျဉ်းချုပ် (လက်တွေ့လုပ်ဆောင်နိုင်သော)

စဉ်	သက်ရောက်မှု	စောင့်ကြပ်ကြည့်ရှုရမည့်ပါရာမီတာများ	စောင့်ကြပ်ကြည့်ရှုရမည့်နေရာ	အကြိမ်အရေအတွက်	တာဝန်ရှိသူ	ကုန်ကျစရိတ် (တစ်ခါ)
၁။	လေပတ်ဝန်းကျင်/လေထုတ်လွှတ်မှု	- ထိတွေ့လေကို စောင့်ကြပ်ကြည့်ရှုခြင်း - ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်လွှတ်မှု လမ်းညွှန်ချက် တန်ဖိုး၊ အမှတ်စဉ် ၁.၁ မှ ပါရာမီတာများ အားလုံးကို စောင့်ကြပ်ကြည့်ရှုခြင်း	17° 3'25.75"N, 96°18'24.11"E	တည်ဆောက်ရေးကာလအတွင်းတွင် တစ်ကြိမ်	ပညာရှင် ဌာနရမ်း	ကျပ် ၁,၇၀၀,၀၀၀
၂။	ဆူညံသံနှင့် တုန်ခါမှု	- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်လွှတ်မှု လမ်းညွှန်ချက် တန်ဖိုး၊ အမှတ်စဉ် ၁.၃ မှ ဆူညံသံနှင့် နှိုင်းယှဉ်၍ စောင့်ကြပ်ကြည့်ရှုခြင်း	17° 3'25.75"N, 96°18'24.11"E	တည်ဆောက်ရေးကာလအတွင်းတွင် တစ်ကြိမ်	ပညာရှင် ဌာနရမ်း	ကျပ် ၇၀,၀၀၀
၃။	ရေပတ်ဝန်းကျင်/စွန့်ထုတ်မှု	- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော တည်ဆောက်ရေးကာလအတွက် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ စွန့်ထုတ်မှု တန်ဖိုး၊ အမှတ်စဉ် ၁.၂တွင် ပါဝင်သော ပါရာမီတာများ အားလုံးစောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်း	17° 3'27.44"N 96°18'22.22"E	တည်ဆောက်ရေးကာလအတွင်းတွင် တစ်ကြိမ်	ပညာရှင် ဌာနရမ်း	ကျပ် ၈၀,၀၀၀

၄။	မြေဆီလွှာနှင့် မြေအောက်ရေ ညစ်ညမ်းမှု	- လောင်စာဆီ၊ အမဲဆီ၊ ဓါတုပေဒပစ္စည်း (ရှိခဲ့လျှင်) လျှို့ဝှက်ခြင်းကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း	17° 3'26.09"N 96°18'21.80"E	အပတ်စဉ်	EMP အဖွဲ့ဝင်များ	အခမဲ့
၅။	တိုက်စားခြင်း	- မြေကြီးလုပ်ငန်းနှင့် မြောင်းစနစ်များကို စောင့်ကြပ်ကြည့်ရှု စစ်ဆေးခြင်း	17° 3'24.98"N 96°18'22.57"E	အပတ်စဉ် (အထူးသဖြင့် မိုးရာသီ)	EMP အဖွဲ့ဝင်များ	အခမဲ့
၆။	အစိုင်အခဲစွန့်ပစ် ပစ္စည်း (တည်ဆောက်ရေး ပစ္စည်း၊အမှိုက်သရိုက်)	- ထွက်ရှိလာသော အမှိုက်များကိုအမျိုးအစားခွဲခြားခြင်း၊ ပြန်လည်အသုံးပြုခြင်းနှင့် စွန့်ပစ်ခြင်း	17° 3'26.96"N 96°18'21.46"E	အပတ်စဉ်	EMP အဖွဲ့ဝင်များ	အခမဲ့
၇။	ဖိတ်မျိုးစုံမျိုးကွဲ	- မြက်နှင့် အပင်ငယ်များကို ရှင်းလင်းခြင်းအား စောင့်ကြပ်ကြည့်ရှု စစ်ဆေးခြင်း	17° 3'28.09"N 96°18'20.03"E	အပတ်စဉ်	EMP အဖွဲ့ဝင်များ	အခမဲ့
၈။	မီးဘေးအန္တရာယ် ကာကွယ်ခြင်းအတွက် အစီအစဉ်	- မီးဘေးအန္တရာယ်ကို ကာကွယ်ခြင်းအတွက် အစီအစဉ်များ ရေးဆွဲခြင်း - ဆောက်လုပ်ရေးပစ္စည်းများကို စုပုံခြင်းသည် မီးအလွယ်တကူ လောင်စေခြင်းကြောင့် စောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်း	17° 3'27.20"N 96°18'24.67"E	အပတ်စဉ်	EMP အဖွဲ့ဝင်များ	အခမဲ့

စီမံကိန်းလည်ပတ်ခြင်းအတွက် ဇယားဖြင့် စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်းအစီအစဉ် အနှစ်ချုပ်

(က) လက်တွေ့လုပ်ဆောင်ချက်

စဉ်	သက်ရောက်မှု	စောင့်ကြပ်ကြည့်ရှုရမည့်ပါရာမီတာများ	စောင့်ကြပ်ကြည့်ရှုရမည့်နေရာ	အကြိမ်အရေအတွက်	တာဝန်ရှိသူ	ကုန်ကျစရိတ် (တစ်ခါ)
၁။	ထုတ်လွှတ်မှု	- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်လွှတ်မှု လမ်းညွှန်ချက် တန်ဖိုး၊ အမှတ်စဉ် ၁.၁ မှ တန်ဖိုးများ အားလုံးဖြင့် နှိုင်းယှဉ်၍ ပါရာမီတာများ ကို စောင့်ကြပ်ကြည့်ရှုခြင်း	17° 3'25.75"N, 96°18'24.11"E	ခြောက်လ တစ်ကြိမ်	ပညာရှင် ဌားရမ်း	ကျပ် ၁,၇၀၀,၀၀၀
၂။	စွန့်ထုတ်မှု	- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ စွန့်ထုတ်မှု တန်ဖိုး၊ အမှတ်စဉ် ၁.၂တွင် ပါဝင်သော တန်ဖိုးများဖြင့် နှိုင်းယှဉ်၍ ပါရာမီတာများ အားလုံးကို စောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်း	17° 3'25.31"N 96°18'17.30"E	ခြောက်လ တစ်ကြိမ်	ပညာရှင် ဌားရမ်း	ကျပ် ၈၀,၀၀၀
၃။	ဆူညံသံနှင့်တုန်ခါမှု	- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနမှ ချမှတ်ထားသော အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ဆူညံသံ တန်ဖိုး၊ အမှတ်စဉ် ၁.၃ တွင် ပါဝင်သော တန်ဖိုးများဖြင့် နှိုင်းယှဉ်၍ ပါရာမီတာများ အားလုံးကို စောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်း	17° 3'25.75"N, 96°18'24.11"E	ခြောက်လ တစ်ကြိမ်	ပညာရှင် ဌားရမ်း	ကျပ် ၇၀,၀၀၀

		- PPE ဝတ်ဆင်ခြင်းကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း	- ဆူညံသံစက်နားရှိ အလုပ်ခွင်နေရာတွင်	အချိန်နှင့်အမျှ	EMP အဖွဲ့ဝင်များ	အခမဲ့
၄။	မြေဆီလွှာ	- မြေဆီလွှာညစ်ညမ်းခြင်းကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း(ရှိခဲ့လျှင်)  - မြေဆီလွှာတိုက်စားခြင်းကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း (ရှိခဲ့လျှင်)	17° 3'27.32"N, 96°18' 20.09"E  စက်ရုံဝန်းအတွင်း	အချိန်နှင့်အမျှ  မိုးရာသီ	ပညာရှင် ဌားရမ်း  EMP အဖွဲ့ဝင်များ	ကျပ်၁၄၀,၀၀၀  အခမဲ့
၅။	အစိုင်အခဲစွန့်ပစ်ပစ္စည်း	- ပါကင်ပစ္စည်းများကို စုဆောင်းခြင်းနှင့် စွန့်ပစ်ခြင်း ကို စောင့်ကြပ်ကြည့်ရှု လေ့လာခြင်း  - ထွက်ရှိလာသော အမှိုက်များကို စုဆောင်းခြင်းနှင့် စွန့်ပစ်ခြင်းကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း	17° 3'27.83"N 96°18'19.46"E  စက်ရုံဝန်းအတွင်း	နေ့စဉ်  အပတ်စဉ်	EMP အဖွဲ့ဝင်များ  EMP အဖွဲ့ဝင်များ	အခမဲ့  အခမဲ့
၆။	စွန့်ပစ်ရေ	- လူသုံးစွန့်ပစ်ရေ စီမံခန့်ခွဲမှုကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း	17° 3'27.51"N 96°18'21.51"E	နေ့စဉ်	EMP အဖွဲ့ဝင်များ	အခမဲ့

စဉ်	သက်ရောက်မှု	စောင့်ကြပ်ကြည့်ရှုရမည့်ပါရာမီတာများ	စောင့်ကြပ်ကြည့်ရှုရမည့်နေရာ	အကြိမ်အရေအတွက်	တာဝန်ရှိသူ	မှတ်ချက်
၁။	စီမံကိန်းပိတ်သိမ်းခြင်းနှင့် ပြန်လည်ရှင်သန်ခြင်း	<ul style="list-style-type: none"> <li>- ကြွင်းကျန်သက်ရောက်မှုများကို ဖယ်ရှားခြင်းအပါအဝင် စီမံကိန်းပိတ်သိမ်းခြင်းလုပ်ငန်းစဉ်ကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း</li> <li>- ပြန်လည်ရှင်သန်ခြင်းလုပ်ငန်းစဉ်ကို စောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်း</li> </ul>	<ul style="list-style-type: none"> <li>- စက်ရုံဝန်းအတွင်း</li> <li>- စက်ရုံဝန်းအတွင်း</li> </ul>	<ul style="list-style-type: none"> <li>- အပတ်စဉ်</li> <li>- လအလိုက်</li> </ul>	<ul style="list-style-type: none"> <li>- EMP အဖွဲ့ဝင်များ</li> <li>- EMP အဖွဲ့ဝင်များ</li> </ul>	<ul style="list-style-type: none"> <li>- အခမဲ့</li> <li>- အခမဲ့</li> </ul>

ဤစောင့်ကြပ်ကြည့်ရှုလေ့လာခြင်းကို ခြောက်လတစ်ကြိမ် လုပ်ဆောင်ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန (ECD) သို့ အစီရင်ခံတင်ပြပါမည်။

**လူထုတွေ့ဆုံဆွေးနွေးခြင်း**

လူထုတွေ့ဆုံဆွေးနွေးခြင်းသည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ၏ မဖြစ်မရှိအရေးပါသော အစိတ်အပိုင်းဖြစ်သည်။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) လုပ်ငန်းတွင် လူထုပူးပေါင်းပါဝင်ခြင်းသည် စီမံကိန်းကို လက်ခံနိုင်မှုနှင့် နားလည်နိုင်မှု မြင့်တက်စေပါသည်။

လူထုတွေ့ဆုံဆွေးနွေးခြင်းသည် ဒေသခံများ၊ ပါဝင်ပတ်သက်သူများနှင့် စီမံကိန်းထိခိုက်ခံစားရသူများ သူတို့၏ အမြင်သဘောထားများ၊ သဘောထားမှတ်ချက်များနှင့် သူတို့၏ အမြင်များ ရှိခဲ့လျှင် ဖော်ပြနိုင်ပါသည်။

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း လေ့လာချိန်အတွင်းတွင် ပြုလုပ်သော လူထုတွေ့ဆုံပွဲ

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း လေ့လာချိန်အတွင်းတွင် လူထုတွေ့ဆုံပွဲကို ၁၆-၂-၂၀၁၉ တွင် ဆားတလင်းကျေးရွာ အုပ်ချုပ်ရေးမှူးရုံး၌ ကျင်းပ၍ တက်ရောက်သူ ၃၂ ဦးရှိခဲ့ပါသည်။

ဦးအောင်ဇော်၊ အုပ်ချုပ်ရေးမှူးမှ အဖွင့်အမှာစကားပြောကြားခဲ့ပါသည်။ ဒေါ်ဖြူလင်းမြင့်၊ ကုမ္ပဏီ၏ အထွေထွေမန်နေဂျာမှ စီမံကိန်းအကြောင်းအရာ အသေးစိတ်ကို ရှင်းလင်းပြောကြားခဲ့ပါသည်။ ထို့နောက် ဦးမြင့်ကျော်သူရ၊ MESC ၏ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း အဖွဲ့ခေါင်းဆောင်မှ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း ဆောင်ရွက်ပုံနှင့် နောက်ပိုင်းတွင် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ဆောင်ရွက်မည်ဖြစ်ကြောင်း ရှင်းပြခဲ့ပါသည်။

အစည်းအဝေးတွင် ဦးနှစ်ဆန်း၊ ဦးကြည်ငွေ၊ ဦးအေးဟန်၊ ဦးအေးကြွယ်နှင့် ဦးလှမြင့် တို့မှ မေးခွန်းများမေးမြန်းခဲ့ပါသည်။

အစည်းအဝေး၏ မှတ်တမ်းများကို ဤအခန်းတွင် အသေးစိတ် ဖော်ပြထားပါသည်။

အစည်းအဝေးတွင် ပြဿနာ ၂ ခု ရှိခဲ့ပါသည်။

- ၁။ ဦးနှစ်ဆန်းမှ စာသင်ကျောင်း၏ ဘေးအန္တရာယ်ကင်းရှင်းမှုကို မေးမြန်းခဲ့ပါသည်။ အဘယ်ကြောင့်ဆိုသော် စာသင်ကျောင်း၏သန့်စင်ခန်းများသည် စက်ရုံ၏ ခြံစည်းရိုး နယ်နိမိတ်နှင့် ကပ်နေသောကြောင့် ဖြစ်ပါသည်။ ဒေါ်ဖြူလင်းမြင့်၊ ကုမ္ပဏီ၏ အထွေထွေ မန်နေဂျာ မှ မကြာခင် နံရံ သို့မဟုတ် ခြံစည်းရိုးခတ်ပေးပါမည်ဟု ပြန်လည်ဖြေကြားခဲ့ပါသည်။
- ၂။ ဦးအေးဟန်မှ စက်ရုံဝန်းအတွင်းရှိ ရေကန် ၂ ကန်မှ ရေများကို ဒေသခံများ သုံးစွဲခွင့်ရှိမရှိကို မေးမြန်းခဲ့ပါသည်။

ဒေါ်ဖြူလင်းမြင့်မှ ဤအရာသည် ပြဿနာမဟုတ်ပါ။ အဘယ်ကြောင့်ဆိုသော် စက်ရုံဝန်း အတွင်းရှိ အဆိုပါ ရေကန် ၂ ကန်ကို အဆင့်မြှင့်တင်ပြီး ဒေသခံများအတွက် ရေဖြန့်ဝေပေးရန် အစီအစဉ်ရှိပါသည်ဟု ပြန်လည်ဖြေကြားခဲ့ပါသည်။



ဦးကြည်ငွေ၊ ဦးအေးကြွယ်နှင့် ဦးလှမြင့်မှ ကျေးရွာမှ လူငယ်များအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများကို မြှေးမြန်းခဲ့ပါသည်။

ဒေါ်ဖြူလင်းမြင့်မှ အလုပ်အကိုင်ခေါ်ယူရာတွင် ဤကျေးရွာမှ လူများကို ဦးစားပေး ခေါ်ယူမည်ဖြစ်ကြောင်း ပြန်လည်ပြောကြားခဲ့ပါသည်။

စီမံကိန်း၏တာဝန်ရှိသူများသည် ကျေးရွာအုပ်ချုပ်ရေးမှူးနှင့် ကျေးရွာလူကြီးများဖြင့် အကြိမ်များစွာ တွေ့ဆုံဖူးသဖြင့် အဆိုပြုစီမံကိန်းနှင့် ရင်းနှီးပြီးသားဖြစ်နေပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) လေ့လာချိန်အတွင်းတွင် ပြုလုပ်သောလူထုတွေ့ဆုံဆွေးနွေးခြင်း

ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) လေ့လာချိန်အတွင်း တွင် ပြုလုပ်သော ဒုတိယအကြိမ် လူထုတွေ့ဆုံပွဲကို ၁၁-၁-၂၀၂၂ တွင် စက်ရုံအစည်းအဝေးခန်းတွင် ပြုလုပ်ခဲ့ပါသည်။

ကိုဗစ်-၁၉ ကမ္ဘာ့ကပ်ရောဂါကြောင့် တွေ့ဆုံဆွေးနွေးပွဲကို သတ်မှတ်လူဦးရေဖြင့် ၃၁ ဦးတက်ရောက်ခဲ့ပါသည်။

အဆိုပါအစည်းအဝေးကို ကျေးရွာအုပ်ချုပ်ရေးမှူး၊ ကျေးရွာလူကြီးများနှင့် ဦးအေးမင်းသန်း စက်ရုံအထွေထွေမန်နေဂျာ၊ MESC အဖွဲ့ခေါင်းဆောင် ဦးမြင့်ကျော်သူရနှင့် စိတ်ပါဝင်စားသူများ တက်ရောက်ခဲ့ပါသည်။

MESC အဖွဲ့ခေါင်းဆောင် ဦးမြင့်ကျော်သူရမှ စက်ရုံအကြောင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) လုပ်ဆောင်ခြင်းအကြောင်းကို အတော်အသင့် ရှင်းပြခဲ့ပါသည်။

ရာအိမ်မှူး၊ ဦးသက်နိုင်ဝင်း မှ ဤစီမံကိန်းသည် လူငယ်များအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများရရှိစေပြီး စက်ရုံသည် ဆူညံသံနှင့် အနံ့မထွက်ရှိပေဟု ပြောကြားခဲ့ပါသည်။

ဒေသခံတစ်ဦး၊ ဦးအေးလွင်တွင် စီမံကိန်းအနီးရှိ ဈေးဆိုင်တစ်ဆိုင်ဖွင့်လှစ်ထားပြီး ယခုအခါတွင် သူ၏စီးပွားရေးမှာ စီမံကိန်းမှ လုပ်သားများလာရောက်ဝယ်ယူခြင်းကြောင့် အဆင်ပြေပါသည်။ ထို့နောက် ဤစီမံကိန်းမှာ ဆိုးကျိုးသက်ရောက်မှု မတွေ့ရှိရပေဟု ပြောကြားခဲ့ပါသည်။

ဒေသခံတစ်ဦး၊ ဦးတင်ကိုလင်းမှာ ဤစက်ရုံတွင် ဆားတလင်း၊ ဒါးပိန်၊ အင်းတိုင်ကျေးရွာမှ ဒေသခံအများအပြားကို အလုပ်အကိုင်ပေးထားပါသည်ဟု ပြောကြားခဲ့ပါသည်။

အဆိုပါအစည်းအဝေးသည် မည်သည့်ပြဿနာမျှ မရှိ၍ ခင်မင်ရင်းနှီးစွာ ပြီးဆုံးသွားပါသည်။

အစည်းအဝေး၏ မှတ်တမ်းများကို ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ၏ အခန်း ၉ တွင် အသေးစိတ် ဖော်ပြထားပါသည်။

သတင်းအချက်အလက်ထုတ်ဖော်ကြေငြာခြင်း

ပထမနှင့်ဒုတိယ အစည်းအဝေး၏မှတ်တမ်းများအားလုံးကို ဒေသခံများအား ဖြန့်ဝေထားပြီး စိတ်ပါဝင်စားသူများ ဖတ်ရှုနိုင်ရန် အောင်ကမ္ဘာမော်တော်ဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်၏ ရုံးခန်းနှင့် အတိုင်ပင်ခံအဖွဲ့အစည်း MESC၏ ရုံးခန်းတို့ တွင် ထားရှိပါသည်။

ဤအစည်းအဝေးမှတ်တမ်းများကိုလည်း မှတ်တမ်းတင်ထား၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာထဲတွင် ထည့်သွင်းဖော်ပြထားပါသည်။ ဤ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ ခွင့်ပြုချက်ရလျှင် (အကျဉ်းချုပ်အစီရင်ခံစာ) ကို အတိုင်ပင်ခံအဖွဲ့အစည်း၏ ဝဘ်ဆိုဒ်ဖြစ်သော [www.myanmar.environment.sustainable.conservation.com](http://www.myanmar.environment.sustainable.conservation.com) တွင် လွှင့်တင်ပါမည်။ ခွင့်ပြုချက် ရရှိသော ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို စိတ်ပါဝင်စားသူများ ဖတ်ရှုနိုင်ရန် ကုမ္ပဏီ ရုံးခန်းတွင် ထားရှိပါမည်။

နောက်ထပ်ပြုလုပ်မည့် လူထုတွေ့ဆုံဆွေးနွေးခြင်း

လူထုတွေ့ဆုံဆွေးနွေးခြင်းသည် ပုံမှန်အဆက်မပြတ်ပြုလုပ်ရမည့် လုပ်ငန်းစဉ်ဖြစ်ပြီး စီမံကိန်းလည်ပတ်နေစဉ်အတွင်းတွင် နှစ်စဉ် သို့မဟုတ် ခြောက်လတစ်ကြိမ် ပြုလုပ်ပါမည်။ စီမံကိန်းအဆိုပြုသူသည် အဆိုပါနောက်ထပ်ပြုလုပ်မည့် လူထုတွေ့ဆုံဆွေးနွေးခြင်းများအတွက် အစီအစဉ်ရှိပါသည်။

## 1. EXECUTIVE SUMMARY

This is the Environmental Impact Assessment (EIA) report for the assembling, manufacturing and sales of motor vehicles by Aung Gabar Motor Services Co., Ltd.

A scoping report for the project was submitted in June, 2019 and was approved by the environmental authority, the Environmental Conservation Department (ECD), under the Ministry of Natural Resources and Environmental Conservation (MONREC) on 9-9-2021. (Document-eia-1/4-Hsa (1505/2021)). This EIA report is the follow up report.

Aung Gabar Motor Services Co., Ltd was registered as limited company by shares in April, 2014 (Document: Company Registration No.218/2014-2015; Dated: 10-2-2014; Certificate of Incorporation under the Myanmar Company Law). The new registration number is 108227338 (DICA).

The company has already obtained a permit from Myanmar Investment Commission (MIC); Permit No. Ma Na Tha 1267/2017, dated 20-8-2017.

Motor vehicles (sedans) will be assembled and manufactured according to semi-knock down (SKD) system and marketed. The auto parts will be imported from China (from BAIC International Development Co., Ltd, Beijing).

The proposed project site is at U Paing Holding No.56/2/ka + 56/2/kha + 56/2/ga + and 57/2; Plot No. 1082 ka, Sar Ta Linn village, Hlegu Township, Yangon Region. The area of the site is 18.64 acres (75433.47 sq.m). The type of land is Grant Land and the lease period is 50 years (extendable 5 years, twice).

The type of business organization is 100% nationals owned. The proposed project involves the establishment of motor parts assembling plant and manufacturing of BAIC sedan vehicle; also the marketing and servicing of the products in Myanmar.

The project was conceived after various agreements were signed between the Chinese manufacturer companies, BAIC International Development Co., Ltd, Beijing, China the Myanmar Company, the Aung Gabar Motor Services Co., Ltd.

### **The Project Proponent**

Name of Project Proponent	: Aung Gabar Motor Services Co., Ltd
Address (Head office)	: No. 74 (1) Street, Ward No.8, South Okkalapa Township, Yangon
Telephone	: 09 421054488, 09 421154777, 09 8616998
Website	: <a href="http://www.agb.com">www.agb.com</a>
Contact person	: Daw Phyu Lin Myint, General Manager
Telephone	: 09 5159165

Email : [miemie.agbs-miemie.agbs@aunggabar.com](mailto:miemie.agbs-miemie.agbs@aunggabar.com)

Location of project site : U Paing No. 56/2/Ka+56/2/Kha+56/2/Ga+ and 57/2, Plot no. 1082<sup>Ka</sup>, Sar Ta Linn Village Tract, Hlegu Township, Yangon Region

**Particulars of executive and administrative body**

<b>Name</b>	<b>Nationality &amp; National Registration Card No.</b>	<b>Usual Residential Address</b>	<b>Designation</b>	<b>Other Business Occupation</b>
U Aung Sein	Myanmar 9/MAYAMA (N) 078324	Pun Hlaing Golf Street, Lot. 79 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Managing Director	Merchant
Daw Ei Myo Myo Khine	Myanmar 13/TAKANA (N) 146644	Pun Hlaing Golf Street, Lot. 79 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant
U Myint Thein	Myanmar 9/MAYAMA (N) 079439	Pun Hlaing Golf Street, Lot. 81 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant
Daw Thandar Soe	Myanmar 9/MANAMA (N) 102491	Pun Hlaing Golf Street, Lot. 81 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant

Aung Gabar Motor Services Co., Ltd is 100% owned by Myanmar nationals.

Nominal amount of share so allotted : Ks 5,000,000

The number of share : 50

Amount paid or due and payable or cash such share : Ks 100,000 (fully paid)

Shareholders

U Aung Sein - 25 shares

U Myint Thein - 25 shares

## Environmental and social experts

The consultant firm is Myanmar Environment Sustainable Conservation (MESC) Co., Ltd. MESC is a consultant firm officially registered in 2014 as a limited company (a consultant/service company) at the Ministry of National Planning and Economic Development. Document: YaKa-8(Ga) 001/2014(004720), dated: 6<sup>th</sup> June, 2014. Registration No. 830/2014-2015, (20-5-2014).

The Transitional Registration/License No. of the consultant firm, MESC is No. 0003, ECD, Dated 1<sup>st</sup> July 2017.

**Contact Address** : Room no. (B -5), Building no.67/69, Parami Road, 16 Ward, Hlaing Township, Yangon Region

**Contact person** : Myint Kyaw Thura  
95 9 420105071

**Contact number** : 95 9 73044903

**E-mail** : [myanmar.esc@gmail.com](mailto:myanmar.esc@gmail.com)

Members of MESC who are IEE/EIA appraisers, or IEE/EIA practitioners or who are involved in this IEE/EIA project are as follows:-

Name	Nationality & National Registration Card No.	Registration/licence No. by ECD	Designation
U Myint Kyaw Thura M.Sc (Zoology)	Myanmar 12/Da Ga Ta (N) 028349	0006	Managing Director, Biodiversity Specialist (Fauna), EIA practitioner and EIA Appraiser
U Saw Han Shein B.Sc (Botany) M.Sc (Marine Biology)	Myanmar 10/Ma La Ma(N)008173	0007	Retired Professor, EIA Practitioner and Appraiser
Dr. Thiri Dawe Aung Ph.D (Zoology)	Myanmar 12/Da La Na (N) 029433	0008	Biodiversity Specialist (Ornithologist)
U Tin Tun Aung B.Sc (Engineering)	Myanmar 12/U Ka Ma (N)172111	0009	Engineer and EIA practitioner
Daw Khin Nhwe Naing M.Sc (Botany)	Myanmar 9/Pa Kha Ka (N)001252	00010	Biodiversity Specialist (Flora), Environment Researcher

U Than Soe Oo M.Sc (Forestry)	Myanmar 9/Ma Na Ma (N) 050808	00011	EIA practitioner
U Oakka Kyaw Thu B.Sc (Geology)	Myanmar 7/Ya Ta Ya (N) 090371	00012	Geologist
Daw Thin Thin Yee B.Sc (Chemistry)	Myanmar 12/Tha Ga Ka (N)039292	00013	Chemical Environment Researcher, Computer Programmer

- U Myint Kyaw Thura is involved in fauna study, EIA practicing and appraising and writing of report, in part.
- U Saw Han Shein is involved in EIA practicing appraising and report writing (chief report writer).
- Dr. Thiri Dawe Aung involved in avifauna study writing part of report.
- U Tin Tun Aung is involved in the EIA practicing and aspects of the report and provision of information, data and facts and writing part of the report.
- Daw Khin Nhwe Naing is involved in flora study and writing report, in part.
- U Than Soe Oo is involved in EIA practicing and part of the report writing especially on the socio-economic aspect,
- Daw Thinn Thinn Yee is involved in the physical aspects, especially ambient air, water quality, noise and vibration and soil etc and compilation of data on the physical components; including secondary information on weather.
- U Oakka Kyaw Thu is involved in the geological and geographical aspects by conduction desktop survey and gathering of secondary information on local geology.

Actually members of MESC always work together wholly as a tight-knit group in writing of each and every EMP/IEE/EIA report.

MESC has also part time members working as free lances.

The firm is not in a position to employ all its part time members on a permanent basis.

These are botanists, zoologists, ornithologists, ecologists, aquatic ecologists, social scientists, medical doctors, engineers and geologists working with this firm either as part time or as free lances.

## **Policy, legal and administrative framework**

These are all described in Chapter 3, the corporate environmental and social policy of Aung Gabar Motor Services Co., Ltd is, first of all, to comply with all the laws, rules, regulation and guideline concerning environment.

The company will endeavour to:

- operate the auto parts assembling with an environmentally and socially responsible manner and to comply with laws and regulation
- prevent pollution of surrounding area; monitoring and adopting suitable measures for environment protection
- implement EMP effectively to mitigate pollution of water, land, air, noise and dust and proper disposal of waste
- develop green belt in available space
- conserve natural resources and energy as far as possible
- create environmental awareness among employees and local community through education and training and to implement CSR programme for local communities.

## **Applicable Laws, Rules and regulation**

A few of the 47 applicable laws, rules and regulation etc. in this EIA report text are listed, namely,

1. The Environmental Conservation Law, 2012
2. The Environmental Conservation Rules, 2014
3. Impact Assessment Procedure, 2015
4. National Environmental Quality (Emissions) Guidelines, 2015
5. Myanmar Investment Law, 2016
6. Myanmar Investment Rules, 2017
7. Private Industrial Enterprise Law, 1990
8. Labour Organization Law, 2011
9. The Factories Act, 1951
10. Myanmar Motor Vehicle Law, 2015
11. Vehicle Safety and Motor Vehicle Management Law, 2020, among others.

The relevant articles/sections for each and every law, rules, regulation and listed are reproduced.

The international convention, treaties and agreements signed or ratified by Myanmar are listed.

#### NEQEG guideline values

- Air quality guideline values by ECD, Notification No.615/2015, Code No. 1.1;
- Effluent guideline values, Code No.1.2
- Noise level guideline values, Code No.1.3
- WHO drinking water standards are all shown in Chapter 3.

#### Commitments

Commitment made by the project proponent (Aung Gabar Motor Services Co., Ltd) as well as that made by the consultant firm (MESOC) are described.

#### Institutional frame work

Institutional organization of National Environmental Conservation and Climate Change Central Committee (NECCCCC), institutional organization of Environmental Conservation Department (ECD) and that of Occupational and Environmental Health Division (OEHD) are also depicted. The Institutional Arrangement of the Aung Gabar Motor Services Co., Ltd is shown in diagram.

The project environmental and social standards as prescribed by International Finance Corporation (IFC) are reproduced.

In this final part of Chapter 3 health standards for project with health are summarized.

This EIA reports Chapter 3 Environmental Policy, Legal and Institutional frame work are described in relative details.

#### Project description and alternative selection

These are described in details in Chapter 4.

The proposed project is for the auto parts assembling, manufacturing and sales of motor vehicles; and the technology applied is the SKD technology.

The auto parts assembling plant and facilities is established at the project site (U Paing No.56/2/Ka + 56/2/Kha + 56/2/Ga and 57/2; Plot No.1082 Ka) at Sar Ta Linn village area, Hlegu Township, Yangon Region.

The area of the project site is 18.64 acres (75433.47 sq.m) the coordinates: N. Lat. 17° 03' 39.47" and E Long. 96° 18' 27.23".



## Infrastructure

The auto part assembling plants and facilities comprises:

- The main assembling plant; office; main warehouse, shower test room, road test area, light and mirror inspection room, painting room, loading/unloading area, car parks, car garrage, transformers, generator house, family line, bachelor line, canteen, etc.

Technology: is the semi-knock down (SKD) system; partially assembled motor parts are imported from China and then assembled/installed and manufactured at the project site.

Three models of BAIC brand and one model of JMC are produced (BAIC Model; X55, D50, D70 and JMC Model; S350) ; the prouduction target for Year 1 is a total of 1500 sedans. By year 6 and onward the production target is 5000 sedans. All are left hand drive types.

## Processes

The following group of SKD parts (auto components and auto parts) are imported and assembled:

- body and chassis group; engine assembly; transmission and clutch system; front and rear axles; suspension group; steering wheel; exhaust system; wheels and tyres; seat assembly; and door groups.

The said acomponents/parts are imported for each model and assembled and produced at the plant.

The assembly process can be summarized and simplified as follows:

- (1) Body Inspection: inspection of car body and assembling of car body.
- (2) Chassis Assembly Line: assembly of lower parts. e.g. wirings, oil pipes, brakes, power steering, engine, fuel tank, lower chassis, front and suspension, wheels.
- (3) Final Assembling: trial state of assembly, eg- installation inside engine, wirings and pipes, seats, doors, engine oil, brake oil, etc filling.
- (4) Test Line: testing work, eg- alignment, inspection of lamps, testing the speed, inspection of ABS brake system, testing emission of CO<sub>2</sub>.
- (5) Shower Test: testing water tightness.
- (6) Commercial area: final inspection for sale.
- (7) Repair area: after undergoing test line, shower test, and commercial inspection if a car is still not in satisfactory condition it is repaired.
- (8) Road Test: the ultimate test is done at road test area. If the car passes this final test, it is ready for sale.

### Uses of raw materials and resources

Actually no raw materials are needed; the raw materials are only a variety of auto components/auto parts to be imported from China.

The resources required are only water and electricity. Annual water requirement (Operation Phase) is 300,000 gallons, mainly for shower test (testing water tightness).

Water is sourced from the nearby natural pond inside the compound.

The annual electricity requirement is 1.5 million KV and is sourced from Gridline electricity. Backup generator (500 KVA) is installed for emergency use.

Annual requirements for diesel, petroleum, and engine oil are 3600 gallons, 5000 gallons and 100 gallons respectively.

The estimated budget is Ks 2863.62 millions (including USD 1.62 millions).

### Staffing

About 100 construction workers were deployed during Construction Phase. 135 staffs (including 3 foreigners) will be employed during Operation Phase.

Working hours: 8 hours/day; 40 hours/week; operational days: 250 days/year.

Monthly salaries for local staff range from Ks 180,000 to Ks 2,100,000 and from USD 2500 to USD 4000 for foreign experts/technicians. Salaries will be increased every two years.

### Generation of wastes, emissions and disturbances

Auto parts assembling plant is actually a smoke less factory, and a non-waste generating factory.

All the required auto parts/components imported from China are simply assembled, installed and made into cars (sedan cars). (No actual industrial solid wastes are generated).

The uses of pumps and generator will generate smoke but will be minor and insignificant. Small quantities of water have to be used for shower test (water tightness test). Certain low level noise can be generated during the assembling and installation of auto parts. Generation of odour not envisaged.

### Solid wastes

During the Construction Phase large quantity of construction waste, especially left over waste, were generated. These were cleared and the site tidied up after Construction Phase.

During the Operation Phase the main solid waste are old packing materials (woods, plastic, foams) for auto parts. Some of these are reused or put up for sale. Solid wastes of small quantity are: old batteries, old lamps, old filters and certain discarded materials etc. These are collected in waste bins of two types; recyclable and non-recyclable, and those that can not be recycled are disposed at the landfill in the north.

In the same way organic wastes from kitchen, messing room are collected in bins and disposed. (There are only minor quantity of organic waste as only 4 staff and families and 7 bachelor staff will reside in the staff housing; the large majority of staff are locals commute to the assembling plant).

There is only minor chemicals waste such as thinner and paints. The auto parts/components are already painted in China and after assembling and installation only final touch works with paint will be required.

#### Liquid wastes

During the Construction Phase all the water required is used up for construction works, for instance, cement batching, and therefore no industrial liquid waste is envisaged.

About 100 construction workers were working at the site during day time and return to their homes in the evening. The domestic liquid waste was insignificant.

During the Operation Phase the auto parts assembling plant does not required water (except small quantity of water for shower test/water tightness test for each produced car). The used water simply flow into the drainage system.

Only 11 staffs reside at the housing inside the compound (the large majority of staff commute to the plant). Therefore domestic waste water in also small in quantity.

The site has adequate toilets and therefore sewage (black water) from the toilets end up at septic tanks and soak pits. Other domestic waste water (in small quantity) simply flows into the network of drainage system and dry up. In the same way rain water influx/storm water flows down the drain and end up in discharged point.

There is no special waste water treatment system.

#### Project alternative

Location alternative: The site is readily accessible by motor road and has access to gridline electricity; water can be sourced from natural water pond. This leads to the decision to choose this site. The cost-benefits analysis also favour the site selection.

Construction alternative: Iron frame, corrugated iron roofing and walling are used instead of timber as a means of conservation of forest.

Technology alternative: The holistic manufacturing of vehicle cannot be undertaken yet Myanmar. This lead the decision to choose Semi-knock Down (SKD) technology.

Energy alternative: a 500 KVA generator is installed as back up a mean of energy alternative in time of power outage.

Supply alternative: The consumption of water, fuel and energy will adhere to the principle of conservation rather than traditional principle.

Activities alternative: staffs are educated and trained to "work smarter" rather than "work harder".

No go (no project) alternative: This alternative is not be considered. The "no go" alternative will not contribute anything to the development of the local area and the nations; it cannot contribute to development of motor industry. The 135 people to be permanently employed during the long Operation Phase will lose their employment opportunities if the project is not implemented. The no go alternative can contribute to no increase in GDP, tax, duties and revenue for the nation.

In this EIA report Chapter 4 described the project in technical details.

### **Description of the surrounding environment**

The proposed project site in in the south west outskirts of Sar Ta Linn village, Hlegu Township, Yangon Region. It is situated between No.2 High way (Yangon-Bago Road) in the east and Sar Ta Linn Chaung in the west. It is 6.19 miles east of Hlegu Town and 21.23 miles of Yangon City proper.

A 2 miles radius area (12.6 sq. mile) is selected for study area. The impacts from the auto parts assembling plant will be mostly minor and impacts, if any, can be seen and felt with the inner 1 mile radius; the outer one mile can be consider as buffer zone.

The surrounding area of Sar Ta Linn village comprises mainly numerous paddy fields and farms; there is no forest. There are also no other project or factories in the near and far vicinity. Sar Ta Linn is the only village in the study area and is incorporated into EIA study area.

The studies on the physical, biological, socio-economic, cultural and visual components of the surrounding environment are conducted, recorded, documented and incorporated into the EIA report.

#### Physical component

Meteorological data are obtained from Hmawbi Township, Meteorological department. The monthly maximum temperature (39.5°C) was recorded in April, 2019; while the maximum rainfall (828 mm) was recorded in July, 2015.

Other physical characteristics e.g. topography, geology, soil, water, ambient air, noise are also studied and recorded. Geological data are secondary data: the area can be classified as that of Quaternary Period; the rock is formed out of deposit of alluvial and deltaic sediment.

Ambient air, noise level, soil and quality are measured/analysed with the aid of hired technicians. The results are shown below:

### Soil test results

Sr. No	Sample plot	pH	Texture	Total N	Available Nutrient
					P
1.	Project site	Moderately acid	Loamy sand	Low	Low

### Soil analytical data sheet

Sr. No	Sample plot	Moisture %	pH soil: Water 1: 2.5	Texture				Total N %	Available Nutrient
				Sand %	Silt %	Clay %	Total %		P ppm
1.	Project site	0.36	5.83	86.94	0.68	12.38	100.00	0.11	0.20

B = Bray & Kurtz Method

**Note:** Soil samples are free of contamination by hydrocarbon, SO<sub>2</sub> and toxic substances.

### Analysis of water sample from the project site

Sr. No	Parameters	Lake water	WHO guideline values
1.	pH	7.3	6.5 – 8.5
2.	Turbidity	38 NTU	5 NTU
3.	Total Hardness	20 mg/l	500 mg/l
4.	Total Alkalinity	34 mg/l	-
5.	Iron	2.70 mg/l	0.3 mg/l
6.	Chloride (CL)	14 mg/l	250 mg/l
7.	Sulphate (SO <sub>4</sub> )	10 mg/l	200 mg/l
8.	Total Solids	112 mg/l	1500 mg/l
9.	Salinity	0.1 ppt	-
10.	Nitrate	0.7 mg/l	50 mg/l

**Ambient air (baseline data) results from the project site (in comparison with NEQEG guideline values)**

Sr. No	Parameters	Averaging period	Existing values at the site	NEQEG guideline values
1.	Nitrogen dioxide (NO <sub>2</sub> )	1 - hour	6.95 µg/m <sup>3</sup>	200 µg/m <sup>3</sup>
2.	Ozone (O <sub>3</sub> )	8 - hours	36.34 µg/m <sup>3</sup>	100 µg/m <sup>3</sup>
3.	Particulate matter (PM <sub>10</sub> )	24 - hours	158.66 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
4.	Particulate matter (PM <sub>2.5</sub> )	24 - hours	95.12 µg/m <sup>3</sup>	25 µg/m <sup>3</sup>
5.	Sulphur dioxide (SO <sub>2</sub> )	24 - hours	6.39 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
6.	Carbon dioxide (CO <sub>2</sub> )	24 - hour	358.57 ppm	NEQEG - (NA)
7.	Volatile organic compound (VOC)	24 - hour	0.37 ppm	NEQEG - (NA)
8.	Ammonia	24 - hour	3.07 ppm	NEQEG - (NA)

**Ambient noise level (dBA) by sample site (compared with NEQEG guideline)**

	At the factory site		NEQEG guideline	
	Day	Night	Day	Night
(Residential, institutional, educational)	51.85	52.36	55	45
Industrial commercial	-	-	70	70

**Biological component**

Study on biodiversity is conducted not only within the 2 miles radius area but also outside, where necessary.

The following taxa are found, identified and recorded and documented in the EIA report.

**Flora**

- 85 species of plants (both natural and cultivated plants) belonging to 39 families.

**Fauna**

- 79 species of avian fauna (birds), belonging to 38 families.
- 11 species of herpetofauna (amphibians and reptiles) belonging to 8 families.
- 2 species of small mammals (rat and mouse).
- As regards aquatic fauna 7 species of fish are recorded (from secondary information from locals). These fish are known to inhabit Sar Ta Linn Chaung.

### Socio-economic components

Sar Ta Linn village is on the No.2 High way (Yangon-Bago Road) which runs from south to north and is easily accessible by vehicles. It is also on the intersection of No.2 High way and the Hlegu-Dar Pein that runs for west to east.

The village is also electrified (gridline electricity).

The villagers source water either from shallow wells or community water ponds (rain water pond).

The village has a population of 5253 (male – 1607, female – 1646). 100% are Bamar and about 97% are Buddhists; 3% are Christians.

The main occupation is predominantly rice paddy farming while some grow bean. Many are also involved in poultry while many are working in factories (in Yangon area) and elsewhere. A few are working in Thailand; there are 8 teachers, 15 nurses and mid wives and 5 soldiers. Daily wages range from Ks 5000 to 7000.

The village has a BEHS (public) school (997 students and 32 teachers) and one village clinic (most patients go to Hlegu Township Hospital or Yangon General Hospital).

There is one village pagoda and one Buddhist monastery with 17 monks. There is one village guardian spirit (Nat) shrine; the whole area is a wide low flat land dominated by numerous paddy fields.

In this EIA report Chapter 5 described the surrounding environment in details.

### Impacts and Risks assessment and mitigation measures

#### Methodology

Based mainly from prediction and from personal practical experience.

The Experts Consensus Method (Ad hoc method) is applied in combination with simple IFC's risk table and risk rating matrix method (probability multiply by Consequences equal outcome).

#### Impacts and mitigation measures

The impact envisaged and assessed during the four phases of the projects together with different options of mitigation measures to be put in place for each and every impact are summarized below:

##### **1. During the Preconstruction Phase**

No mitigation measures necessary as no actual impacts are anticipated or envisaged during this phase.

## 2. During the Construction Phase

Sr. No	Impact	Mitigation
1	Impact of mobilization and preparation activities for construction work	<ul style="list-style-type: none"> <li>- carefully plan for mobilization, storage and preparation works</li> <li>- have logistic plan for heavy trucks loaded with building materials</li> <li>- systematically store or pile up all the building materials within the premise</li> <li>- ensure that the wall or fence is reliable and can effectively prevent theft</li> <li>- prevent the spilling over of the building materials outside the premise or on nearby roads, No.2 Yangon-Bago Highway.</li> </ul>
2	Occupational Health and Safety issue (potential accidents at workplace)	<ul style="list-style-type: none"> <li>- plan and manage for zero accident</li> <li>- set up "Safety First" sign boards at places where workers can see easily</li> <li>- create safety condition for all workers; create accidents free environment</li> <li>- educate, train and supervise construction workers for good working practice, good engineering practice, good safety practice and good house-keeping practice so that these good practices will be ingrained in each and every worker's mind</li> <li>- provide adequate Personal Protection Equipment (PPE) where necessary</li> <li>- keep first aid kits well-stocked with medicine and drugs</li> <li>- plan and manage for effective emergency response</li> <li>- provision of firefighting equipment and tools,</li> <li>- provision of adequate sanitation – eg. toilets, clean water,</li> <li>- apply safe and effective procedures for storages of fuel and chemicals; display warning sign/pictogram</li> </ul>
3	Impact on air quality	<ul style="list-style-type: none"> <li>- plan in the Pre-construction Phase for the procurement of equipment, vehicles that emit less smoke (to be certified for emission compliance)</li> <li>- keep equipment and vehicles well-maintained, well-operated and well-lubricated</li> <li>- avoid open burning of debris</li> <li>- spray water for suppression of dust</li> </ul>



		<ul style="list-style-type: none"> <li>- restrict vehicular movement; maintain road clear of mud and dirt</li> <li>- provide PPE to workers who are exposed to smoke or dust for long period</li> </ul>
4	Noise and vibration quality	<ul style="list-style-type: none"> <li>- plan in the Preconstruction Phase for procurement of equipment, machinery and vehicle that emit lower noise level (that is eco-friendly equipment vehicles).</li> <li>- plan for noise management to meet NEQEG guideline values for noise and vibration.</li> <li>- avoid construction works at night;</li> <li>- schedule high noise activities only during day time hours.</li> <li>- limit transportation during unsocial hours to reduce noise.</li> <li>- switch off or throttle down equipment during idle hours.</li> <li>- limit the speed of vehicle to mitigate noise as well as vibration.</li> <li>- if possible install silencers, noise abators on inlet and outlet of fans to reduce noise level.</li> <li>- keep machinery and equipment well-maintained, well-operated and well lubricated to reduce noise level.</li> <li>- design stable foundation to mitigate vibration; if possible install vibration absorbers.</li> <li>- provide PPEs, ear plugs, ear muffs to workers exposed to high noise level.</li> <li>- the local community should be able to file complaints regarding noise and vibration.</li> </ul>
5	Potential impact on soil	<ul style="list-style-type: none"> <li>- try to avoid potential destruction of soil profile</li> <li>- separate top soil (for later creation of green belt) from sub-soil (for construction work-earth filling etc.)</li> <li>- draw up a plan for prevention and mitigation of contamination of soil</li> <li>- prevent spill of fuel oil and chemicals; clean up spill with absorbent promptly (do not wash down with water)</li> <li>- properly instruct workers with respect to handling of fuel and chemical and cleanup of spills</li> <li>- implement soil conservation techniques to prevent soil erosion (during rainy season)</li> <li>- Prevent wash water from carrying earth and materials into drainage system</li> <li>- the ground should not be laid bare for long period during the rainy season</li> </ul>

		<ul style="list-style-type: none"> <li>- dispose all waste materials (from construction work and from domestic use) at approved land fill</li> <li>- train workers for good house keeping; do not litter</li> </ul>
6	Potential impact on water	<ul style="list-style-type: none"> <li>- plan and manage for the conservation of water</li> <li>- also plan and manage to prevent the pollution of natural pond water (no surface water to be impacted)</li> <li>- do not use water more than necessary during the Construction Phase</li> <li>- discipline workers for the conservation of water;</li> <li>- monitor the daily use of water for construction</li> <li>- avoid the spillage of fuel oil which will contaminate the soil and eventually ground water;</li> <li>- if there is spillage clean up spill with absorbent promptly (do not wash down with water)</li> <li>- bund fuel area to prevent spreading of fuel oil</li> <li>- avoid disposing of waste (solids and liquids) into water body, into the pond, and Sar Ta Linn Chaung, nearby</li> </ul>
7	Impact of waste (Construction waste)	<ul style="list-style-type: none"> <li>- draw up a plan for management of solid waste</li> <li>- avoid open burning of debris</li> <li>- clear the ground regularly; ensure dumping at approved landfill</li> <li>- educate workers for good housekeeping; do not litter</li> <li>- plan for reuse and disposal of construction tailings and left overs</li> <li>- at the end of Construction Phase put up construction spoils, left over materials for sale</li> <li>- hire a contractor and party for tidying up the site after Construction Phase</li> </ul>
8	Potential social impact/issue	<ul style="list-style-type: none"> <li>- draw up a plan for management of social illness and anti-social behaviour</li> <li>- educate and train workers on discipline and code of conduct</li> <li>- try to build good relation with the locals</li> <li>- conduct public consultation so that the locals will have a positive perception on the project</li> <li>- educate the workers for appropriate behavior when dealing with locals; to respect their culture and tradition</li> <li>- manage misbehavior and social illness of workers</li> <li>- deal with workers on a fair and square basis</li> </ul>

		<ul style="list-style-type: none"> <li>- maintain the good relation between the company and the locals</li> <li>- provide adequate welfare programme for workers</li> </ul>
9	Potential security issue	<ul style="list-style-type: none"> <li>- draw up a security management plan</li> <li>- campaign against social evil to ensure security and order</li> <li>- undertake effective walling of the compound</li> <li>- set up security gates; deploy adequate guards or watchmen</li> <li>- store building materials under lock and key as far as possible</li> <li>- apply punitive measures, such as suspension or termination of employment if necessary</li> <li>- provide ID cards for all workers for easy identification</li> </ul>

### 3. During the Operation Phase

Sr. No	Impact	Mitigation
1	Potential traffic issue	<ul style="list-style-type: none"> <li>- draw up a traffic management plan</li> <li>- schedule the logistics; avoid rush hours; avoid road with heavy traffic road; if possible</li> <li>- educate drivers, staffs (motorists and motorcyclists) for defensive driving; drive at reduced speed; follow road regulations</li> <li>- set up signage or traffic sign at the entrance of the site and suitable places</li> <li>- avoid overloading of truck, or any vehicles</li> <li>- regular maintenance of cars and motor bikes</li> <li>- keep a log book for each vehicle</li> <li>- aim to achieve zero road accident</li> </ul>
2	Impact on air quality	<ul style="list-style-type: none"> <li>- draw up a plan and implement for air quality management for the long term Operation Phase</li> <li>- spray water adequately to suppress dust</li> <li>- also deploy sweepers to clean dirt</li> <li>- reduce the speed of vehicle to reduce dust generation</li> <li>- avoid open burning of solid waste</li> <li>- use well-maintained and well-operated equipment and vehicles</li> </ul>

		<ul style="list-style-type: none"> <li>- use vehicles and machines that emit less smoke and use less fuel (procure ecofriendly vehicles and machinery in the first place)</li> <li>- conserve fuel and prevent unnecessarily emission of gas (smokes)</li> <li>- plant trees and create green zone; trees will sequestrate CO<sub>2</sub> in the smoke</li> <li>- provide adequate PPE such as face masks, nose and mouth covers to workers</li> </ul>
3	Noise and vibration	<ul style="list-style-type: none"> <li>- plan for effective management of noise and vibration</li> <li>- restrict or limit vehicular movements</li> <li>- plan for appropriate choice of machinery and vehicles (that emit low noise level); method of working, efficient material handling</li> <li>- installation of noise abating devices eg- silencers, mufflers at air inlet and outlet of fan and compressor; place noisier sources far away in overall design</li> <li>- well-operated and well-maintained vehicles and machinery generate lower noise level and prevent undesirable noise level</li> <li>- develop green belt (plant trees) around the factory; trees abate noise and serve as noise sink (pollution sink)</li> <li>- create smooth road surface as far as possible to mitigate vibration due to vehicular movement</li> <li>- create suitable foundation design for machinery and equipment (eg. grinder, compressor and pumps etc.) to mitigate vibration</li> <li>- if necessary install vibration absorbers or vibration abators</li> <li>- provide adequate PPE eg- ear muffs, ear protectors to workers exposed to long hours of high noise level; conduct regular noise monitoring to ensure that the levels are within noise exposure standard (not higher than 85-90 dBA)especially for generators and pumps</li> </ul>
4	Impact of project on gridline electricity and vice versa	<ul style="list-style-type: none"> <li>- consider for application of environmentally sound idea and technology when sourcing for electricity</li> <li>- acquire conservation of energy knowledge in the planning and design phase of the factory</li> <li>- plan and manage for the conservation of electricity energy</li> </ul>

		<ul style="list-style-type: none"> <li>- design the building to take advantage of sunlight and air flow</li> <li>- ensure that the consumption of electricity be in the work frame as stated earlier</li> <li>- monitor electricity consumption weekly</li> <li>- use electrical equipment, devices that are energy efficient, particularly use energy efficient equipment associated with heating, ventilation, air conditioning and cooling (HVAC)</li> <li>- use day light as much as possible</li> <li>- ensure that the backup generator is operational immediately after power outage or use automatic backup system</li> <li>- liaise with electricity authority from time to time</li> </ul>
5	Impact of wastes (solid & liquid)	<ul style="list-style-type: none"> <li>- plan and implement the management of wastes</li> </ul> <p><b>For liquid wastes</b></p> <ul style="list-style-type: none"> <li>- monitor waste water drainage from time to time, especially for domestic waste water and storm water</li> <li>- The domestic waste water from a few employees reside in the housing (only 4 family members and 7 bachelor workers) will also simply flows down the drain and dry up (no need for special treatment)</li> <li>- The domestic black water (from toilet) will end up in septic tank and soak pit (no need for vacuum truck to remove the sewage)</li> <li>- ensure that waste water is not discharge into watercourse, that is into Sar Ta Linn stream</li> </ul> <p><b>For solid waste in general:</b></p> <ul style="list-style-type: none"> <li>- dispose the solid wastes inside the factory at an approved landfill or dumping site</li> <li>- avoid open burning of debris or trash in the compound</li> </ul> <p><b>For solid waste inside the plant</b> and at the office and messing room at housing etc. (domestic waste)</p> <ul style="list-style-type: none"> <li>- implement organic-waste compositing of some wastes from the kitchen for organic fertilizer to apply in lawn, and green</li> <li>- dispose waste only after all waste prevention and possible recycling strategies have been explored (adhere to the principles of 4 Rs, reduce, reuse, recover and recycle as far as possible)</li> </ul>

		<ul style="list-style-type: none"> <li>- dispose wastes only at approved landfill</li> <li>- return packaging materials such as plastic, paper and drums etc. to supplier for reuse; recycle packaging materials whenever possible</li> <li>- give priority to reduction of solid waste, recovery and reuse</li> </ul>
6	Occupational Health and Safety issue (Accidents at workplace)	<ul style="list-style-type: none"> <li>- draw up a comprehensive plan and manage for the safety working conditions for workers</li> <li>- educate, train and supervise workers for good working practice, good engineering practice, good safety practice and good housekeeping practice so that all these good practices are ingrained in their minds and become good habits; especially train them for correct use of machinery and safety devices; correct lifting technique; where possible install mechanical lifting aids. eg. forklift,</li> <li>- educate, train and supervise them for skills; for handling and operation of equipment; handling and application of chemicals; especially harmful one</li> <li>- educate them for good health practice, hygiene, environmental awareness and occupational health hazards</li> <li>- all workers must pass a medical examination prior to employment</li> <li>- conduct yearly medical checkup for workers</li> <li>- draw a programme for workers' health monitoring and implement it</li> <li>- provide free Medicare for workers</li> <li>- compensation, rehabilitation and curative services shall be made available to workers who suffer occupational injuries, accidents and work related diseases</li> <li>- toxic and hazardous chemical, if any, shall be stored in a safe place (enclosed and secured room with roofing and concrete floor) and labeled with pictograms</li> <li>- maintain and inspect storage unit regularly</li> <li>- keep all machinery, equipment and vehicles well-maintained, well-operated and well-lubricated;</li> <li>- check on automatic safeguards on machines to prevent accidental injuries</li> <li>- beware of all the common accidents and common injuries mentioned earlier that used to happen (as well as potential accidents and injuries) and implement a prevention, protection and mitigation measures for each</li> </ul>

		<ul style="list-style-type: none"> <li>- provide adequate PPEs – outfits, boots, helmet, gloves, face mask, goggles, ear muff, ear plug, etc. also tools such as sit – stand tools for workers who have to stand for long hours</li> <li>- also provide adequate First Aid Kits well-stocked with medicines &amp; drugs</li> <li>- provide adequate sanitation facility eg. toilets, clean water, baths room etc. for workers</li> <li>- minimize manual labour; maximize mechanical labour</li> </ul>
7	Potential social impact	<ul style="list-style-type: none"> <li>- try to build and maintain good relation with the locals; avoid friction between the locals and the company as far as possible.</li> <li>- conduct public consultation from time to time so that the locals will have a positive perception of the project</li> <li>- educate workers for appropriate behaviours when dealing with locals; to respect their culture and tradition</li> <li>- discipline workers for work place regulation and code of conducts including social conduct</li> <li>- take disciplinary action/punitive action for wrong doer eg. suspension, discharge</li> <li>- prevent and manage disputes, quarrels, brawls among workers and also between workers and locals.</li> <li>- strictly prohibit the drinking of alcohol during working hours; totally ban the use of narcotics</li> <li>- deal with workers on a fair and square basis – (not overworked, underpaid)</li> </ul>
8	Potential security issue	<ul style="list-style-type: none"> <li>- plan and manage for site security</li> <li>- ensure that the fence/wall is secure</li> <li>- do not let the assembly plant become a soft target for terrorists</li> <li>- implement strict security as far as possible</li> <li>- deploy adequate security staffs; security guards at gate; inside factory and at office</li> <li>- perform security check on each and every one entering and leaving the factory</li> <li>- in addition to worker suits issue Identity Cards for all employees for easy identification</li> <li>- campaign against social evil to ensure security and order</li> </ul>

#### 4. During the Decommissioning Phase

Sr. No	Impact	Mitigation
1	Potential accidents at workplace (OHS issue)	<ul style="list-style-type: none"> <li>- plan and manage for safe and effective decommissioning work</li> <li>- hire a decommissioning contractor and party for the demolition of buildings/structures and dismantling of equipment; and also for tidying up the site</li> <li>- dispose those that are no longer usable at the approved landfill</li> <li>- obsolete machinery and equipment shall be made into scrap and sent to smelting mill</li> <li>- put up for sale materials and machinery that are still usable and saleable</li> <li>- remove soil contaminated by fuel and/or chemical spills, if any, and dispose at the landfill</li> </ul>
2	Potential residual issue	<ul style="list-style-type: none"> <li>- clear and remove all residual eg- chemicals, if any</li> <li>- remove all soil contaminated by the fuel oil, if any</li> <li>- test the soil for the last time to ensure that no contaminants remain</li> <li>- test the water and air for the last time for contamination</li> <li>- restore the plot and soil to its original condition</li> <li>- vegetate or rehabilitate the plot</li> </ul>

#### Positive impact during the Construction Phase

The project has boosted the local economy and brought economic benefit to locals who were involved in extraction and sale of building materials e.g. sand, gravel, bricks, timber.

Jobs were provided for 100 construction workers, who have also gained knowledge and skill from foreigners. At the national level there is direct investment of Ks 2863.62 million (including USD 1.62 millions) raising the GDP of the nation.

#### Positive impacts during the Operation Phase

135 people will have long term employment with salaries ranging from Ks 180,000 – 210,000 (salaries will increase every two years). The follow up benefit after investment by the company will be in the form of income tax, duties and revenues from the project.



Above all, the project will contribute to the development of the Industrial Sector of the Nation, especially the automobile industry.

#### Likelihood and severity of natural and industrial hazards

The area is a flat low land and about 100 miles away from the coast. There is no mountain range between and the area is directly under the influence of the south west monsoon during the west season. The coastal areas of Rakhine and Ayeyarwaddy are prone to Cyclone but this area is relatively safe. The area is not far from (about 10 miles) the southern tip of Sagaing Fault line but it is not prone to earthquake but only small tremors infrequently.

As regards industrial hazards the auto-parts assembling plant does not pose any industrial hazards. There will be no smoke and substantial affluent; no chemicals or hazardous substances are used.

All these are described in technical details in Chapter 6.

#### **Cumulative impact assessment**

No simultaneous cumulative impact (impact happening at the same time from other sources) are envisaged as there are no other project in the area. This auto-part assembling plant is the only project in the whole area.

As the auto-part assembling plant is rather a "smoke less factory" and "non-effluent generating factor" the impacts are mostly minors. The incremental or successive cumulative impact over the years can be also, on the whole, insignificant as mitigation will be put in place for all impacts.

It mitigation measures to be taken are taken for each and every minor impacts in a timely manner there can be no cumulative impact over the years.

However, as the plant has a target for producing up to 5000 assembled sedan cars per year after 5 years in operation the emission from the 5000 cars can be substantial. (In other words) the assembling plant will indirectly contributed to incremental cumulative impact on air environment over the years.

#### **Environmental Management Plan (EMP)**

Environmental management plan is the key to ensure that the environmental quality of the area does not deteriorate due to the implementation of a project. EMP involved the management of the overall environmental issue encompassing the physical, biological, socio-economic, cultural and visual components issue.

The overall EMP addresses the operation of an auto-parts assembling plant in an environmentally sound manner. EMP is essential effectively throughout the life of the project. In addition monitoring of the environmental parameter are conducted in an effective manner. Monitoring Plan (MP) is imperative.

In this long chapter on EMP health policy and commitment are mentioned. (The project environmental, socio-economic and legal requirement and institutional arrangement are already described earlier in Chapter – 3).

Summary of impacts and mitigation measures are briefly mentioned again in tabulated form.

#### Overall budget for implementation of EMP

5% of the budget, equipment to Ks 208,896,965 is set aside as EMP fund.

The sub-budget allotted for each programme under EMP and MP are as follow:

- Cost of organizing EMP 2% of EMP fund (Ks 4,107,939)
- Cost for actual execution and dissemination of EMP in the forms of:
  - (a) Taking mitigation measure 25% of EMP fund(Ks 52,224,241)
  - (b) Monitoring actions 25% of EMP fund (Ks 52,224,241)
- Cost for partial procurement of equipment and materials 20% of EMP fund (Ks 41,779,393)
- Cost for capacity building and training 7% of EMP fund (Ks 14,622,787)
- Cost for emergency/contingency (for protoable emergency cases) 10% of EMP fund(Ks 20,887,696)
- Cost for reporting, documentation work 8% of EMP fund (Ks 16,711,757)
- Miscellaneous (including casual fees for two villagers, who are EMP cell members) 3% of EMP fund (Ks 6,266,908)

The EMP fund cannot cover the whole life of the project of 30 plus years. The fund is simply seed money; as time goes on more money will have to be added to the fund. Labour cost will be kept at a minimum. Only staff will be involved in the implementation of EMP and MP. Staff will be first trained for the purpose.(there are no EMP contractors in Myanmar yet)

The long section on management and monitoring sub-plan (MMSP) by project phase addresses and satisfy all the following relevant environmental and social management and monitoring issues:

- noise and vibration; waste; hazardous waste; waste water and storm water; air quality; odour; chemicals; water quality, erosion and sedimentation; biodiversity; occupational and community health and safety; cultural heritage, employment and training; emergency response; traffic and social issues.

The content of each sub-plan: covers objectives, legal requirement, overview map and satellite layout; implementation schedule, management actions, monitoring plan and projected budget and responsibilities.

All are briefly mentioned; emphasizes are given on management actions and monitoring plan. A nucleus organization, EMP cell will be formed and EMP cell leader and members will be responsible for the effective implementation of EMP.

### **Management actions for each sub-plan**

Overall environmental and social management sub-plans and implementation of sub-plans are described in 8.5 (in tabulated form), in accordance with EIA Procedures, 2015, prescribed by ECD.

For practical purpose management actions plans for:

- air quality and emission
- noise and vibration
- water quality and waste water
- solid wastes
- soil (emission and sedimentation) and
- Occupational health and safety

During the Construction Phase and Operation Phase are described below:

### **During the Construction Phase**

#### **1. Air quality and emission management action plan**

Objective : The main objective is to mitigation/reduce emission (smoke or gaseous emission) and control air quality as practical as possible.

Legal requirement : will comply with NEQEG emission guideline (2015), Code No.1.1 prescribed by ECD in EIA procedure (2015)

Management actions : The following will be implemented for all emission (fugitive emission of smoke and dust), during the Construction Phase. These have been extracted from mitigation measures described later in Chapter 6, 6.2 and Chapter 8, 8.5 (tabulated form) and are summarized as below:

- Comply with NEQEG emission guideline.
- Do not clear vegetation more than necessary.
- Procure equipment that are environmentally friendly, that emit less smoke.
- Keep equipment and vehicle well-operated, well-maintained, and well-lubricated to reduce emission, if possible.

- Use fuel oil low in sulphur, if possible.
- Avoid open burning of debris.
- Spray water for suppression of dust.
- Restrict vehicular movements.
- Limit open stockpile of earth, sand, etc.
- Provide PPE, face mask, nose and mouth covers to workers where necessary.
- Conduct regular monitoring (semiannually); hire technicians for this.

## **2. Noise and vibration management action plan**

Objective : To mitigate/reduce noise and vibration level, generated from the construction activities.

Legal requirement : Will comply with NEQEG emission guideline, 2015, prescribed by ECD, Code No.1.3.

Management actions : The following will be implemented for the control/mitigation of noise level and vibration generated from the construction activities.

These have been extracted from mitigation measures described later in Chapter 6, 6.2 and overall Chapter 8, 8.5 in tabulated form, and summarized as below:

- Will comply with NEQEG emission guideline (2015) prescribed by ECD, Code No.1.3
- Procure eco-friendly machinery that emits lower noise level in the first place.
- Noisy machine to be fitted with noise muffler or silencer, if possible.
- Keep machinery and vehicle well-operate, well-maintained and well-lubricated to reduce noise level.
- Ensure that foundations for equipment are stable to mitigate vibration.
- Restrict/limit truck movement.
- Keep the road surface smooth and flat (to mitigate vibration)
- Construction activities must be during day time (no construction at night).
- Keep big trees, if any, intact to absorb noise.
- Provide PPE, ear muffs, to workers necessary.
- Conduct regular monitoring (semi-annually); hire technicians.

### **3. Water quality and waste water management action plan**

Objective : Not to impact any surface water surface or underground quality and to manage the waste water (effluent).

Legal requirement : Will comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2.

Management action : The followings will be implemented to control water quality and manage effluent.

These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and Chapter 8, 8.5 (tabulated form) and summarized as below:

- Comply with NEQEG emission/effluent guideline
- Plan and manage for prevention on the water emission; manage so that construction activities do not impact surface or ground water.
- Create systematic drainage system at construction site to manage waste/used water; also drainage system to manage storm water.
- Keep natural drainage of the area intact; ensure that construction of access road, and factory site do not damage natural drainage.
- Store fuel oil as well as used oils at a designated banded side.
- Avoid contamination of surface or underground water:
- Avoid accidental spillage; should spillage occur do not waste down with water (to prevent percolation), but immediately remove with absorbents or saw dust.
- Avoid disposing of waste to any water body.
- Educate workers for conservation of water.
- No specific waste water treatment during Construction Phase.
- Test water quality and effluent every six months; hire technicians.

### **4. Waste management action plan**

Objectives : To mitigate/reduce construction waste and domestic waste.

Legal requirement : Will comply with Environmental Conservation Law, 2012 and Environmental Conservation Rules, 2014, (to discharge the wastes in accord with environmentally sound methods and not to pollute the environment).

Management actions : The following will be implemented for the management of wastes. These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and from EMP sub-plan, Chapter 8, 8.5 (in tabulated form) and summarized below:

- Will comply with Environmental Conservation Law, 2012. Articles 14, 15, 32; Environmental Conservation Rules, 2014; Rule 69.
- Educate and train workers for the proper handling of wastes, and minimize waste.
- Separate waste into recyclable and non-recyclable ones; use separate waste bin.
- As regard construction waste – ensure large quantity of construction waste and left over are temporarily dumped inside the construction site in a systematic way.
- Surplus or left over material to be put up for sale later.
- After completion of construction works hire a contractor and party for tidying up the site.
- Materials that should be disposed off will be disposed at the approved landfill.
- Avoid open burning of debris by all means.

#### **5. Soil management action plan (erosion and sedimentation)**

Objectives : To avoid and prevent soil erosion and prevent the destruction of soil structure and profile due to construction activities.

Legal requirement : To comply with Environmental Conservation Law, 2012.

Management action : The following will be implemented for the management of soil. These have been extracted from mitigation measure described in Chapter 6, 6.2 and EMP sub-plan, Chapter 8, 8.5 and summarized below:

- Ensure that when doing construction works soil structure and profile are not destructed more than necessary
- Keep top soil and subsoil separately (backfill subsoil first and then top soil on top facilitate revegetation.
- Avoid contamination of soil as much as possible; no fuel spill or leaked; should there is a spill do not wash down with water (to prevent percolation into soil); remove spill immediately with absorbents (rags, saw dust); prevent spreading of spill.
- Schedule the construction work so that large area of soil is not laid bare during monsoon month.
- Resurface and stabilize exposed ground surface after earth work.
- Soil compacted by heavy trucks/machinery to be raked and restored.
- Prevent soil erosion and sedimentation, especially during monsoon season.
- Run off from area adjacent the site will be diverted.

## **6. Occupational Health and Safety management action**

Objectives : Try to achieve zero accident at work place as practical as possible.

Legal requirement : To comply with Occupational Health and Safety Law, 2019 (depicted in Chapter 3)

Management actions : The following will be implemented. These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and in EMP sub plan, Chapter 8, 8.5 and summarized below:

- Plan and manage for zero accident.
- Create a safe working place and working condition.
- Educate train and supervize workers for good working practice, good safety practice and good housekeeping practice so that these good practices will be in grained in each and every worker's mind.
- Provide adequate lavatory facility, bath and washing area; potable water.
- Provide adequate PPE, where necessary.
- Provide First Aid training for some staff; keep First Aid Kit well-stocked with medicines and drugs.
- Develop emergency response plan for any unexpected accidents and injuries.
- Display phone numbers of Ambulance service, Red Cross Society, Hospital, Fire brigade etc.
- Maximize mechanical labour and minimize manual laobur as far as possible to prevent workers for over exertion, excessive repetitive motions, and to reduce fatigue, strain and injury on workers.
- Cover the whole structure during Construction Phase with lace or netting to prevent accidental falling of objects (a common civil engineering practice).

### **During the Operation Phase**

#### **1. Air quality and emission management action plan**

Objective : The main objective is to mitigation/reduce emission and control air quality as practical as possible.

Legal requirement : will comply with NEQEG emission standards guideline (2015), Code No.1.1 prescribed by ECD in EIA procedure (2015)

Management actions : The following will be implemented for all emission (point soure emission or stationary emission and fugitive emission of smoke and dust), generated from the operation of the project. These have been extracted from mitigation measures described later

in Chapter 6, 6.2 and environmental management sub-plans in Chapter 8, 8.5 (tabulated form) and are summarized as below:

- All air emission will comply with NEQEG emission standards values guideline mentioned above.
- Procure eco-friendly machinery that emits less smoke in the first place.
- Spray water for fugitive emission of dust; daily or as required (during dry months).
- Restrict/reduce vehicular movement (speed limit 20 mph).
- Always avoid open burning of debris and trash.
- Develop green belt (plant fast growing trees) for trapping dust.
- Keep equipment and vehicles well-operated, well-maintained and well-lubricated to reduce smoke.
- Provide PPE (e.g. face mask, mouth and nose cover where necessary).
- Implement GRM, so that locals can file complaint regarding smoke and dust.
- Conduct regular monitoring (Preferable every 6 months; hire technicians for this).
- Conduct daily overall visual inspection of smoke and dust condition.
- Monitor effectiveness of mitigation measures taken, weekly or monthly.

## **2. Noise and vibration management action plan**

Objective : The main objective is to mitigate/reduce noise and vibration level, generated from the operation of the factory.

Legal requirement : Will comply with NEQEG emission guideline, 2015, prescribed by ECD, Code No.1.3.

Management actions : The following will be implemented for the control/mitigation of noise level and vibration generated from the operation of the factory.

These have been extracted from mitigation measures described later in Chapter 6, 6.2 and overall environmental management sub-plans described later in Chapter 8, 8.5 in tabulated form, and summarized as below:

- Will comply with NEQEG emission guideline (2015) prescribed by ECD, Code No.1.3
- Procure eco-friendly machinery that emits lower noise level in the first place.
- Install noise abating device e.g. silencer, muffler, where possible.
- Ensure that foundations for machinery/equipment are stable to mitigate vibration.



- Keep machinery and vehicle well-operated, well-maintained and well-lubricated to mitigate noise and vibration.
- No auto-parts assembling work at night
- Restrict/limit vehicular movement to mitigate vibration.
- Create smooth road surface to mitigate vibration.
- Develop green belt (plant fast growing grees) around the compound to abate noise.
- Provide PPE e.g. ear muffs, ear protectors where necessary.
- Conduct regular monitoring, preferably every 6 months; hire technicians for this.
- Conduct regular daily inspection of noise condition.
- Implement GRM (the locals can file complaints regarding noise).
- Regularly monitor the effectiveness of mitigation measures taken weekly or monthly.

### **3. Water quality and waste water management action plan**

Objective : The main objective is not to impact any surface or underground water quality and to manage the waste water (effluent).

Legal requirement : Will comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2 (generally application).

Management action : The followings will be implemented to avoid the impact of waste water and to control/mitigate and manage waste water.

These have be excerpted from mitigation measures described later in Chapter 6, 6.2 and overall environmental management sub-plans edscribed later in 8.5 (tabulated form) and summarized as below:

- Comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2
- Provide potable drinking water for staff.
- Ensure that all activities do not impact the stream water.
- Prevent erosion (especially along Sar Ta Linn Chaung bank during rainy season).
- Avoid disposing of all waste, (solid and liquid) into any water body by all means.
- Prevent oil spills or oil spread into any water body.
- Adhere to the principle of water conservation; educate staffs for this.
- In auto-parts assembling no industrial waste water is produced; only used water.
- Set up network of drainage system for domestic waste water and storm water.
- Domestic waste water (brown water) from office, dormitory, kitchen, baths etc. will dry up in the drain (no special treatment required).

- Black water for toilets will end up in septic tanks and soak pits.
- Monitor water quality regularly (preferably every 6 months, hire technicians for this).
- Conduct weekly visual inspection of water condition.
- Monitor effectiveness of mitigation measures taken, weekly or monthly.

#### **4. Waste (solid waste) management action plan**

Objectives : The main objective is to mitigate/reduce industrial waste and domestic waste.

Legal requirement : Will comply with Environmental Conservation Law, 2012 and Environmental Conservation Rules, 2014. That is to discharge the wastes in accord with environmentally sound methods and not to pollute the environment.

Management actions : The following will be implemented for the management of wastes generated. These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and EMP sub-plans Chapter 8, 8.5 (tabulated form) and summarized as below:

- Will comply with Environmental Conservation Law, 2012. Articles 14, 15, 32; Environmental Conservation Rules, 2014; Rule 69.
- Educate and train staffs for the proper handling of wastes, educate them for good housekeeping, and minimization of waste as practical as possible.
- In auto-parts assembling the only main industrial waste is old packing materials e.g. wood, plastic, foam.
- As for domestic wastes collect them daily in small waste baskets or big garbage bins (waste baskets in office and dormitory; big bins placed in kitchen and elsewhere inside the compound) daily and dispose them.
- Separate waste into recyclable and non-recyclable ones; dispose only those that are non-recyclable.
- Avoid open burning of solid wastes.
- Monitor waste management fortnightly or monthly.
- Monitor the effectiveness of mitigation measures taken.
- Implement GRM (locals can file complaint regarding waste).

#### **5. Soil management action plan (erosion and sedimentation)**

Objectives : The main objective is to avoid and prevent soil erosion and prevent the destruction of soil structure and profile due to activities of the project.

Legal requirement : To comply with Environmental Conservation Law, 2012.

Management action : The following will be implemented for the prevention of soil erosion and destruction of soil structure. These have been excerpted from Chapter 8, 8.5 EMP sub-plan (tabulated form) and summarized as below:

- Ensure that there is no contamination of soil; avoid spillage of fuel on soil, remove the spill immediately.
- Ensure that project activities do not impact soil structure (during the rainy season).
- Ensure that soil is stable and not easily eroded; compact soil where possible.
- Minimize the area of bare soil exposed (plant, grass and trees where possible to prevent erosion).
- Control run off and storm water (create reliable drainage system; divert storm water so that it can flow freely into the Sar Ta Linn Chaung).
- Ensure that no erosion and sedimentation taking place along the bank of Sar Ta Linn Chaung
- Prevent dirt and debris getting into the drainage causing siltation.
- Monitor the soil condition weekly or monthly.
- Monitor the effectiveness of mitigation measures taken (weekly or monthly during rainy season).

## **6. Occupational Health and Safety management action**

Objectives : to avoid/prevent health impact on workers and try to achieve zero accident at work places as far as possible.

Legal requirement : To comply with Occupational Health and Safety Law, 2019

Management actions : The following will be implemented. These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and in EMP sub plan, Chapter 8, 8.5 and summarized below:

- Create safe working place and working condition.
- Educate, train and supervise workers for good working practice, good engineering practice, good safety practice, and good health and hygiene practice so that these good practices will be ingrained in their mind sets.
- Apply mechanical rather than manual works and also apply automation system as far as possible.
- Train them for safety handling of materials for safety and efficient operation of all machinery and equipment.
- Organize induction effective induction training; provide work manuals and safety manual.

- Organize OHS training for all workers.
- Avoid accidental fire and explosion by all means.
- Set up alarm systems.
- Provide basic First Aid training and Firefighting training for some workers; provide adequate equipment facility.
- Develop plan for emergency response.
- Take out insurance for the plant and consider for life insurance for workers.

### **During the Decommissioning Phase**

Objectives : To undertake systematic decommissioning and rehabilitation of the site.

Legal requirement : To comply with Environmental Conservation Law, 2012 and Occupational Health and Safety Law, 2019.

Management actions : The following will be implemented. These have been excerpted from mitigation measures described later in Chapter 6, 6.2 and EMP sub plan, Chapter 8, 8.5 and summarized below:

- Plan and manage for safe and effective decommissioning work;
- Hire a decommissioning contractor and party for demolition of buildings and structures and dismantling of equipment and tidying up the site.
- Put up for sale those that are still useable and saleable; dispose those that are not.
- Soil, if contaminated will be removed and disposed.
- Test air, water and soil quality for the last time to ensure that they are within guideline values (that air, water and soil are not polluted, no erosion of soil).
- Plant trees and commence rehabilitation work and ensure that the site is ecologically restored.
- Ensure for effective restoration/reforestation; all replanted trees are well-established.
- Monitor the effectiveness of decommissioning and rehabilitation works.
- Ensure that the site is safe for local communities after decommissioning and rehabilitation.

## Monitoring Plan

Comprehensive monitoring plan for each project phase are described in details (in tabulated) in Chapter 6, 6.2.5.

Specific monitoring plan for physical component are again shown in tabulated form.

### Summary of monitoring programme for Construction Phase in tabulated form (the pragmatic approach)

Sr. No	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Cost (once off cost)
1.	Air environment/ air emission	- monitor ambient air - monitor all the parameter for emission shown in the NEQ emission guideline values prescribed by ECD, Code no.1.1	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 1,700,000
2.	Noise and vibration	- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD, Code no.1.3	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 70,000
3.	Water environment/ effluent	- monitor all the parameters for the effluent shown in the NEQ effluent level values prescribed by ECD for construction phase, Code no.1.2	17° 3'27.44"N 96°18'22.22"E	Once during construction phase	Hired technicians	Ks 80,000
4.	Contamination of soil and ground water	- monitor spillage of fuel oil, grease, chemical, etc, if any	17° 3'26.09"N 96°18'21.80"E	Weekly	EMP cell members	Free of charges

5.	Erosion and siltation	- monitor earth work and drainage system	17° 3'24.98"N 96°18'22.57"E	Weekly (especially during rainy season)	EMP cell members	Free of charges
6.	Solid waste (construction tailing, debris)	- monitor type, amount generated reused, recycled, and disposed of	17° 3'26.96"N 96°18'21.46"E	Weekly	EMP cell members	Free of charges
7.	Biodiversity component	- monitor clearing of grass and small vegetation	17° 3'28.09"N 96°18'20.03"E	Weekly	EMP cell members	Free of charges
8.	Plan for prevention of fire outbreak	- monitor the plan and the readiness for prevention of fire - monitor the stock piling of building materials that can easily catch fire	17° 3'27.20"N 96°18'24.67"E	Weekly	EMP cell members	Free of charges

### Summary of monitoring programme for Operation Phase (tabulated form)

#### (a) The pragmatic approach

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Costs (once off cost)
1.	Emission	- monitor all the parameters for emission for comparison with NEQEG emission guideline values prescribed by ECD Code no.1.1	17° 3'25.75"N, 96°18'24.11"E	- Every six months	- Hired technicians	- Ks 1,700,000
2.	Effluent	- monitor all the parameters for effluent for comparison with NEQEG effluent guideline values prescribed by ECD Code no.1.2	17° 3'25.31"N 96°18'17.30"E	- Every six months	- Hired technicians	- Ks 80,000

3.	Noise and vibration	<ul style="list-style-type: none"> <li>- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD Code no.1.3</li> <li>- monitor the wearing of PPE</li> </ul>	<p>17° 3'25.75"N, 96°18'24.11"E</p> <p>At work place near noisy machine</p>	<ul style="list-style-type: none"> <li>- Every six months</li> <li>- From time to time</li> </ul>	<ul style="list-style-type: none"> <li>- Hired technicians</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Ks 70,000</li> <li>- Free of charge</li> </ul>
4.	Soil	<ul style="list-style-type: none"> <li>- monitor contamination of soil (if any)</li> <li>- monitor soil erosion (if any)</li> </ul>	<p>17° 3'27.32"N, 96°18' 20.09"E</p> <p>Inside the compound</p>	<ul style="list-style-type: none"> <li>- From time to time</li> <li>- Rainy season</li> </ul>	<ul style="list-style-type: none"> <li>- Hired technicians members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Ks 140,000</li> <li>- Free of harge</li> </ul>
5.	Solid waste	<ul style="list-style-type: none"> <li>- monitor the packing materials collection and disposal</li> <li>- monitor trash/garbage generated, collection and disposal</li> </ul>	<p>17° 3'27.83"N 96°18'19.46"E</p> <p>Inside the compound</p>	<ul style="list-style-type: none"> <li>- Daily</li> <li>- Weekly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> <li>- Free of charge</li> </ul>
6.	Waste water	<ul style="list-style-type: none"> <li>- monitor the management of domestic waste water</li> </ul>	<p>17° 3'27.51"N 96°18'21.51"E</p>	<ul style="list-style-type: none"> <li>- Daily</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> </ul>

**Summary of monitoring programme for Decommissioning/Rehabilitation Phase (tabulated form)**

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Remarks
1.	Decommissioning and Rehabilitation	<ul style="list-style-type: none"> <li>- monitor the Decommissioning process including the removal of all residuals, if any</li> <li>- monitor rehabilitation process</li> </ul>	<ul style="list-style-type: none"> <li>- Inside the compound</li> <li>- Inside the compound</li> </ul>	<ul style="list-style-type: none"> <li>- Weekly</li> <li>- Monthly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> <li>- Free of charge</li> </ul>

These monitoring will be conducted semi-annually and report to the Environmental Conservation Department (ECD).

### **Public Consultation**

Public consultation is an integral part of EIA, IEE, and EMP. Involving public participation in the EIA work is imperative for increasing the understanding and acceptance of the project by the local communities.

Public consultation meetings will give the locals/stakeholders and Project Affected People (PAP) the opportunity to express their views, opinions, their concerns, if any, etc.

#### Public Consultation Meeting during scoping study

A preliminary public consultation meeting was held during the scoping study on 16-2-2019 at the village administrator office of Sar Ta Linn village and attended by 32 persons.

U Aung Zaw, the village administrator delivered an address. Daw Phyu Linn Myint, General Manager of the company explained about the detailed of the project. Then U Myint Kyaw Thura, leader of scoping team (MESC), explained to the participants about the scoping study to be conducted now and the follow up EIA study to be undertaken later.

During the meeting the local elders U Nit Sann, U Kyi Ngwe, U Aye Han, U Aye Kywel and U Hla Myint asked questions and tackled the issue raised by them.

The minutes of the meeting is described in details in Chapter.

Two issues were raised during the meeting.

1. U Nit Sann, the local elder, voiced his concern for the safety of the High School Students because the toilets of the school are close to the border fence of the assembling plant. Daw Phyu Linn Myint, General Manager of the company replied that soon concrete wall or secured fence will be built.
2. U Aye Han expressed his concern for the use of water by the locals from the two ponds inside the compound.

Daw Phyu Linn Myint replied that this will not be an issue because the company has a plan for upgrading the two water ponds inside the plant premise and plan for distribution of water to the locals.

U Kyi Ngwe, U Aye Kywel and U Hla Myint all enquired about employment opportunities for the village youths.

Daw Phyu Linn Myint replied that when employing workers first priority will be given to the people of this village.

The responsible persons of the project have already met with the village administrator and elder for many times and they are already familiar with this proposed project.



### Public Consultation Meeting during EIA study

The second public consultation meeting was held during the EIA study on 11-1-2022 at the meeting room of the auto-parts assembling plant.

Due to the prevailing of COVID-19 pandemic in the country the meeting was held with limited participants: 31 attendants.

The meeting was attended by the village administrator and village elders, U Aye Min Than, factory general manager of the assembling plant, U Myint Kyaw Thura, team leader of MESC and a few interested people.

U Myint Kyaw Thura (MESC, team leader) explained in relative details to the local participants about the auto-parts assembling project and for conducting EIA.

Member of the village administrator (Yar-eain-hmoo), U Thet Naing Win spoke in favour of the project saying that the local youth will have employment opportunities and that the plant will not emit any high level noise and odour.

One local, U Aye Lwin said that he has a shop near the project site and his business is now brisk and workers from project site are buying things from his shop. And that this project will not have any negative impact.

One local, U Tin Ko Lin also spoke in favour of the project saying that many locals from Sar Ta Linn, Dar Pein and Inn Taing villages are now employed at the assembling plant.

The meeting has ended in a friendly and cordial manner; no issue was raised the meeting.

The minutes of meeting is described in detail in Chapter 9 of the EIA report.

### Information disclosure

The detailed minutes of the first meeting and second meeting are distributed to all the participants and are also kept at the office of Aung Gabar Motor Services Co., Ltd and office of the consultant firm, MESC, for perusal by any interested person.

These minutes of meeting and records are also incorporated into the EIA report.

When this EIA report is approved by the authority part of this report (e.g. the Executive Summary) will be launched at the website of the consultant firm. [www.myanmarenviroinmentsustainableconservation.com](http://www.myanmarenviroinmentsustainableconservation.com). Copies of the approved EIA report will be kept at the company office for and interested person for perusal.

### Further ongoing public consultation

Public consultation meeting is a continuous process and will be held annually or bi-annually on situation during the long Operation Phase. The project proponent has a plan for such further ongoing public consultation meeting.

## 2. INTRODUCTION

### 2.1 Presentation of the project proponent

Aung Gabar Motor Services Co., Ltd was registered as a limited company in April, 2014 (Document: Company Registration No. 218/2014-2015, Dated: 10-4-2014, Certificate of Incorporation under the Myanmar Company Law). The new registration number is 108227338 (DICA).

Name of Project Proponent : Aung Gabar Motor Services Co., Ltd

Address (Head office) : No. 74 (1) Street, Ward No.8, South Okkalapa Township, Yangon

Telephone : 09 421054488, 09 421154777, 09 8616998

Website : [www.agb.com](http://www.agb.com)

Contact person : Daw Phyu Lin Myint, General Manager

Telephone : 09 5159165

Email : [miemie.agbs-miemie.agbs@aunggabar.com](mailto:miemie.agbs-miemie.agbs@aunggabar.com)

Location of project site : U Paing No. 56/2/Ka+56/2/Kha+56/2/Ga+ and 57/2, Plot no. 1082<sup>Ka</sup>, Sar Ta Linn Village Tract, Hlegu Township, Yangon Region

### Particulars of executive and administrative body

Name	Nationality & National Registration Card No.	Usual Residential Address	Designation	Other Business Occupation
U Aung Sein	Myanmar 9/MAYAMA (N) 078324	Pun Hlaing Golf Street, Lot. 79 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Managing Director	Merchant
Daw Ei Myo Myo Khine	Myanmar 13/TAKANA (N) 146644	Pun Hlaing Golf Street, Lot. 79 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant
U Myint Thein	Myanmar 9/MAYAMA (N) 079439	Pun Hlaing Golf Street, Lot. 81 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant
Daw Thandar Soe	Myanmar 9/MANAMA (N) 102491	Pun Hlaing Golf Street, Lot. 81 Pun Hlaing Golf Estate, Hlaing Tharyar Township, Yangon, Myanmar	Director	Merchant

Aung Gabar Motor Services Co., Ltd is 100% owned by Myanmar nationals.

Nominal amount of share so allotted : Ks 5,000,000

The number of share : 50

Amount paid or due and payable or cash such share : Ks 100,000 (fully paid)

Share holders

U Aung Sein - 25 shares

U Myint Thein - 25 shares



ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်  
Certificate of Incorporation

အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီ လီမိတက်  
**AUNG GABAR MOTOR SERVICES COMPANY LIMITED**  
Company Registration No. 108227338

မြန်မာနိုင်ငံကုမ္ပဏီများအက်ဥပဒေ ၁၉၁၄ ခုနှစ် အရ  
အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီ လီမိတက်  
အား ၂၀၁၄ ခုနှစ် ဧပြီလ ၁၀ ရက်နေ့တွင်  
အစုရှယ်ယာအားဖြင့် တာဝန်ကန့်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ  
အဖြစ် ဖွဲ့စည်းမှတ်ပုံတင်ခွင့် ပြုလိုက်သည်။

This is to certify that  
**AUNG GABAR MOTOR SERVICES COMPANY LIMITED**  
was incorporated under the Myanmar Companies Act 1914 on 10 April  
2014 as a Private Company Limited by Shares.

ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ  
Registrar of Companies  
ရင်းနှီးမြုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန  
Directorate of Investment and Company Administration



Former Registration No. 218/2014-2015

Figure – 1: Certificate of Incorporation



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်  
မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်  
ခွင့်ပြုမိန့်

ခွင့်ပြုမိန့် အမှတ်၊ မနသ-၁၂၆၇/၂၀၁၇ ။ ၂၀၁၇ ခုနှစ်၊ ဩဂုတ်လ ၂၅ ရက်

မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်သည် မြန်မာနိုင်ငံသားများ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ ပုဒ်မ ၁၂ ပုဒ်မခွဲ(ခ) အရ ဤခွင့်ပြုမိန့်ကို ထုတ်ပေးလိုက်သည်။

- (က) ရင်းနှီးမြှုပ်နှံသူ၏အမည် ဦးအောင်စိန်
- (ခ) အဘ အမည် ဦးရောင်ဝမ်ချင်
- (ဂ) နိုင်ငံသား/ အမျိုးသားမှတ်ပုံတင်အမှတ် ၉/မရမ(နိုင်)၀၇၈၃၂၄
- (ဃ) နေရပ်လိပ်စာ အမှတ်-၄၀(အေ)၊ ဖိုးစိန်လမ်း၊ နတ်မောက်ရပ်ကွက်၊ တာမွေမြို့နယ်၊ ရန်ကုန်မြို့
- (င) ဖွဲ့စည်းထားသည့်သို့မဟုတ်ဖွဲ့စည်းမည့်အဖွဲ့အစည်း အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက် (Aung Gabar Motor Services Company Limited)
- (စ) ရင်းနှီးမြှုပ်နှံမှုပြုလုပ်မည့်လုပ်ငန်းအမျိုးအစား မော်တော်ယာဉ်တပ်ဆင်ထုတ်လုပ် ရောင်းချခြင်းနှင့်ပြုပြင်ထိန်းသိမ်းခြင်းလုပ်ငန်း
- (ဆ) ရင်းနှီးမြှုပ်နှံမှုပြုလုပ်သည့်အရပ်ဒေသ(များ) ဦးပိုင်အမှတ်(၅၆/၂/က+၅၆/၂/ခ+ ၅၆/၂/ဃ+ ၅၇/၂)၊ ကွင်းအမှတ်-( ၁၀၈၂)၊ ဆားတလင်းကွင်း၊ ဆားတလင်းကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
- (ဇ) မတည်ငွေရင်းပမာဏ(ကျပ်) ကျပ် ၂၈၆၃.၆၂ သန်း (အမေရိကန်ဒေါ်လာ ၁.၆၂ သန်း အပါအဝင် ကျပ်နှစ်ထောင်ရှစ်ရာ ခြောက်ဆယ့်သုံးသန်းနှင့်ခြောက်သိန်းနှစ်သောင်းခန့်)
- (ဈ) တည်ဆောက်မှုကာလ ၃ နှစ်

*(Signature)*  
၇၀.၈.၁၇  
ဥက္ကဋ္ဌ  
မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်

Figure – 2: MIC Permit





ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
 စီမံကိန်း၊ ဘဏ္ဍာရေးနှင့်စက်မှုဝန်ကြီးဌာန  
 စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန  
 ပုဂ္ဂလိကစက်မှုလုပ်ငန်းမှတ်ပုံတင်လက်မှတ်

စက်မှုမှတ်ပုံတင်အမှတ် ..... ၇၈/ကြီး/၅၆၀၇ ..... ရက်စွဲ ..... ၁၇. ၁၂. ၂၀၁၉  
 လုပ်ငန်းအရွယ်အစား အကြီးစား ပြည်ထောင်စုနယ်မြေ/တိုင်းဒေသကြီး/ပြည်နယ် ရန်ကုန်  
 အောက်ပါလုပ်ငန်းသည် ပုဂ္ဂလိကစက်မှုလုပ်ငန်း ဥပဒေ ပုဒ်မ ၇ ပုဒ်မခွဲ ( ဝ )အရ မှတ်ပုံတင်ပြီး  
 ဖြစ်ပါသည်။

၁။ လုပ်ငန်းအမည် Aung Gabar Motor Services Co., Ltd. မော်တော်ယာဉ်တပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်း  
 ၂။ လုပ်ငန်းအမျိုးအမည် ..... သယ်ယူပို့ဆောင်ရေးယာဉ်များထုတ်လုပ်ငန်း  
 ၃။ အဓိကကုန်ချောပစ္စည်းအမျိုးအမည် BAIC (X 3, X 25, D 50-SENOVA, X 55-SENOVA)  
 -----  
 ၄။ တည်နေရာလိပ်စာ ဦးပိုင်အမှတ်-၅၆/ (က)+၅၆/ (ခ)+၅၆/ (ဃ)+၅၇/ ၂ ကွင်းအမှတ်(၁၀၈၂)  
 ဆားတလင်းကွင်း၊ ဆားတလင်းကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ မြောက်ပိုင်းခရိုင်  
 -----  
 ၅။ ပိုင်ဆိုင်မှုအမျိုးအစား ..... ကုမ္ပဏီပိုင်  
 ၆။ လုပ်ငန်းရှင်အမည် ..... ဦးအောင်စိန်(M.D)  
 ၇။ ကိုင်ဆောင်သည့်မှတ်ပုံတင်အမှတ် ..... ၉/မရမ(နိုင်)၀၇၈၃၂၄  
 ၈။ ရင်းနှီးမြုပ်နှံမှုတန်ဖိုး(ကျပ်) ၂၆၀. ၇၀ သန်း+US\$ ၀. ၈၇၆ သန်းတည်ထောင်သည့်ခုနှစ် ..... ၂၀၁၉  
 ၉။ အသုံးပြုသည့်အားအမျိုးအစား ထရန်စဖော်မာ/လျှပ်ထုတ်စက် မြင်းကောင်ရေ ..... ၃၁၅ KVA/  
 ၁၀။ အလုပ်သမားဦးရေ ..... ၅၀ ဦး ..... ၁၅၀ KVA  
 ၁၁။ မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးသည့်နေ့ရက် ..... ၃၀. ၁၂. ၂၀၂၀



*(Signature)*  
 အေးအေးဝင်း  
 ညွှန်ကြားရေးမှူးချုပ်

Figure – 3: Private Industrial Enterprise certificate

031266



The Government of The Republic of the Union of Myanmar  
Ministry of Commerce  
Department of Trade

**CERTIFICATE OF EXPORTER/IMPORTER REGISTRATION**

1. Enterprise Name: **AUNG GABAR MOTOR SERVICES COMPANY LIMITED** (English/အင်္ဂလိပ်)  
 (Burmese/အမည်) \_\_\_\_\_

2. Registration No: **3354920-15-14**

3. Registration Term: **FIVE YEAR**

4. Start Date: **10-04-2019**

5. End Date: **09-04-2024**

6. Address: **No.74, 1st Street, Ward No.8, South Okkalapa Township, Yangon Region, Myanmar** (Burmese/အမည်) \_\_\_\_\_

7. Business Registration No: **108227338(11-4-2014)**

8. Type of Business:  Sole Proprietorship (အထူးတစ်ဦးပိုင်)  Partnership (အဖွဲ့ပိုင်)  Limited Company (အကန့်အသတ်ခံရသူ) (Myanmar/Foreign)  Co-operative Society (အသင်းအဖွဲ့)  Others (Please specify) \_\_\_\_\_

9. Type of Service:  New  Extension  Amendment

10. Contact No: **31-860391 09-860391819 01-555881 11-8603918** **logistic.agbari-dunggabar.com**

Telephone No.
Fax No.
e-mail

11. Remarks: **MIC Permit No.MaHaTHo-1267/2017 Date: 20-6-2017**

12. Terms and Conditions: **အခြေခံချက်များ**  
 I hereby register the above mentioned enterprise as Exporter/Importer subject to the following terms and conditions: **အောက်ဖော်ပြပါအချက်များနှင့် အညီ အကန့်အသတ်ခံရသူ အဖြစ် အတည်ပြုပေးလိုက်ပါသည်။**  
 (a) Line of goods permitted - all items except prohibited and restricted items.  
**အတည်ပြုပေးလိုက်သည့် အမျိုးအစား အပစ္စည်းများ အကန့်အသတ်ခံရမှုမှ ကင်းရှောင်ရမည်။**  
 (b) The enterprise shall abide by the Export/Import rules and Regulations prescribed for the registered Exporter/Importer.  
**အကန့်အသတ်ခံရသူ အဖြစ် အတည်ပြုပေးလိုက်သည့် အချက်များနှင့် အညီ အကန့်အသတ်ခံရမှုမှ ကင်းရှောင်ရမည်။**



Stamp



Signature  
9.9.19

DRC2081936REGCK1213012

**Figure – 4: Export/Import permit**



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်  
 သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
 ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
 ညွှန်ကြားရေးမှူးချုပ်ရုံး

စာအမှတ်၊ အီးအိုင်အေ - ၁/၄-ဆ(၁၅၀၅ / ၂၀၂၁)  
 ရက်စွဲ၊ ၂၀၂၁ ခုနှစ် စက်တင်ဘာလ ၉ ရက်

ဒေါ်အိမျိုးမျိုးနိုင်  
 Director

အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်

အကြောင်းအရာ။ အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်မှ SKD စနစ်ဖြင့်  
 မော်တော်ကား တပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းအတွက် တင်ပြလာသော  
 နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာ (Scoping Report)  
 အပေါ် အတည်ပြုပြန်ကြားခြင်း

- ရည်ညွှန်းချက်။
- (၁) အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်၏ ၄-၁၂-၂၀၁၉  
 ရက်စွဲပါစာအမှတ်၊ mMF/ Admin/ 12-19/ 0103
  - (၂) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ၁၆-၉-၂၀၁၉ ရက်စွဲပါစာ  
 အမှတ်၊ အီးအိုင်အေ-၁/၄ က (၁၉၅၃/၂၀၁၉)
  - (၃) အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်၏ ၂၈-၁၂-၂၀၂၀  
 ရက်စွဲပါစာအမှတ်၊ 064/03/AGB-MF/2020
  - (၄) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ၈-၇-၂၀၂၁ ရက်စွဲပါစာ  
 အမှတ်၊ အီးအိုင်အေ-၁/၄-ဆ(၁၂၀၈/၂၀၂၁)
  - (၅) သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊  
 ပြည်ထောင်စုဝန်ကြီးရုံး၏ ၁၄-၇-၂၀၂၁ ရက်စွဲပါစာအမှတ်၊  
 (သစ်တော)၃(၂)/၁၆(ဃ)(၁၉၅၄/၂၀၂၁)

၁။ အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊  
 နတ်တလင်း ကျေးရွာအုပ်စု၊ မြေကွက်အမှတ် ၁၀၈၂၊ ဦးပိုင်အမှတ် ၅၆/၂/က ၅၆/၂/ခ ၅၆/၂/ ဃ  
 နှင့် ၅၇/၂ တွင် SKD စနစ်ဖြင့် မော်တော်ကားတပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းအတွက် ကုမ္ပဏီမှ  
 ရည်ညွှန်း (၁) ပါစာဖြင့် တင်ပြလာခြင်းအပေါ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ရည်ညွှန်း  
 (၂) ပါစာဖြင့် ပြန်ကြားခဲ့ခြင်းအပေါ် ပြင်ဆင်ထားသည့် နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်း

Figure – 5: Scoping report approval by ECD



၄။ အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်မှ SKD စနစ်ဖြင့် မော်တော်ကား တပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းအတွက် တင်ပြလာသည့် နယ်ပယ်အတိုင်းသတ်မှတ်ခြင်း အစီရင်ခံစာတွင်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်းနှင့် ကိုက်ညီကြောင်း စိစစ်တွေ့ရှိရမှုအပေါ် ပြည်ထောင်စုဝန်ကြီးရုံးထံသို့ ရည်ညွှန်း (၄) ပါစာဖြင့် တင်ပြခဲ့ရာ လုပ်ထုံး လုပ်နည်းနှင့်အညီ ဆက်လက်ဆောင်ရွက်ရန် ရည်ညွှန်း (၅) ပါစာဖြင့် အကြောင်းကြားလာပါ သည်။

၅။ သို့ဖြစ်ပါ၍ အောင်ကမ္ဘာမော်တာဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်မှ SKD စနစ်ဖြင့် မော်တော်ကားတပ်ဆင်ထုတ်လုပ်ခြင်းလုပ်ငန်းအတွက် တင်ပြလာသော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအစီရင်ခံစာကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် ကိုက်ညီပါသဖြင့် အတည်ပြုနိုင်ပါကြောင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာ ကိုပြင်ဆင်ရာ၌ အောက်ပါအချက်များကို စီမံကိန်းအဆိုပြုသူမှ လိုက်နာဆောင်ရွက်ရန်လို အပ်ကြောင်း ပြန်ကြားအပ်ပါသည်။

- (က) စီမံကိန်းအဆိုပြုသူအနေဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း အပိုဒ် ၆၀၊ ၆၁၊ ၆၂၊ ၆၃၊ ၆၅ ပါ သတ်မှတ်ချက်များနှင့်အညီ ရေးဆွဲ၍ သယံဇာတနှင့် သဘာဝပတ်ဝန်း ကျင်ထိန်းသိမ်းရေးဝန်ကြီး ဌာနသို့ အတည်ပြုချက် ရယူရန်၊
- (ခ) နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအစီရင်ခံစာနှင့် လုပ်ငန်းတာဝန်များ တွင် ထည့်သွင်းဖော်ပြထားခြင်း မရှိသော်လည်း ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အဆင့်တွင် ထပ်မံ၍ဆန်းစစ်ရန်လိုအပ်သော အချက်များရှိပါက လေ့လာဆန်းစစ် ခြင်းဆောင်ရွက်ရန်၊
- (ဂ) ဒေသခံများ၏ ဆန္ဒနှင့်သဘောထားများကို ရယူဆောင်ရွက်ရန်နှင့် အခါအား လျော်စွာလူထုတွေ့ဆုံပွဲများပြုလုပ်၍ စီမံကိန်းဆိုင်ရာသတင်းအချက်အလက် များကို တင်ပြဆွေးနွေးခြင်း ဆောင်ရွက်ရန်၊



(လှမောင်သိန်း)  
ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကို

ပြည်ထောင်စုဝန်ကြီးရုံး၊ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီး ဌာန၊ ရုံးအမှတ် (၂၈)

Figure – 6: Scoping report approval by ECD

## 2.2 Presentation of the environmental and social experts

About the consultant firm, Myanmar Environment Sustainable Conservation Co., Ltd (MESC)

MESC is a consultant firm officially registered in 2014 as a limited company (a consultant/service company) at the Ministry of National Planning and Economic Development. Document: YaKa-8(Ga) 001/2014(004720), dated: 6<sup>th</sup> June, 2014. Registration No. 830/2014-2015, (20-5-2014).

The Transitional Registration/License No. of the consultant firm, MESC is No. 0003, ECD, Dated 1<sup>st</sup> July 2017.

**Contact Address** : Room no. (B -5), Building no.67/69, Parami Road, 16 Ward, Hlaing Township, Yangon Region

**Contact person** : Myint Kyaw Thura  
95 9 420105071

**Contact number** : 95 9 73044903

**E-mail** : [myanmar.esc@gmail.com](mailto:myanmar.esc@gmail.com)

Members of MESC who are IEE/EIA appraisers, or IEE/EIA practitioners or who are involved in this IEE/EIA project are as follows:-

Name	Nationality & National Registration Card No.	Registration/license No. by ECD	Designation
U Myint Kyaw Thura M.Sc (Zoology)	Myanmar 12/Da Ga Ta (N) 028349	0006	Managing Director, Biodiversity Specialist (Fauna), EIA practitioner and EIA Appraiser
U Saw Han Shein B.Sc (Botany) M.Sc (Marin Biology)	Myanmar 10/Ma La Ma(N) 008173	0007	Retired Professor, EIA Practitioner and Appraiser
Dr. Thiri Dawe Aung Ph.D (Zoology)	Myanmar 12/Da La Na (N) 029433	0008	Biodiversity Specialist (Ornithologist)
U Tin Tun Aung B.Sc (Engineering)	Myanmar 12/U Ka Ma (N) 172111	0009	Engineer and EIA practitioner

Daw Khin Nhwe Naing M.Sc (Botany)	Myanmar 9/Pa Kha Ka (N) 001252	00010	Biodiversity Specialist (Flora), Environment Researcher
U Than Soe Oo M.Sc (Forestry)	Myanmar 9/Ma Na Ma (N) 050808	00011	EIA practitioner
U Oakka Kyaw Thu B.Sc (Geology)	Myanmar 7/Ya Ta Ya (N) 090371	00012	Geologist
Daw Thin Thin Yee B.Sc (Chemistry)	Myanmar 12/Tha Ga Ka (N) 039292	00013	Chemical Environment Researcher, Computer Programmer

- U Myint Kyaw Thura is involved in fauna study, EIA practicing and appraising and writing of report, in part.
- U Saw Han Shein is involved in EIA practicing appraising and report writing (chief report writer).
- Dr. Thiri Dawe Aung involved in avifauna study writing part of report.
- U Tin Tun Aung is involved in the EIA practicing and aspects of the report and provision of information, data and facts and writing part of the report.
- Daw Khin Nhwe Naing is involved in flora study and writing report, in part.
- U Than Soe Oo is involved in EIA practicing and part of the report writing especially on the socio-economic aspect,
- Daw Thinn Thinn Yee is involved in the physical aspects, especially ambient air, water quality, noise and vibration and soil etc and compilation of data on the physical components; including secondary information on weather.
- U Oakka Kyaw Thu is involved in the geological and geographical aspects by conduction desktop survey and gathering of secondary information on local geology.

Actually members of MESC always work together wholly as a tight-knit group in writing of each and every EMP/IEE/EIA report.

MESC has also part time members working as free lances.

The firm is not in a position to employ all its part time members on a permanent basis.

These are botanists, zoologists, ornithologists, ecologists, aquatic ecologists, social scientists, medical doctor, engineers and geologists working with this firm either as part time or as free lance.

For the physical and chemical environmental studies MESC has to hire experts, say for example, from the Health Department and from registered laboratory in Yangon. Since portable test kits are sometime not reliable, experts from the Health Department have to be hired for the analysis of air quality. Experts from a registered laboratory were hired for the analysis of water (or samples have to be sent to the laboratory).



REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0003 Date 01.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၅၁၆/၂၀၁၅ အရ သယ်စာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

- (a) Name of Organization (အဖွဲ့အစည်းအမည်) Myanmar Environment Sustainable Conservation-MESC
- (b) Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်) U Myint Kyaw Thura
- (c) Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား) Myanmar
- (d) Identity Card /Passport Number of the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်) 12/ Da Ga Ta (N) 028349
- (e) Address of organization (ဆက်သွယ်ရန်လိပ်စာ) Room No. B-5, Building No.72, Marlar Myaing 6<sup>th</sup> street, 16 Ward, Hlaing Township, Yangon. [myanmar\\_esc@gmail.com](mailto:myanmar_esc@gmail.com) , 09 73044903
- (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) Organization
- (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်) 31 March 2018

EXTENSION  
 သက်တမ်းတိုးချက်ပြင်  
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)  
 ဤသက်တမ်း (၁-ခု - နှစ်) မှတ်ပုံ (၂၀၁၈.၂၀၁၉) မှတ်ပုံတင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာနသည်  
 Soc Naing  
 13.7.2018  
 For Director General  
 (Soc Naing, Director)  
 Environmental Conservation Department

Handwritten signature

Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation

**Areas of Expertise Permitted**  
(စွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Ecology and Biodiversity
3. Facilitation of Meeting
4. Geology and Soil
5. Land use
6. Modeling for Water Quality
7. Socio-Economy
8. Water Pollution Control

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။  
*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)  
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။  
*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၁) ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။  
*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION**  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)  
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။  
*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

**EXTENSION** (သက်တမ်းတိုးမြှင့်ခြင်း)  
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။  
*Soe Naing*  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

Figure – 7: Certificate of consultant firm

### **3. ENVIRONMENTAL POLICY LEGAL AND INSTITUTIONAL FRAME WORK**

#### **3.1 Corporate environmental and social policy of Aung Gabar Services Co., Ltd**

Aung Gabar Motor Services Co., Ltd is a new company going to make investment in Myanmar. The first and foremost policy is to comply with all the environmental Laws, Rules and Regulation concerning the assembling and sale of motor vehicles. The company also pledges to do a car assembling/manufacturing business that will be environmentally sound as far as possible.

The company will endeavour to:

- operate the auto parts assembling with an environmentally and socially responsible manner and to comply with laws and regulation
- prevent pollution of surrounding area; monitoring and adopting suitable measures for environment protection
- implement EMP effectively to mitigate pollution of water, land, air, noise and dust and proper disposal of waste
- develop green belt in available space
- conserve natural resources and energy as far as possible
- recycle of waste water through the principles of 5 Rs (reduce, reuse, recycle, recover and redesign), and
- create environmental awareness among employees and local community through education and training
- implement effective CSR programme

#### **Corporate Social Responsibility (CSR) and community development**

The company very well realizes that the ethic code of 21<sup>th</sup> century big business is not to make profit at the expense of the environment and the local community. And that the big business should not focus only on economically viable venture but also on environmentally and functionally sound, ecologically viable as well as socially sustainable venture.

CSR has become mandatory in many countries and it is also now an official policy of big companies. Aung Gabar Motor Services Co., Ltd will, as far as possible, carry out community assistance and community development. Generous compensation would be provided if there is any loss or damage due to the implementation of this project. Moreover charity and donation works will be carried out. **See ANNEX** for CSR programme by the company (in Myanmar version).



### **3.2 Policy and legal frame work**

There were/are several laws since the colonial days which were/are one way or another pertaining to the environment of the country.

The Protection and Conservation of the Environment was the priority of successive governments.

The National Commissions of Environmental Affairs (NCEA) was formed in 1990. Myanmar Agenda-21 was outlined which contains social, economic, institutional and infrastructural improvement programmes and, most of all, environmental conservation programmes.

Respective ministries devised 56 environmental policies and regulations directly related with environmental conservation and protection.

The National Environmental Conservation Committee (NECC) was formed in 2011 with the aim to achieve sound environmental management in the country.

With a view to effectively implementing the protection and conservation of the environment the new government in 2016 has created the new ministry, Ministry of Natural Resources and Environmental Conservation (MONREC). It is believed that effective and meaningful management of the environmental affairs will be achieved. The Environmental Conservation Department (ECD) is the focal and coordinating agency for the overall and detail environmental management throughout the country.

#### **3.2.1 Applicable Laws and Rules**

Excerpts of Laws, Rules, Act, regulations, guideline etc of relevance

The project proponent will strictly comply with the following Law, Rule, Act, regulation etc particularly the Sections/Articles reproduced below (See also commitment **Section-3.3**).

Aung Gabar Motor Servies Co., Ltd will comply with the following laws:

1. The Environmental Conservation Law, 2012
2. The Environmental Conservation Rules, 2014
3. Environmental Impact Assessment Procedure, 2015
4. National Environmental Quality (Emissions) Guidelines, 2015
5. Myanmar Investment Law, 2016
6. Myanmar Investment Rules, 2017
7. Private Industrial Enterprise Law, 1990
8. The Conservation of Water Resources and Rivers Law, 2006
9. Prevention of Hazard from Chemical Substances Law, 2013
10. The Petroleum and Petroleum Products Law, 2017



11. Labour Organization Law, 2011
12. The Settlement of Labour Dispute Law, 2012
13. Employment and Skill Development Law, 2013
14. Leaves and Holiday Act, 1951
15. Workmen's Compensation Act, 1923
16. Social Security Law, 2012
17. The Factories Act, 1951
18. Minimum Wages Law, 2013
19. The Payment of Wages Law, 2016
20. Myanmar Public Health Law, 1972
21. Prevention and Control of Communicable Diseases Law, 1995
22. The Control of Smoking and Consumption of Tobacco Product Law, 2016
23. Protection and Preservation of Antique Objects Law, 2015
24. Protection and Preservation of Cultural Heritage Regions Law, 2019
25. Protection and Preservation of Ancient Monuments Law, 2015
26. Myanmar Insurance Law, 1993
27. Fire Brigade Law, 2015
28. Myanmar Engineering Council Law, 2013
29. Yangon Region City Development Committees Law, 2018
30. Myanmar Export Import Law, 2012
31. The Protection of Wildlife and Protected Area Law, 1994
32. Land Acquisition, Resettlement and Rehabilitation Law, 2019
33. Farmland Law, 2012
34. Electricity Law, 2014
35. Consumer Protection Law, 2019
36. Occupational Health and Safety Law, 2018
37. The Highway Law, 2000
38. Myanmar Motor Vehicle Law, 2015
39. Vehicle Safety and Motor Vehicle Management Law, 2020
40. Trademark Law, 2019
41. Industrial Design Rights Law, 2019
42. Patent Law, 2019

43. Law on Standardization, 2014
44. Tax Management Law, 2019
45. Union Tax Law, 2019
46. Registration of Deeds Law, 2018
47. Fresh water Fisheries Law, 1991

These above-mentioned Laws, Rules and guideline are directly or indirectly related to motor vehicle industry business. The company shall comply with all these laws. Since these laws cover a very wide spectrum and various aspects, the company is not in a position to read and study all these laws. The company, therefore, has hired a legal expert to deal with the details of these laws.

When implementing the project and doing the business the company authority will apply the common sense and simple logics not to pollute the air, water, land and the community. When it comes to details the legal expert hired by the company will assist the company to comply with these laws, accordingly.

Staffs shall be educated and trained for environmental awareness and for maintenance of environmental performance during the entire life of the project.

However, certain points or Articles of the law which are of great environmental relevant to the project are excerpted and reproduced as follows:

### **1. The Environmental Conservation Law, 2012**

#### Article-7:

- (d) The ministry prescribes environmental quality standards including standards on emission, effluents, solid wastes, production procedures, processes and products for conservation and enhancement of environmental quality;
- (o) Managing to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the business which explore, trade and use the natural resources in environmental conservation works;

Article-14: A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards.

Article-15: The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods.

Article-24: The Ministry may, in issuing the prior permission, stipulate terms and conditions relating to environmental conservation. It may conduct inspection whether or not it is performed in conformity with such terms and conditions or inform the relevant Government departments, Government organization to carry out inspections.

Article-32: Whoever violates any prohibition contained in the rules, notifications, orders, directives and procedures issued under this Law shall, on conviction, be punished with imprisonment for a term not exceeding one year, or with fine, or with both.

## **2. The Environmental Conservation Rules, 2014**

Rule-69 (a): Any person shall not emit, cause to emit, dispose, cause to dispose, pile and cause to pile, by any means, the pollutants to environment and hazardous waste or hazardous material stipulated by notification under the Law and any these rules at any place which may affect the public directly or indirectly.

Rule-69 (b): Any person shall not carry out the action which can be damaged to natural environment which is changing due to ecosystem and such system, except the permission of the relevant Ministry in order to the interest of the public.

## **3. Environmental Impact Assessment Procedure, 2015**

Article -102: The project Proponent shall bear full legal and financial responsibility for:

- (a) All of the Project Proponent's actions and omissions and those of its contractors, subcontractors, officers, employees, agents, representatives, and consultants employed, hired, or authorized by the Project acting
- (b) PAPs until they have achieved socio-economic stability at a level not lower than that in effect prior to the commencement of the Project, and shall support programs for livelihood restoration and resettlement in consultation with the PAPs, related government agencies, and organizations and other concerned persons for all Adverse Impacts.

Article 103: The project proponent shall fully implement the EMP, all project commitments, and conditions and is liable to ensure that all contractors and subcontractors of the project comply fully with all applicable laws, the rules, this procedure, the EMP, project commitments and condition when providing services to the project.

Article 104: The project proponent shall be responsible for and shall fully and effectively implement, all requirements set forth in ECC, applicable laws, the rules, this procedure and standards.

Article 105: The project proponent shall timely notify and identify in writing to the ministry, providing detailed information as the proposed project's potential adverse impacts.

Article 106: The project proponent shall, during all phase of the project (Preconstruction, Construction, Operation, Decommissioning, Closure and Post-closure) engage in continuous, proactive and comprehensive self-monitoring of the project and activities related thereto, all adverse impacts, and compliance with applicable laws, the rules, this procedure, standards, the ECC and the EMP.

Article 107: The project proponent shall notify and identify in writing to the ministry any breaches of its obligations or other performance failures or violations of the ECC and the EMP as soon as reasonably possible and in any event, in respect of any breach which would have a serious impact or where the urgent attention of the ministry is or may be required, within not later than twenty-four (24) hours, and in all cases within seven (7) days the project proponent becoming aware of such accidents.

Article 108: The project proponent shall submit monitoring reports to the ministry not less frequently than every six (6) months, as provided in a schedule in the EMP, or periodically as prescribed by the ministry.

Article 109: The monitoring reports shall include:

- a) Documentation of compliance with all conditions
- b) Progress made to date on implementation of the EMP against the submitted implementation schedule
- c) Difficulties encountered in implementing EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties
- d) Number and type of non-compliance with the EMP and proposed remedial measures and timelines for completion of remediation
- e) Accidents or incidents relating to the occupational and community health and safety, and the environment, and
- f) Monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required.

**Note:** The project proponent will comply with the above mentioned section and sub-sections.

Article -110: Within ten(10) days of completing a monitoring report as contemplated in Article 108 and Article 109 in accordance with the EMP schedule, the Project Proponent shall make such report (except as relate to National Security concerns) publicly available on the Project's website, at public meeting places (e.g. libraries, community halls) and at the Project offices. Any organization or person may request a digital copy of a monitoring report and the Project shall, with ten (10) days of receiving such request, submit a digital copy via email or as may otherwise be agreed upon with the requestor.

Article -113: For purpose of monitoring and inspection, the Project Proponent:

- (a) Shall grant to the Ministry and/or its representatives, at any time during normal working hours, access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed; and
- (b) From time to time as and when the Ministry may reasonably require, shall grant the Ministry access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed.

Article -115: In the event of an emergency, or where, in the opinion of the Ministry, there is or may exist a violation or risk of violation of the compliance by the Project with all applicable environmental and social requirements, the Project shall grant full and immediate access to the Ministry at any time as may be required by the Ministry.

Article -117: The Project Proponent shall further ensure that the Ministry's rights of access hereunder shall extend to access by the Ministry to the Project's contractors and information storage, and persons.

#### **4. National Environmental Quality (Emissions) Guidelines, 2015**

The guidelines apply to any project subject to EIA procedure- if those that requires EIA or IEE. They require a project to take necessary measures to avoid, minimize and control adverse impacts to human health and safety, and the environment by reducing air, water and noise emissions and minimizing the load of pollutants and contaminants prior to release or discharge. The guidelines are divided into two groups general and industry-specific guidelines.

Relevance for this project:-

- The project proponent must meet a general set of requirement on air emissions, waste water, noise and odour that apply to any project where an IEE or EIA is required.
- The project proponent must meet specific effluent levels if the project activities generate any effluent (Chapter-2.7).

#### **5. Myanmar Investment Law, 2016**

Article -51: The investor:

- (a) May appoint any citizen who is a qualified person as senior manager, technical and operational expert, and advisor in his investment within the union in accordance with the law.

Article -65: The investor:

- (f) Shall not make any significant alternation of topography or elevation of the land on which he is entitled to lease or to use, without the approval of the commission.
- (g) Shall abide by applicable laws, rules, procedures and best standards practiced internationally for this investment so as not to cause damage, pollution, and loss to the natural and social environment and not to cause damage to cultural heritage;
- (i) Shall close and discontinue the investment only after payment of compensation to employees in accordance with applicable laws for any breach of employment contracts, closure of investment, sale and transfer of investment, discontinuation of investment, or reduction of workforce;
- (j) Shall pay wages and salaries to employees in accordance with applicable laws, rules, procedures, directives and so forth during the period of suspension of investment for a credible reason;
- (k) Shall pay compensation and indemnification in accordance with applicable laws to the relevant employee or his successor for injury, disability, disease and death due to the work;
- (l) Shall supervise foreign experts, supervisors and their families, who employ in their investment, to abide by the applicable laws, rules, orders and directives, and the culture and traditions of Myanmar;
- (m) Shall respect and comply with the labor laws;
- (o) Shall pay effective compensation for loss incurred to the victim, if there are damage to the natural environment and socioeconomic losses caused by logging or extraction of natural resources which are not related to the scope of the permissible investment, except from carrying out the activities required to conduct investment in a permit or an endorsement.
- (p) Shall allow the Commission to inspect in any places, when the Commission informs the prior notice to inspect the investment;
- (q) Shall take in advance permit or endorsement of the Commission for the investments which need to obtain prior approval under the Environmental Conservation Law and the procedures of environmental impact assessment, before undertaking the assessment, and shall submit the situation of environmental and social impact assessment to the Commission along the period of activities of the investments which obtained permit or endorsement of the Commission.

Article -73: The investor shall insure the types of insurance stipulated in the provision of the rules at any insurance enterprise which is entitled to carry out insurance businesses within the Union.

## **6. Myanmar Investment Rules, 2017**

Rules-202: The Investor must comply with the conditions of the Permit and other applicable laws when making an Investment.

Rules-206: If the Investor is desirous to appoint a foreigner as senior management, technician expert or consultant according to section 51(a) of the law, it shall submit such foreigner's passport, expertise evidence or degree and profile to the Commission Office for approval.

Rules-212: Every Investor that holds the Permit or Tax Incentives must have taken out the relevant insurance out of the following types of insurance at any insurance business that holds the license in the Union based on the nature of the business:

- (a) Property and Business Interruption Insurance;
- (b) Engineering Insurance;
- (c) Professional Liability Insurance;
- (d) Professional Accident Insurance;
- (e) Marine Insurance; and
- (f) Workmen Compensation Insurance.

## **7. Private Industrial Enterprise Law, 1990**

Article -4: (a) Any person desirous of conducting any private industrial enterprise;

- (b) Any person conducting any private industrial enterprise on the day this Law is enacted; by using any type of power which is three horsepower and above or manpower of ten wage-earning workers and above shall register under this Law.

Article -13: The duties of the entrepreneur are as follows:-

- (a) Shall pay the registration fees, fees for the renewal of registration and other payable duties and taxes prescribed by the Directorate;
- (b) Shall abide by the terms and conditions of the registration certificate;
- (c) Shall conduct the enterprise by opening an account with the relevant bank in the name of its registered enterprise;
- (f) Shall shift the place of enterprise, change the nature of enterprise, amalgamate enterprises and split up enterprises only with the approval of the Directorate;

(g) Shall abide by the orders and directives issued from time to time by the Ministry and the Directorate;

(h) Shall also abide by the existing laws.

Article -26: No one shall conduct a private industrial enterprise contained in section ~ without obtaining registration under this Law.

Article -27: An entrepreneur:

(a) In distributing and selling the goods he has produced shall not sell without a trade mark;

(b) Shall not violate any provision of section 13;

(c) Shall not fail to comply with any order or decision passed by the Minister and the Director General.

## **8. The Conservation of Water Resources and Rivers Law, 2006**

Article -8: No person shall:

(a) Carry out any act or channel shifting with the aim to ruin the water resources and river and creeks.

(b) Cause the wastage of water resources willfully.

(d) Not found.

Article -9: No person shall destroy, cause damage or cause collision of vessel with the river training structure either wholly or partially.

Article -10: No person shall anchor the vessel where vessels are prohibited from anchoring in the rivers and creeks.

Article -11: No person shall:

(a) Dispose of engine, oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk.

Article -19: No one shall dispose of any substance into the river, creek that may cause damage to water way or change of water course from the bank or vessel which is plying, vessel which has berthed, anchored, stranded or sunk.

Article -22: No one shall, without the permission of the Directorate, pile sand, shingle and other heavy materials for business purpose on the bank area and water front area.

Article -29: Whoever attempts or conspires or abets in the commission of an offence under this law shall be punished with the punishment provided for such offence in this law.



Article -30: Any government department and organization or any person desirous of constructing drainage, utilizing river water intake, constructing bridged spanning rivers, connecting underground pipe, connecting underground electric cables, connecting underground telecom cable or digging in river or creeks, bank boundary and water front boundary, under the requirement of work, shall in order not to adversely affect the water resources and river and creeks, carry out only after obtaining the approval of the Ministry of Transport.

### **9. Prevention of Hazard from Chemical Substances Law, 2013**

Article -15: A person who has obtained a licence, before starting the respective chemical and related substances business:-

- (a) Shall be inspected for the safety and the power of resistance of the machinery and equipments by the respective Supervisory Board and Board of Inspection;
- (b) Shall be attended the person who serve in the work to the respective foreign trainings or the training and the expert trainings on prevention of hazard from the chemical and related substances opened by the government department and the government organizations.

Article -16: A person who has obtained a license:-

- (a) Shall abide by the license regulation;
- (b) Shall perform to abide strictly the instructions for being safety in using the chemical and related substances by himself and also the persons who serve the work;
- (c) Shall keep the required safety equipment enough in the chemical and related substances businesses, furthermore shall grant the personal protection equipment and dresses free of charge to the working persons;
- (d) Shall make the course of training and study and instruction if necessary to the working persons for using the occupational safety equipment, the personal protection equipment and the dresses systematically in the chemical and related substances business;
- (e) Shall be inspected by the respective Supervisory Board and Board of Inspection in respect of whether or not the hazard may impact on the Human Being and Animals' health and the environment;
- (f) Shall make medical checkup the working persons who will work in the chemical and related substances business and shall permit to serve in that work after obtaining the recommendation that his health is suitable for that work. This medical checkup records shall be kept systematically;

- (g) Shall send the copy of informative letter of the permission to the respective Department of Township Administration, if the hazardous chemical or related substances are permitted to store;
- (h) Shall acquire in advance the guidance and agreement of the respective Department of Fire Brigade, if the business that is worried to fire hazard is operated by using the fire hazard substances or the explosive substances;
- (i) Shall transport only the permitted amount of the chemical and related substances in accordance with the prescriptive stipulations, if they are transported in local;
- (j) Shall take the permission from the Central Supervisory Board if the chemical and related substance is altered and transferred from one place to any other place which contained in the license;

Article -17: A person who has obtained a license, shall put the insurance in accordance with prescriptive stipulations to be able to pay the compensation, if the impact and damage is occurred on the Human Being and Animals or the environment in respect of the chemical and related substances businesses.

Article -22: A person who has obtained the registration certificated shall abide the regulations consisted in the registration certificate furthermore shall also abide the order and instructions issued occasionally by the Central Supervisory Board.

Article -27: A person who has obtained the license to be complied the following matters to control and decrease the hazard of the chemical and related substances:-

- (a) Classifying the hazard level to protect in advance the hazard according to the properties of the chemical and related substances;
- (b) Expressing the Material Safety Data Sheet and Pictogram;
- (c) Providing the safety equipment, the personal protection equipment to protect and decrease the accident and attending to the training to be used systematically;
- (c) Performing in accordance with the stipulations in respect of transporting, possessing, storing, using, discharging the chemical and related substances;
- (d) Not being imported or exported the chemical and related substances banned by the Central Supervisory Board and the machinery and equipment which are used them.

## **10. The Petroleum and Petroleum Products Law, 2017**

Article -9: The Ministry of Transport and communications shall carry out the following functions relating to any petroleum and petroleum products.

- (a) Issuing license to vehicles, vessels and barges that carry any petroleum and petroleum product.
- (c) Determine and supervision on ports for vessels and barges that carry out import, export and transport by water in accordance with procedures

Article -10: The ministry shall:

- (a) Issue licence for the right to store for the storage tanks and warehouses
- (b) Issue transport permit for the vehicles, vessels and barges that shall carry any petroleum and petroleum product
- (d) If it occurs environmental impact, in carrying out petroleum and petroleum product business activities, taking action, as necessary in accordance with the existing laws of on-site inspection.
- (e) Determine in coordination with ministries concerned, procedures and conditions relating to standard and quality of storage tanks and warehouse and tanks of vehicles, vessels and barges that carry any petroleum and petroleum product.

Article -11: On all receptacles containing any dangerous petroleum and petroleum product the warning sign of danger by stamping, embossing, painting, printing or any other means shall be expressed. If it is impossible to express as such, similar warning signs of the nature of danger of gasoline, spirit or petroleum shall be expressed in writing at the ostensible place in salient words or signs near the receptacle.

Article -31: Any license:

- (a) Shall not violate any prohibition contained in the rules, regulations, bye-laws, notifications, orders, directives, procedure and conditions or fail the duty to implement
- (c) Shall not import, transport, store, sell and distribute the dangerous petroleum and petroleum products or non-dangerous petroleum and petroleum product except by the means stipulated in the law
- (d) Shall not have the right to carry out without under taking the environmental impacts, in operating petroleum and petroleum product business activities.

## **11. Labour Organization Law, 2011**

Article -17: The labour organization shall have the right to carry out freely in drawing up their constitution and rules, in electing their representatives, in organizing their administration and activities or in formulating their programmes the labour organization has the right to negotiate and settle with the employer if the workers are unable to obtain and enjoy the right of the workers contained in the labour laws and to submit demands to the employer claim in accord with the relevant law if the agreement cannot be reached.

Article -18: The labour organizations have the right to demand the relevant employer to re-appoint a worker if such worker is dismissed by the employer and if there is cause to believe that the reason of such dismissal were based on labour organization membership or activities, or were not in conformity with the labour law.

Article -19: The labour organizations have the right to send representation to the Conciliation Body in settling the dispute between the employer and the worker. Similarly, they have the right send representatives to the Conciliation Tribunal formed with the representatives from the various levels of labour organization.

Article -20: In discussing with the Government the employer and the complaining workers in respect of workers' right or interests contained in the labour laws, the representative of the labour organization also have the right to participate and discuss.

Article -21: The labour organizations have the right to participate in solving the collective bargains of the workers in accord with the labour laws.

Article -22: The labour organizations shall carry out peacefully in carrying out holding meetings, going on strike and carrying out other collective activities in accord with the procedure, regulations, by-law and any directives prescribed by the relevant labour Federation ship.

## **12. The Settlement of Labour Dispute Law, 2012**

Article -38: No employer shall fail to negotiate and coordinate in respect of the complaint with the prescribed period without sufficient cause.

Article -39: No employer shall alter the condition of service relating to workers concerned in such dispute at the consecutive period before commencing the dispute within the period under the investigation of the dispute before the Arbitration Body or Tribunal, to affect the interest of such workers immediately.

Article -40: No party shall proceed to lock-out or strike without accepting negotiation, conciliation and arbitration by Arbitration Body in accord with this law in respect of a dispute.

Article -51: It an employer in the course of settlement of dispute commits any action omission without sufficient case, which by causing reduction in production resulting so as to reduce the workers' benefits shall be liable to pay full compensation in the amount determined by the Arbitration Body or Tribunal. Such money shall be recovered as the arrear of land revenue.

## **13. Employment and Skill Development Law, 2013**

Article -5: (a) (1) If the employer has appointed the employee to work for an employment, the employment agreement shall be made within 30 days. But it shall not be related with government department and organization for a permanent employment.

(2) If pre training period and probation period are stipulated before the appointment the said trainee shall not be related with the stipulation of sub-section (1).

(b) The following particulars shall be included in the employment agreement:

- (1) The type of employment;
- (2) The probation period;
- (3) Wage, salary;
- (4) Location of the employment;
- (5) The term of the agreement;
- (6) Working hour;
- (7) Day off, holiday and leave;
- (8) Overtime;
- (9) Meal arrangement during the work hour;
- (10) Accommodation;
- (11) Medical treatment;
- (12) Ferry arrangement to worksite and travelling;
- (13) Regulations to be followed by the employees;
- (14) If the employee is sent to attend the training, the limited time agreed by the employee to continue to work after attending the training;
- (15) Resigning and termination of service;
- (16) Termination of agreement;
- (17) The obligations in accord with the stipulation of the agreement;
- (18) The cancellation of employment agreement mutually made between employer and employee;
- (19) Other matters;
- (20) Specifying the regulation of the agreement, amending and supplementing;
- (21) Miscellaneous.

- (c) The worksite regulations contained in the employment agreement shall be in compliance with any existing law and the benefits of the employee shall not be less than those of the any existing law.
- (d) According to the employment agreement, the Ministry shall issue the notification for paying the stipulated compensation to the employee by the employer, if the work is completed earlier than the stipulated period or the whole work or any part of it have to be terminated due to unexpected condition or the work has to be terminated due to various conditions.
- (e) The employment agreement made under sub-section (a) shall be related with daily wage workers, piece rate workers who are appointed temporarily in the government department and organization.
- (f) The worksite regulations and benefits contained in the employment agreement mutually made between the employer and employee or among the employees shall be amended as necessary, in accord with the existing law.
- (g) The employer shall send a copy of the employment agreement made between the employer and employee, to the relevant employment and labour exchange office within the stipulated period and shall get the approval of it.
- (h) The employment agreement made before the enforcement of this law shall be confirmed up to the end of the term of the original agreement.

Article -14: The employer shall carryout the training programme in accord with the work requirement in line with the policy of the skill development team to develop the skill relating to the employment for the workers who are proposed to appoint and working at present.

Article -30: (a) The employer of the industry and service business shall put into the fund monthly as put in fees without fail for the total wages of the subordinates and the supervisors' salary for not less than 0.5%.

- (b) Put in money paid under sub-section (a) shall not be deducted from the wage and salary of the employees

#### **14. Leaves and Holiday Act, 1951**

The law contains 18 sections and the purpose is for regulating the taking of leaves and holidays, covering the hours of work, weekly rest and paid leave. Three types of leaves, namely Earned leave, casual leave and leave on Medical Certificate are stipulated. The holidays during that period (the 1950s) include: Independence Day, Fullmoon of Tabaung, Thingyan, Burmese New Year, May Day, Full Moon of Kason, Resistance Day, beginning of Buddhist Lent, Martyrs' Day, End of Buddhist Lent, Full Moon of Tansaungmone, and National Day. One Islam Holiday and Hindu Holiday are official but are not written in the Act, but are notified in short advance.

## **15. Workmen's Compensation Act, 1923**

It was/is an Act to provide for the payment by certain classes of employers to their workmen of compensation for injury by accidents.

This law was amended in 2005 by chairman of the State Peace and Development Council. Since the rate in kyats for compensation during the 1920s are no longer applicable (workable) the rate for compensation are increased. The rate shall be according to the Notification by the existing Ministry of Labour. e.g. fine which may extend to "Ks 100" is substituted by "Ks 10,000".

Article -13: Compensation shall be paid in line with the provision of the said law.

## **16. Social Security Law, 2012**

Article -11:

(b) The project owner will register to the respective social security office.

(d) Not found.

Article -15: (a) The project owner will pay the social security fund for four types of social security

Article -18: (b) The project owner will pay the fund which have to be paid by himself together with the fund which have to be paid from the salaries of the employees.

Article -48: The project owner will pay the fund for accident, (but it is not related to workmen's compensation)

Article -49:

(a) The employers and insured of establishments where the employer had registered compulsorily under sub-section (a) of section 48 or where the employer had registered voluntarily under sub-section (b) of section 48 who have paid contribution to employment injury benefit fund shall not apply to the provisions contained in the Workmen's Compensation Act in respect of the employment injury benefit.

(b) The insured who has effected insurance for employment injury benefit under sub-sections (a) and (b) of section 48 shall only be entitled to employment injury benefits contained in this Law.

Article -75: The project owner will submit the lists and records, provided in article 75, to related social security office.

## **17. The Factories Act, 1951**

The law contains 10 Chapters and 109 articles.

Purpose: to ensure the health, safety, welfare, fair working time the clean environment for the employees working inside a factory. This law focuses on all stipulation for the employer (project owner).

The project owner should abide by nearly all sections in this Act. The project owner has to abide by all provisions for healthy, safety, welfare, working-hours and other needs. The project owner shall ask its legal expert to study this Act in details for his advice.

This Act also contains the provision for chemicals management and storage. The chemicals use in the manufacturing of motorcycle, paints, thinners, varnishes etc, may not require permits. Since iron smelting will not be involved permit for "hot work" may not be also necessary.

This factories Acts requires all factories to have proper pollution control measures such as air pollution, sewage and waste water treatment system and solid waste management system.

## **18. Minimum Wages Law, 2013**

Article -12: The employer:

- (a) Shall not pay wage to the worker less than the minimum wage stipulated under this Law;
- (b) May pay more than the minimum wage stipulated under this Law;
- (c) Shall not have the right to deduct any other wage except the wage for which it has the right to deduct as stipulated in the notification issued under this Law;
- (d) Shall pay the minimum wage to the workers working in the commercial, production and service business in cash. Moreover, if the specific benefits, interests or opportunities are to be paid, it may be paid in cash or partly in cash and partly in property, with prevailing regional price, jointly according to the desire of the worker;
- (e) In paying minimum wage to the workers working in the agricultural and livestock business, some cash and some property at prevailing regional price may be paid jointly according to local custom or desire of the majority of workers or collective agreement. Such payment shall be for any personal use and benefit of the worker and his family and the value shall also be considerable and fair.

Article -13: The employer:

- (a) Shall inform the workers the rates of minimum wage relating to the business among the rates of minimum wage stipulated under this Law and advertise it at the workplace to enable to be seen by the relevant workers;



- (b) Shall prepare and maintain the lists, schedules, documents and wages of the workers correctly;
- (c) Shall report the lists, schedules and documents prepared and maintained under sub-Section (b) to the relevant department in accord with the stipulations;
- (d) Shall accept the inspection when summoned by the inspection officer. Moreover, he shall produce the said lists and documents upon asking to submit;
- (e) Shall allow the entry and inspection of the inspection officer to the commercial, production and service businesses, agricultural and livestock breeding workplaces and give necessary assistances;
- (f) If the workers cannot work due to sickness, shall give them holiday for medical treatment in accord with the stipulations;
- (g) If the funeral matter of the member of the family of worker or his parent occurs, shall give holiday without deducting from the minimum wage, in accord with the stipulations.

Article -18: The inspection officer:

- (a) Has the right to enter and inspect the relevant commercial, production and service workplaces, agricultural and livestock breeding workplaces and inspect whether or not they comply with and carry out in accord with the rules, notifications, orders, directives and procedures under this Law, whether or not the lists, schedules and documents, wages relating to the workers are prepared correctly, and whether or not such lists, schedules and documents are reported to the Department in accord with the stipulations;
- (b) May summon, inspect the relevant persons under the assignment of duty by the Department, asking and copying for the relevant lists, schedules and documents.
- (c) If there are outside workers at employer, has the right to inspect information relating to such outside workers, their names and addresses and the right to ask for and copy their lists and documents and lists relating to minimum wage;
- (d) In carrying out under sub-section (a), (b) and (c) relating to inspection, if required by the employer to produce the document, shall show the civil service identify card issued by the relevant department;
- (e) Report to the Department in accord with the stipulations relating to the finding under sub-sections (a), (b) and (c), and documents and papers called for.

## **19. The Payment of Wages Law, 2016**

### Article -3: The employer must...

- (a) Pay in local currency or foreign currency recognized by the Central Bank of Myanmar. This may be in cash, check or deposit into the bank account of Employee.
- (b) Moreover, pay can be in the means of...
  - (1) Totally in cash OR half the cash and half in things set according to the local price to those employees working in trade, manufacturing and service sectors.
  - (2) Totally in cash OR half the cash and half in things set as local price according to local traditions or common agreement to those working in agriculture and livestock sectors.

But, this must be for the sake of the employees and their families. And, it also must be reasonable/fair.
  - (3) An employee shall receive the payment for 60 days when he/she is in Alternative Civil Service.

### Article -4: An employer must pay for...

- (a) Part-time, daily, weekly or other part-time job, temporary or piecework when the work is done OR at the agreed time.
- (b) According to the Article (a), the time frame shall not exceed one month.
- (c) Wages for the permanent work must pay per monthly basis. If so...
  - (1) Must pay at the end of the payment period when there are not more than 100 workers.
  - (2) If there are 100 workers and above, pay must not be administered later than 5 days after the end of the payment period.
- (d) Upon termination, wages must be paid within 2 days from the date of termination.
- (e) If a resignation letter is submitted, wages must be paid at the ending day of the payment period.
- (f) If an employee dies, wages must be paid to the legally recognized heir within 2 working days after the day he/she has died.
- (g) All wages must be paid during the working day.

Article -5: If the owner encounters difficulty to pay the wages according to Section 4 sub-section (c) because of significant happenings, including natural disaster, the employer must report to the Department with solid evidence that wages will be paid at the mentioned day upon the workers' agreement.

Chapter-III: The employer may deduct:

- From wages, except leaves
- Expenses which are allowances of any kinds
- Advance payment or reimburse or saving for the worker etc
- From the wages of the worker under a decision of a court of Arbitration Council etc

The employer shall not deduct from the wages of the worker except in accordance with provision of Section 7 and 11.

The deduction shall not exceed 50% of the wages of a worker.

- The employer shall obtain approval of the Department regarding deduction.
- The employer may designate as time to compensate for loss of property and cast and violation of any terms or condition, stipulated as time in the employees agreement.

The worker: May request the employer to be settled by himself or legally registered labour organization etc or may submit to the inspector to solve the problem.

- The chief inspect will make decision and his order in final.

Article -14: The worker has the right to enjoy overtime wages stipulated by the law if he works overtime.

Article -22: No employer shall not violate sections 4, 5, 8, 9 and 11 regarding payment and term and rate of payment.

Article -23: No employer shall violate the rules, decrees and prohibition regarding payment to its employees.

Chapter-8 deals with penalties for violation of the law. The penalties range from:

- Imprisonment of no more than 3 months and fine not more than Ks 500,000
- Imprisonment of no more than 3 months and fine at least Ks 2,000,000
- Imprisonment of up to 6 months and fine at least Ks 5,000,000

## **20. Myanmar Public Health Law, 1972**

Article -3: The company shall cooperate with the authorized person or organization in line with the law and shall abide by any instruction or stipulation for public health.

Article -5: The company shall accept any inspection anytime and anywhere if it is needed.

## **21. Prevention and Control of Communicable Diseases Law, 1995**

Article -3: In order to prevent the outbreak of Communicable Diseases the Department of Health shall implement the following project activities.

- (a) Immunization of children by injection or orally.

Article -4: When a principal epidemic disease of a notifiable disease occurs:-

- (a) Immunization and other necessary measures shall be undertaken by the Department of Health, in order to control the spread thereof
- (b) The public shall abide by the measures undertaken by the Department of Health under sub-section (a)

Article -9: The head of the household or any member of the household shall report immediately to the nearest health department or hospital when any of the following events occur:-

- (a) Rat fall
- (b) Outbreak of a principal epidemic disease
- (c) Outbreak of a notifiable disease

Article -11: In order to prevent and control the spread of a principal disease the health officer may undertake the following measures:-

- (a) Investigation of a patient or any other person required
- (b) Medical examination
- (c) Causing laboratory examination of stool, urine, sputum and blood sample to be carried out
- (d) Causing investigation by injection to be carried out
- (e) Carrying out any other investigation.

## **22. The Control of Smoking and Consumption of Tobacco Product Law, 2016**

Article -9: The person in charge at the factory shall:-

- (a) Keep the caption and mark referring that it is a non-smoking area the place mentioned.

Article -6: In accordance with stipulation.

- (b) Arrange the specific place where smoking is allowed as mentioned in section-7 and keep the caption and mark also referring that it is a specific place where smoking is allowed, in accordance with the stipulation
- (c) Supervise and carry out measures so that no one shall smoke at the non-smoking area.
- (d) Accept the inspection when the supervisory body comes to the place for which he is responsible.

### **23. Protection and Preservation of Antique Objects Law, 2015**

Article -12: A person who finds any object which has no owner or custodian shall promptly inform the relevant Ward or Village-Tract Administration if he known or it seems reasonable to assume that the said object is an antique object.

### **24. Protection and Preservation of Cultural Heritage Regions Law, 2019**

Section-13: A person desirous of carrying out one of the following shall abide by the provisions of other existing laws and also apply to the Department in accordance with stipulation to obtain prior permission under this law:-

- (a) Within the ancient monumental zone or the ancient site zone
  - (1) Construction or extending a building
  - (2) Renovating the ancient monument or extending the boundary of its enclosure;
- (b) Within the preserved or protected zone, constructing extending, renovating a hotel, motel, guest house, lodging house or industrial building or extending the boundary of its enclosure
- (c) Within the culture heritage region:
  - (1) Carrying out the renovation and maintenance work of the ancient monument without altering the original ancient form and structure or original workmanship;
  - (2) Carrying out archeological excavations;
  - (3) Building road, constructing bridge, irrigation canal and embankment or extending the same

Section-22: No person shall construct a building which is not in conformity with the conditions prescribed region wise by The Ministry of Culture in the cultural heritage region.

## **25. Protection and Preservation of Ancient Monuments Law, 2015**

Section-12: Anyone who has found an ancient building of 100 years or more of age without owner on the ground, underground above the water or under the water has to inform, if the building is recognized as or believed to be an ancient monument , the nearest village or township administration department.

Section-15: Every person desirous to engage in the following within the area of certain ancient monuments has to apply for the permission of the administration department:

(b) Constructing industrial building

(e) Digging a well, pond

(h) Constructing buildings near an ancient monument if this violets the structural rules approved by the ministry.

The administration development can approve or reject an application submitted under section 14 or 15 after having analyzed it.

Section-20: No one is allowed to do any of the following acts likely to cause damage to an ancient monument within the boundary without prior written permission of the administration department

(b) Using and driving heavy machines and vehicles which may cause vibration within the area of an ancient monument

(f) Releasing of chemical waste which can cause pollution of ancient monument and the natural environment

## **26. Myanmar Insurance Law, 1993**

Article -15: Owner of motor vehicles shall effect life insurance for a minor

Article -16: An entrepreneur or organization operating an enterprise which may cause loss to state-owned property or which may cause damage to the life and property of the public or which may cause pollution to the environment shall effect compulsory General Liability Insurance with the Myanmar Insurance.

## **27. Fire Brigade Law, 2015**

Article -25: No person shall fail to abide by the directives in respect of fire precaution and prevention issued under section -17 by the Township Fire Service Department.

Article -26: The owner or manager of the factory, workshop, work site or business exposed to fire hazard shall:

- (a) Not fail to form the reserve fire bridge
- (b) Not fail to provide materials and apparatus for fire precaution and prevention, in conformity with the directive of the Fire Service Department.

### **28. Myanmar Engineering Council Law, 2013**

Article -34: If, whoever has received a registration certificate, is found to have breached any rules contained in the registration certificate or violated any prohibition contained in a rule, order or directive enacted under this law or in any stipulation of the law, the executive committee may take the following administrative actions:-

- (a) Giving a warning;
- (b) Assessing a suitable fine;
- (c) Suspending the registration certificate,
- (d) Cancelling the registration certificate.

Article -37: No one shall perform any engineering work and technological work which are specified as being dangerous to the public by a rule enacted under this law without having received a registration certificate issued by the Council, except engineers appointed in a government department or an organization in the performance of their duties.

### **29. Yangon Region City Development Committees Law, 2018**

Article -300: No one shall carry out the construction of building and structure and undertake the industrial business without the certificate of land lease, license, permit, and approval issued by the Committee.

Article -302: (a) No one shall do the construction business without the permit or approval issued by the committee.

### **30. Myanmar Export Import Law, 2012**

Article -6: Without obtaining license, no person shall export or import the specific goods which is to obtain permission

Article -7: A person who obtain any license shall not violet the conditions contained in the license.

### **31. The Protection of Wildlife and Protected Area Law, 1994**

Objectives:

- (a) to implement the government policy for wildlife protection
- (b) to implement the policy for natural areas conservation
- (c) to carry out in accordance with the International Conventions acceded by the State in aspects of the protection and conservation of wildlife, ecosystems and migratory birds to protect endangered species of wildlife and their natural habitats

### **32. Land Acquisition, Resettlement and Rehabilitation Law, 2019**

Section-37: The land owner

- (a) has the right to claim for the expense of resettlement and rehabilitation as stipulated by law, due to the acquisition of his land and property.
- (b) In addition to the right mentioned in the subsection (a) he has also the right to claim for the price of land and property not more than current price after agreement with the department or organization that proposed for acquisition.

Section-38: The land acquisition committee, instead of giving compensation, can give a land to the owner as an exchange for the land acquired, with the approval of the Union Government.

### **33. Farmland Law, 2012**

#### Chapter III

Section-9: The person who has the right to use the farmland shall have the following rights:

- (a) right to have the farmland in possession, right to use the farmland, right to enjoy the benefit arising from this right;
- (b) right to sell, mortgage, lease, exchange and gift on the whole or part of the right to use the farmland in accordance with the stipulated terms and conditions;

#### Chapter IV

Section-12: The person who has the right to use the farmland:

- (a) shall carry out the farmland as prescribed in this Law;
- (b) shall pay land revenue and other taxes levied by the Ministry relating to the farmland;

#### Chapter X

Section-30: In respect of the application to utilize farmland for other purposes in the interest of the public:



- (b) The respective Region or state Government shall give permission to utilize the farmland for other purposes except paddy land, with the recommendation of the Region or State Farmland Management Body.

Section-30: (b) The relevant Region or State Government Organization may permit to use the farm land by other means except low land (paddy land) with the recommendation of the Region or State Administrative Body of the farmland.

## Chapter XII

Section-35: Any person who has the right to use the farmland fails to comply with the order passed under Section 19 or the order or decision passed in the dispute of the right to use the farmland under this Law shall, on conviction, be punished with imprisonment for a minimum of six months to a maximum of two years and shall also be liable to fine for a minimum of three hundred thousand kyats to a maximum of five hundred thousand kyats.

### **34. Electricity Law, 2014**

Section-10: When engaging in electricity activities, the ministry, the relevant region or state government and the head ("oozi") of the relevant self-administered division or self-administered zone –

- (b) shall carry out an environmental impact assessment (EIA) in order to minimize the impact on the environment in accordance with the provisions stipulated in the Environmental Conservation Law. They shall pay compensation for the impact and contribute to the environmental conservation fund. Private entrepreneurs holding a license must also comply with these points

Section-18: The license holder has the right to engage in electric power generation and distribution only after having received the electrical hazards safety certificate from the chief inspector.

Section-21: (a) The license holder shall, if he fails to comply with the law, rules, regulations, procedures, orders and directions or the specified quality, standards and norms, be responsible in accordance with the law if any person or organization is affected or suffers a loss as a result.

Section-22: (a) The license holder shall be responsible in accordance with the law if any person or organization is affected or suffers a loss due to his negligence in performance;

Section-26: The license holder must comply with the following-

- (a) Electricity exploration must be done in accordance with the law;
- (b) In electric power generation, transmission and distribution-

- (1) Electrical power must be generated as specified in the license;
- (2) Instruments for measuring electric power and protective equipment must be systematically used and maintained in accordance with the stipulations.

Section-27: The license holder and the authorized person must inform the chief inspector and the relevant department in charge immediately if an electrical hazard has accidentally occurred when generating, transmitting, distributing or consuming electric power.

Section-40: The license holders comply with the rules, norms and procedures issued by the ministry and must accept necessary inspections by the relevant government departments and organizations.

Section-68: If the negligence or irresponsibility of the license holder or of persons assigned by him has caused injury, disability or death by electrocution or fire, the aggrieved person has the right to request compensation from the license holder as follows-

- (a) If the aggrieved person is entitled to compensation according to the existing labour compensation law, the compensation specified in this law;
- (b) If the aggrieved person is not entitled to compensation according to the existing labour compensation law, the compensation specified in the rules, issued under this law.

### **35. Consumer Protection Law, 2019**

Objectives:

Section-3 (a): To fully protect the rights of consumers

Section-3 (b): To conduct comprehensive education campaign regarding consumer protection

Section-3 (c): To provide true information regarding consumer protection

Section-3 (d): To guarantee for safety, health and satisfaction for consumers and to provide quality products and services for consumers

Section-3 (e): To ensure that goods producers and services providers comply with the law

Section 69-73: anyone who is non-compliance with the prohibitions stipulated in Sections 62, 63, 64, 65, 66, 67, 68 shall be punished, on conviction, with imprisonment for terms (ranging from not exceeding 6 months to not exceeding 2 Years) or with fines (ranging from not exceeding Ks. 20 lakhs to fines not exceeding Ks. 200 lakhs) or with both.

### **36. Occupational Health and Safety Law, 2018**

Section-12: The Employer shall, in accordance with the stipulations of the Ministry:

- (a) appoint the Person In-charge for Occupational Safety and Health to closely supervise safety and health of Workers in line with the type of Industry/Business; and

- (b) form the respective Occupational Safety and Health Committee in line with the type of Industry/Business comprising equal number of Employer and Worker representatives to become safe and healthy Workplace on condition that the number of Workers in his/her Industry/Business exceeds the number determined by the Ministry for that purpose. The Occupational Safety and Health of female Workers shall be considered according to the nature of Industry/Business when forming such Occupational Safety and Health Committee.

Section-14: Persons In-charge for Occupational Safety and Health shall comply with this Law and rules, orders, directives and procedures made under this Law to make the Workplace to be a safe Workplace that is good for health.

Section-16: Inspection Officers shall enter the Workplaces to which this Law applies and inspect Occupational Safety and Health conditions and direct Employers for their compliance and report the findings to the Chief Inspection Officer.

Section-17: Inspection Officers have the powers to perform the following for Occupational Safety and Health in accordance with their codes of conduct:-

- (a) the power to enter, inspect and inquire at any Workplaces related to this Law at any time by showing the Inspection Officer's identity without warrant;
- (b) the power to look at, make copies of and seize as evidence as required documents and records in connection with Workplaces and Processes;
- (c) the power to take photos and record videos in connection with Workplaces and Processes that may be harmful to Occupational Safety and Health;
- (d) the power to assess and measure and take records of the extent of impairment and duration caused to the environment of the Workplace due to loudness, light, heat, coldness, particles, gas and Hazardous Materials, and obtain the assistance of the expert in the relevant field of study if required;
- (e) the power to inquire of any person in the Workplace during working hours with the assistance of the Recognised Doctor to check any conditions that put or are likely to put Workers in contact with Occupational Disease; and
- (f) the power to require responsible persons at clinics or hospitals to deliver, with the stipulated security grade, medical treatment records of the Worker who is under treatment or information relating to death due to Occupational Accident or Occupational Disease, or autopsy results asked by the Department in the stipulated form.

Section-18: Inspection Officers shall, with the approval of the Chief Inspection Officer, order the Employer to temporarily close a whole or part of the Workplace, and notify the relevant Departments if required, if they believe that an Occupational Accident, Occupational Disease, Hazardous Event or Major and Serious Occupational Accident occurs or is likely to occur because:

- (a) it is not appropriate to continue doing the Industry/Business due to dangerous Workplace condition, or unsafe operation carried by Workers, or existence of Hazardous Materials and Hazardous Machines, or layout and function of Workplace, part of the machine or equipment;
- (b) it is not appropriate to continue doing the Industry/Business due to breach or incompliance with any of the provisions of this Law;
- (c) it deems that Workers in the Workplace are in danger due to acts, omissions, negligence or carelessness; or
- (d) it needs to evacuate Workers from hazards because an Occupational Accident or accident is about to occur.

Section-26: The Employer shall be responsible to: -

- (a) arrange as required to assess the risks of Workplace, Process and machines and materials used thereat;
- (b) arrange as required to assess the likelihood of occurrence of hazards at the Workplace and to the environment;
- (c) arrange to have Workers medical checked-up by the Recognized Doctor in accordance with stipulations whether they suffer from any Occupational Disease;
- (d) arrange to improve the Workplace until it is safe and good for health based on the findings as per sub-sections (a), (b) and (c)
- (e) provide Workers with sufficient number of personal protective clothing, materials and facilities prescribed and approved by the Department on free of charge basis and cause Workers to wear them while working;
- (f) prescribe precautionary plans and plans for emergency;
- (g) provide a clinic, appoint the Registered Doctors and nurses and provide medicines and supporting equipment for any Industry/Business where the number of Workers is not less than the number determined by the Ministry;
- (h) make necessary arrangements for managers, Workers and members of the Occupational Safety and Health Committee including (Employer) himself/herself to attend Occupational Safety and Health training courses stipulated by the Ministry in accordance with their departments or types of work;

- (i) make necessary arrangements to enable immediate reporting to the Person In-charge for Occupational Safety and Health or manager in case where a Worker suffers an Occupational Accident or his/her life or health is likely to be in danger;
- (j) arrange to prevent any persons in the Workplace from Occupational Safety and Health risks occurred due to materials, machines or wastes used in the Workplace or Process;
- (k) immediately stop the Process, evacuate Workers and conduct necessary rescue plans if any Occupational Accident is about to occur. If possible, Workers will be relocated to another appropriate safe Workplaces;
- (l) display Occupational Safety and Health instructions, danger signs, notices, posters and signage for directions in accordance with stipulations;
- (m) arrange to be complied with precautions when entering restricted hazardous Workplaces;
- (n) arrange to disseminate Occupational Safety and Health manuals and guidelines issued by the relevant Ministries for knowledge, technology, information and skills not only to Workers but also to related persons or raise their awareness or knowledge thereof;
- (o) lay down the fire safety plan, perform fire drilling and train Workers to use fire extinguishers systematically;
- (p) allow the Chief Inspection Officer and Inspection Officers to enter Workplaces, inquire, request documents and information or seize exhibits;
- (q) cause Workers to work only for the specified working hours if they have to work in Hazardous Industry/Business and Workplace; and
- (r) Incur the expenses for Occupational Safety and Health matters.

Section-27: No Employer shall dismiss or demote a Worker: -

- (a) during any period before a medical certificate is issued by the Registered Doctor for occupational injury or by the Recognized Doctor for contact with Occupational Disease;
- (b) because the said Worker has addressed a complaint for hazardous or health detrimental condition;
- (c) because the said Worker has conducted the responsibilities of Occupational Safety and Health Committee; or
- (d) because the said Worker has refused to work in any condition where an Occupational Accident or Occupational Disease is about to occur.

Section-34: The Employer is responsible to undertake the following in accordance with the stipulations: -

- (a) informing the Department in case of an Occupational Accident, Hazardous Event or Major and Serious Occupational Accident;
- (b) if a Worker is in contact with a stipulated Occupational Disease or contaminated or likely to be contaminated due to materials or Process used, sending a report to the Department together with a medical report prepared by the Recognized Doctor.

Section-36:

- (a) Inspection Officers must perform inspection as required if any Occupational Accident, Hazardous Event, Occupational Disease or Occupational Contamination breaks out.
- (b) No one shall, without consent of the Chief Inspection Officer, remove, conceal, add or change a whole or part of the materials, machines, equipment, layout, documents or signs relating to the occurrence of an Occupational Accident, Hazardous Event, Occupational Disease or Occupational Contamination.

### **37. The Highway Law, 2000**

Section-7: Whoever without the permission of the Public Works commits any of the following acts shall, on conviction, be punished with imprisonment for a term which may extend to 3 years or with fine or with both:-

- (b) constructing the building within the boundary of the highway

Section-8: Whoever commits any of the following acts shall, on conviction, be punished with imprisonment for a term which may extend to months or with fine or with both:-

- (c) planting, cutting or destroying tree or crops within the boundary of the highway without permission of Public Works

Section-9: Whoever commits any of the following acts shall, on conviction, be punished with imprisonment for a term which may extend to 3 months or with fine or with both:-

setting up the signboard of advertisement within the boundary of high ways without permission of Public Works

### **38. Myanmar Motor Vehicle Law, 2015**

The law contains 14 chapters and 81 Articles.

- Chapter-6 is on import of motor vehicles, manufacturing, selling, equipping, repairing, maintenance and inspection of motor vehicles in detail,

- Chapter-9 is on Prohibition.

(No one is allowed to operate a business of manufacturing, selling or equipping motor vehicles without a business license Art.50, a.)

- Chapter-10 is on Penalties.

All the articles (58, to 66) are about penalties and involve punishment with imprisonment of ranging from not more than one month to not more than 6 months; and times ranging from not more than Ks 50,000 to not more than Ks 5,000,000.

### **39. Vehicle Safety and Motor Vehicle Management Law, 2020**

Section-9: The ministry must implement the following will the approval of the Union Government.

- (a) designate and restrict the areas for the movement of vehicles used inside the nation.

Section-12: The ministry shall:

(c) as regards initial motor vehicle registration, must issue the safety and environmental regulation, and standards.

Section-14: The power and responsibilities of the Directorate are as follows:

- (r) must designate motor vehicle speed on the roads used by public.

Section-18: The motor vehicle owner:

- (a) must maintain the motor vehicle in accordance with the standards fixe by the Directorate for safety driving.

Section-81: No one must not

carry or transport dangerous goods without regulation or public areas.

### **40. Trademark Law, 2019**

Chapter (XII):

Section-37: If the owner of a mark complies with the provisions in Chapter XI, he shall enjoy the registered mark-related rights stipulated in this chapter for the term of the registration.

Section-38: The right holder shall, without prejudice to the provisions in sections 39 and 40,:

- (a) Enjoy the following as an exclusive right:

- (1) a right to prevent, in accordance with this law, the use by any other person, without his consent in the course of trade, of an identical or similar mark for identical or similar goods or services if such use misleads the public.

- (2) the right to pursue criminal action, civil action or both against those who infringe on the rights relating to a registered mark.
- (3) under the following conditions, a right to prevent the use of a mark identical or similar to a registered, well-known mark for different goods or services, without the consent of owner of the mark, in the course of trade:
  - (aa) if it indicates that there is a connection with the owner of a registered well-known mark and the goods or services for which said mark is used;
  - (bb) if it is harmful to the interests of such registered mark owner.
- (b) The rights of a registered mark may be transferred or licensed, in accordance with the provisions in chapters XIII and XIV, to any other person.

Chapter (XXIII):

Section-87: (a) Whoever is found guilty of any of the following offences for commercial purposes without the consent of the right holder shall be punished with a prison sentence of no more than three years, a fine not exceeding five million (5,000,000) kyats, or both:

- (1) counterfeiting a mark;
- (2) using a counterfeit mark for goods or in relation with services;
- (3) keeping any object or equipment mainly used to make a counterfeit mark or mainly used to use a counterfeit mark in goods.

Section-87: (b) Whoever is found guilty of any of the following offences shall be punished with a prison sentence of no more than two years, a fine not exceeding five million (5,000,000) kyats, or both:

- (1) trading in and distributing goods using counterfeit marks or keeping such goods in possession for the purpose of trading and distribution;

importing goods using counterfeit marks into Myanmar or exporting such goods from Myanmar.

**41. Industrial Design Rights Law, 2019**

Chapter (IV):

Section-17: An inventor of the industrial design, his legal heir, or his legal transferee may apply for the registration of said industrial design.

Section-18: If an industrial design is created by more than one person, said persons have the right to jointly apply for the registration of such industrial design.



Chapter (X):

Section-20: Any person, who is eligible, under this Law, to apply for the registration of an industrial design, shall apply for registration of said industrial design to the Registrar, in accordance with the stipulations, if he wishes to receive industrial design rights.

Chapter (XIV):

Section-42: The term of registration for a registered industrial design is five years from the date of submission of the application. The term of registration may be renewed for up to two times in increments of five years.

Chapter (XV):

Section-45: If the owner of the industrial design complies with the provisions in Chapter XIV, he may enjoy the registered industrial design rights under this chapter during the term of registration.

Section-46: Without prejudice to the provisions of sections 49 and 50, the owner of the industrial design:

(a) As an exclusive right:

(1) to prevent another person from producing, selling or importing products, for commercial purposes without his consent, which are made from or include reproductions of an industrial design that has been registered according to this Law or an industrial design which reproduces the main parts of a registered industrial design under this Law;

(2) the right to pursue civil action against those who infringe upon the rights of registered industrial designs.

(b) may transfer or grant license of the rights of the registered industrial design to any other person in accordance with the provisions of chapters 16 and 17.

Chapter (XXIII):

Section-75: Whoever commits any of the following acts shall be punished with an imprisonment term of not more than one year, a fine not exceeding 2,000,000 kyats, or both, upon conviction:

(a) issuing a false industrial design registration certificate or ordering a false industrial design registration certificate to be issued;

(b) making a false entry without good faith or ordering a false entry to be made in the registration records;

- (c) disclosing the industrial design, which should be kept confidential during a certain period of time when said design must be kept confidential, to an unrelated party; providing the documents related to the application for the registration of an industrial design to an unrelated Party, disclosing to the public, or allowing the use of such documents, during the stipulated period before the announcement.

## **42. Patent Law, 2019**

### Chapter (14):

Section-51: A patentee, who complies with the provisions contained in chapter 13, is entitled to the patent rights contained in this chapter during the term of the patent.

Section-52: Without prejudice to the provisions contained in section 54, the patentee:

(a) as an exclusive right:

- (1) Shall be entitled to prevent or prohibit, in accordance with this Law, another person from manufacturing, using, offering for sale, selling or importing his patented product without his approval.
- (2) Shall be entitled to prevent or prohibit, in accordance with this Law, another person from using his patented production process or carrying out the acts contained in item (1) of subsection (a) for a product which is manufactured using said production process without his approval.

(b) Shall be entitled to pursue civil action against those who infringe upon patent rights.

(c) May transfer his patent rights or grant licenses to any other person, in accordance with the provisions contained in Chapters 15 and 16.

### Chapter (24):

Section-105: Any person convicted of any of the following activities shall be penalized with imprisonment of no more than one year, a fine of not more than two million kyats, or both:

(a) Issuing or causing to issue a false patent certificate or a minor invention patent certificate;

Making or causing to make a false entry in the registration records without good faith.

## **43. Law on Standardization, 2014**

### Chapter (VI):

Section-17: A person desirous of obtaining certificate of certification shall apply to the department and organization which has obtained the accreditation.

## Chapter (VII):

### Taking Action by Committee

Section-19: The Committee may, if it is found out that holder of certificate of certification violates any term or condition contained in the relevant recommendation, pass any of the following administrative orders:

- (a) warning;
- (b) suspending the certificate of certification for limited period;
- (c) cancelling the certificate of certification

Section-26: If any person who obtained certificate of certification uses standardization mark on the product which is not in conformity with the relevant standard or relating to service shall be punished with imprisonment for a term not exceeding one year or with fine not more than one million Kyats or with both.

## **44. Tax Management Law, 2019**

### Section-40:

- (a) Everybody who has the duty to pay tax must pay the tax within the period as stipulated by tax law.
- (b) Must pay the tax in accordance with the place and method as designated by the Director General.

Section65: Anybody who violates the followings will be fined at a rate of 10% of the tax to be paid.

- (a) fail to register in accordance with the tax law
- (b) fail to report to the Director General regarding the changes in information and data on tax payment as stipulated in Section-9, Sub-section (f) and (g).

Section-77: Anybody who evade tax in any manner, if convicted will be punished with imprisonment of not more than 7 years or fined with Ks 25,000 or cash equivalent to 100% of tax evasion period, whichever is more, or both.

## **45. Union Tax Law, 2019**

Section-19: (d) Enterprises, companies, and Cooperatives that are operating according to approval by Natural Economic Organization and Myanmar Investment Commission, have to pay the taxes in accordance with the type and rate as stipulated in the law.

#### **46. Registration of Deeds Law, 2018**

Section-20: The following persons may register the deeds at the Registration of Deeds office established according to Section-10 or Section-11.

- (a) Persons having made the deed person having an interest in the decree or order issued by a court.
- (b) The person according to Section-3 (h).
- (c) The persons who have obtained the following powers of attorney given by a person according to Sub-section (a).

Section-71: Any person may look at, and obtain a copy of, the deeds and maps prescribed in Section-70 by paying the specified fees.

#### **47. Fresh water Fisheries Law, 1991**

Section-40: No one shall cause harassment of fish and other aquatic organisms or pollution of water in fresh water fisheries water.

#### Commitment

Aung Gabar Motor Services Co., Ltd will comply with the above mentioned laws, rules, regulation, particularly, the relevant section/subsection excerpted and reproduced above.

  
DAW EI MYO MYO KHINE  
DIRECTOR  
AUNG GABAR MOTOR SERVICES CO., LTD.

### **3.2.2 International conventions treaties and agreement (concerning environmental affairs)**

Myanmar has either signed or ratified no less than thirty treaties, conventions and protocols concerning environment, it is learnt.

Some of the regional conventions or protocols signed or ratified by Myanmar are:

- (i) ASEAN Agreement on Conservation of Nature and Natural Resources. Kuala Lumpur, 1985
- (ii) Agreement on Aquatic Centre in Asia and Pacific Bangkok, 1988
- (iii) ASEAN Agreement on Tran-boundary Haze Pollution, 2002
- (iv) Establishment of ASEAN Regional Centre for Biodiversity, 2005

Some of the international conventions and protocol which are of importance are:

- (i) Convention on Wetlands of internationally importance, RAMSAR 1971 and amended, 1987
- (ii) Convention for the protection of World Culture and National Heritages. Paris, 1972.
- (iii) Convention on International trade in Endangered Species of wild Fauna and Flora. Washington, 1973, and amended, Bonn, 1979.
- (iv) Convention on conservation of migratory species of wild animals. Bern, 1983.
- (v) Vienna convention for the protection of Ozone Layer. Vienna, 1985.
- (vi) Convention on Biological Diversity. Rio-de-Janero, 1992
- (vii) U N Frame work Convention on Climate Change, 1992.
- (viii) Kyoto Protocol on the frame work convention on climate change. Kyoto, 1998
- (ix) Protocol on Bio safety. Cartagena, 2000
- (x) Convention on Persistent Organic Pollution (POP). Stockholm, 2004

Recently the country has participated in:

- (xi) UN Climate Change Conference, COP (conference of the parties) 21, Paris, 2015
- (xii) UN Climate change conference, COP 22, Marrakesh, 2016

(xiii) International conference on climate change, 2017

(xiv) Second international conference on climate change, Colombo, 2018 and all UN Climate change yearly conference hold in the frame work of UN Framework Convention on Climate Change (UNFCCC).

### 3.2.3 National and international standards and guideline

#### I. National Environmental Quality Guideline by Environmental Conservation Department (ECD)

##### (a) Air emission

Aung Gabar Motor Services Co., Ltd will follow the general National Environmental Quality guideline values for air emission as prescribed by the Environmental Conservation Department (from Notification No.615/2015, December 2015, by ECD, then under the Ministry of Environmental Conservation and Forestry (MOECAAF), now MONREC, Code No. 1.1.

Parameter	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate matter $\text{PM}_{10}^{\text{a}}$	1-year	20
	24-hour	50
Particulate matter $\text{PM}_{2.5}^{\text{b}}$	1-year	10
	24-hour	25
Sulfur dioxide	24-hour	20
	10-minute	500

<sup>a</sup> Particulate matter 10 micrometers or less in diameter

<sup>b</sup> Particulate matter 2.5 micrometers or less in diameter

##### (b) Effluent

Aung Gabar Motor Services Co., Ltd will follow the National Environmental Quality general guideline values for effluent levels (Notification No.615/2015, December 2015, by ECD, MOECAAF), Code No. 1.2

(Waste water, storm water runoff, effluent and sanitary discharges (general application))

<b>Parameter</b>	<b>Unit</b>	<b>Guideline value</b>
5 day biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH	S.U. <sup>a</sup>	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3 <sup>b</sup>
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total nitrogen	mg/l	10
Total suspended solids	mg/l	50
Zinc	mg/l	2

<sup>a</sup> Equivalent continuous sound level in decibels

### WHO drinking water standards

Parameter	Unit	Guideline Value
pH	S.U	6.5-8.5
Chloride	mg/l	250
Total Hardness as CaCO <sub>3</sub>	mg/l	500
Total Iron	mg/l	0.3
Sulphate	mg/l	250
Temperature increase	°C	<3
Turbidity	NTU	5
Manganese	mg/l	0.4
Total dissolved solids	mg/l	600
Copper	mg/l	2
Arsenic	mg/l	0.01
Cyanide	mg/l	0.07
Zinc	mg/l	3

### (c) Noise level

The National Environmental Quality general guideline for noise (from Notification No.615/2015, December 2015, by MOECAAF), code No.1.3.

Receptor	One Hour LAeq (dBA) <sup>a</sup>	
	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

<sup>a</sup> Equivalent continuous sound level in decibels



(d) Odour

Guideline standard for odorant unit is between 5 and 10.

### **3.2.4 Standards and guidelines**

#### **I. International standards**

The project proponent may not be in a position to strictly comply with these international guidelines but will refer to these guideline as practical as possible (The project proponent has an obligation to comply with the national standards and guideline of Myanmar).

- 1) Automotive Engineering standards. [Ansi.org](http://Ansi.org)>automotive
- 2) Auto safety and technical policies in China. [Int.Jour.Auto.Industry.ijbss.net.com](http://Int.Jour.Auto.Industry.ijbss.net.com)>journal>q.pdf.
- 3) China Vehicle Standards, GB Standards (English version translation). [www.gbstandards.org](http://www.gbstandards.org)>index>std.
- 4) IBC. International Building Code
- 5) IFC. Environment, Health and Safety (EHS) guidelines, 2007.
- 6) IFC. Construction and Infrastructure guideline. [www.ifc.org](http://www.ifc.org)>wps>wcm>coonect
- 7) ILO standard on Occupational Safety and Health (OSH). [ilo.org.global](http://ilo.org.global)>standards
- 8) ILO. Fundamental principles of Occupational Health and Safety (OHS). [www.ilo.org.pub](http://www.ilo.org.pub)>wcm.097550
- 9) ISO-9001. Automotive ISO standards. 1999.
- 10) ISO/TS 16949. Wikipedia. <https://en.m.wikipedia.org/wiki/iso>.
- 11) ISO/TC. 22. Road vehicles. <https://www.iso.org/catalogue>.
- 12) ISO and Road vehicles. <https://www.iso.orh/PUB100292>
- 13) ISO/DENSO Auto parts. [densoautopart.com](http://densoautopart.com)>the-international-st. <https://webstore>
- 14) ISO.91. Construction Materials and building. <https://www.iso.org/ics>
- 15) Motor Vehicle Assembly. EBRD subsector Environmental and Social Guidelines, 2014. <https://www.ebrd.com/doc>.

### **3.3 Contractual and other commitment**

#### **3.3.1 Commitments made by the project proponent**

The project proponent has made a sincere commitment and confirmed that:

- (a) the information and data in this EIA report are true and accurate and that the report is complete,
- (b) the EIA has been prepared in strict compliance with applicable laws including EIA procedure and with the TOR for the EIA, and
- (c) that the project proponent will at all times comply fully with the commitments, mitigation measures, EMP and MP in the EIA report. (EIA procedure 616/2015, section-62, a, b, c)

Moreover the company pledges not to pollute the air, water and land environment as practical as possible throughout the entire life of the project from the Construction Phase through the Operation Phase to the Decommissioning and Rehabilitation Phase. The Company will endeavour to operate the plant with an environmentally and socially responsible maner. The Company will monitor and adopt suitable measures for environmental protection. And the Company will follow all at the mitigation measures to be taken and the EMP implemented as prescribed in this EIA report. The company pledges to spend 2% of its net profit for the implementation of CSR.



DAW EI MYO MYO KHINE  
DIRECTOR  
AUNG GABAR MOTOR SERVICES CO., LTD.

### **3.3.2 Commitments by the consultant firm, MESC**

The consultant firm has made a sincere commitment and confirmed that:

- (a) the information and data in this EIA report are true and accurate and that the report is complete, and
- (b) that the EIA has been prepared in strict compliance with applicable laws including EIA procedure and with the TOR for the EIA. (EIA procedure 616/2015, section-62, a, b)

The report has been prepared by MESC with utmost effort with all reasonable skills, care and diligence within the term of contract with the client (Aung Gabar Motor Services Co., Ltd). Recommendations are based on our experience, using professional judgement and based on the information that is available to us.

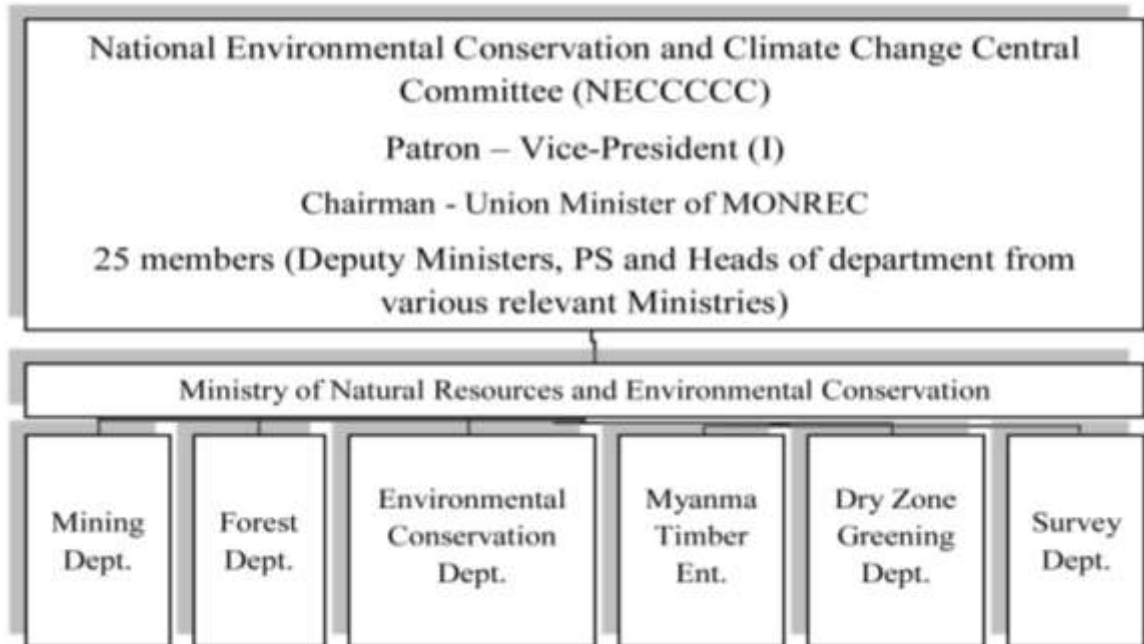


Myint Kyaw Thura  
Managing Director  
Myanmar Environment Sustainable  
Conservation

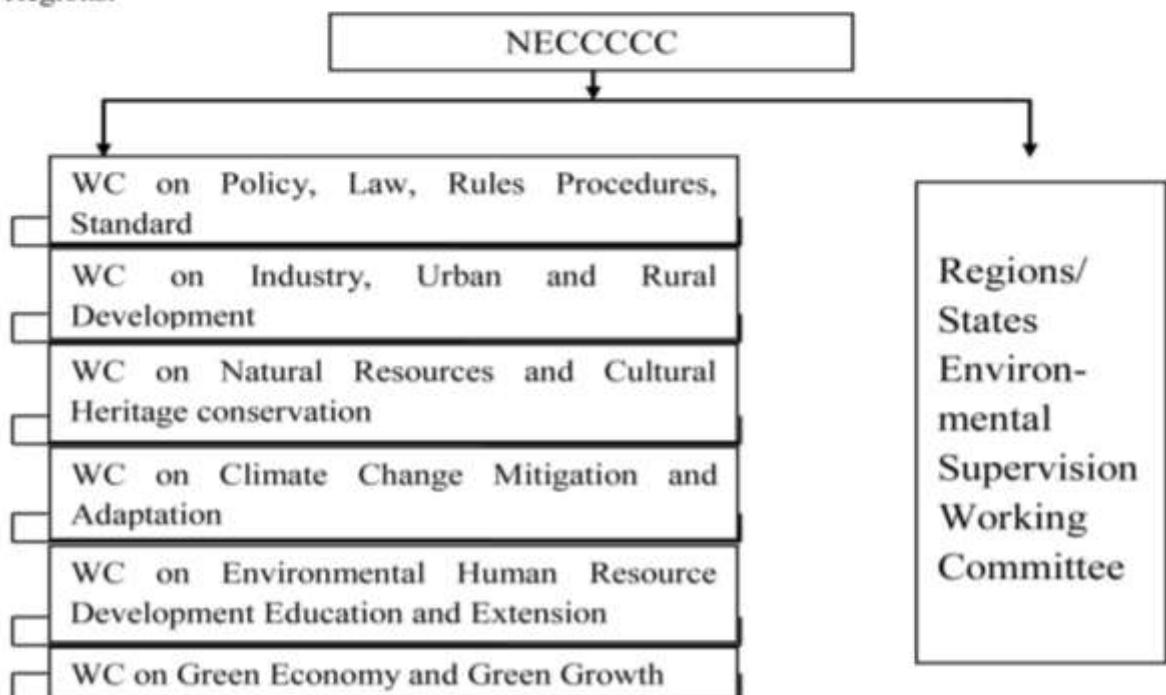
### 3.4 Institutional frame work

The National Environmental Conservation Committee (NECC) was formed in 2011 with the aim to achieve sound environmental management in the country. It is enlarged and reorganized as National Environmental Conservation and Climate Change Central Committee (NECCCCC).

The institutional organization of NECCCCC is as follow:

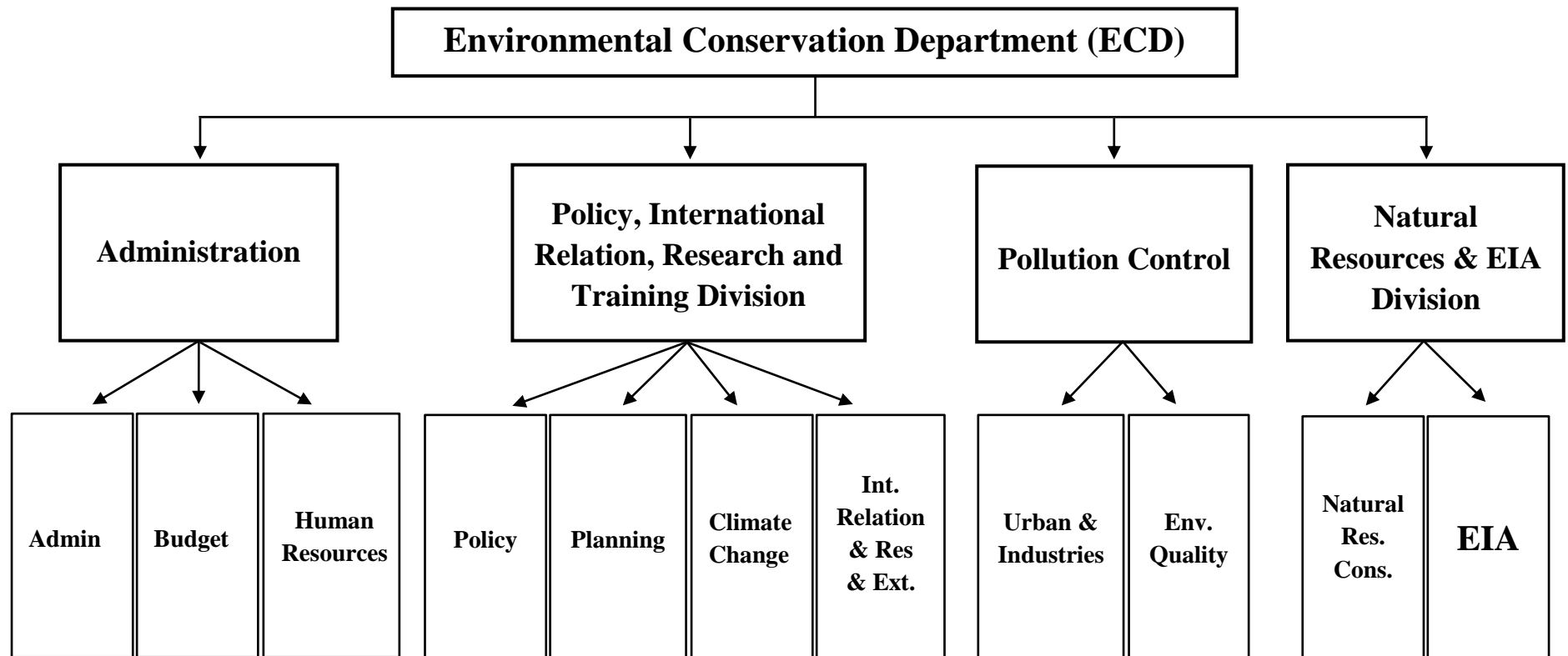


There are six Working committees under NECCCCC and supervision WC at 14 states and Regions.



**Institutional organization of ECD**

ECD is a major department under MONREC and is headed by a director general. Under the Director General are one Deputy Director General and 4 Directors at the directorate. ECD is the focal and coordinating agency for the overall environmental management of the country. It is also directly responsible for all the management of IEE, EIA, EMP etc. activities taking places all over the country.



These four departments are each headed by a director.

The main tasks of ECD include:

- implementing environmental conservation policy
- designing and implementing monitoring programmes
- prescribing environmental quality standards and,
- conducting activities relating to waste management and conducting environmental impacts assessments

Recently various Environmental Conservation Departments at States and Regional levels under the Directorate were established in all the 14 States and Regions of the nation. This will surely greatly enhance the conservation of the environment and especially the management of the environment of the country.

#### The Occupational and Environmental Health Division (OEHD)

The Occupational and Environmental Health Division (OEHD) under the Department of Public Health is the focal agency involves in environmental and health affairs.

The occupational and Environmental Health Division is involved in implementing Environmental Health Programme in the country.

At the moment it is involved in:

- Environmental monitoring: on air quality and water quality
- Medical monitoring: health assessment on workers (periodic medical examination, performing physical examination, chest X-ray, biomarker survey on workers)
- Work place assessment: eg- on air quality, waste (solid) and waste water, heat stress and light, noise level, soil quality, water sanitation and hygiene etc. in certain factories.
- Assessment of environmental health probably related to climate change and general health impact assessment.

#### **Institutional frame work of Aung Gabar Motor Services Co., Ltd**

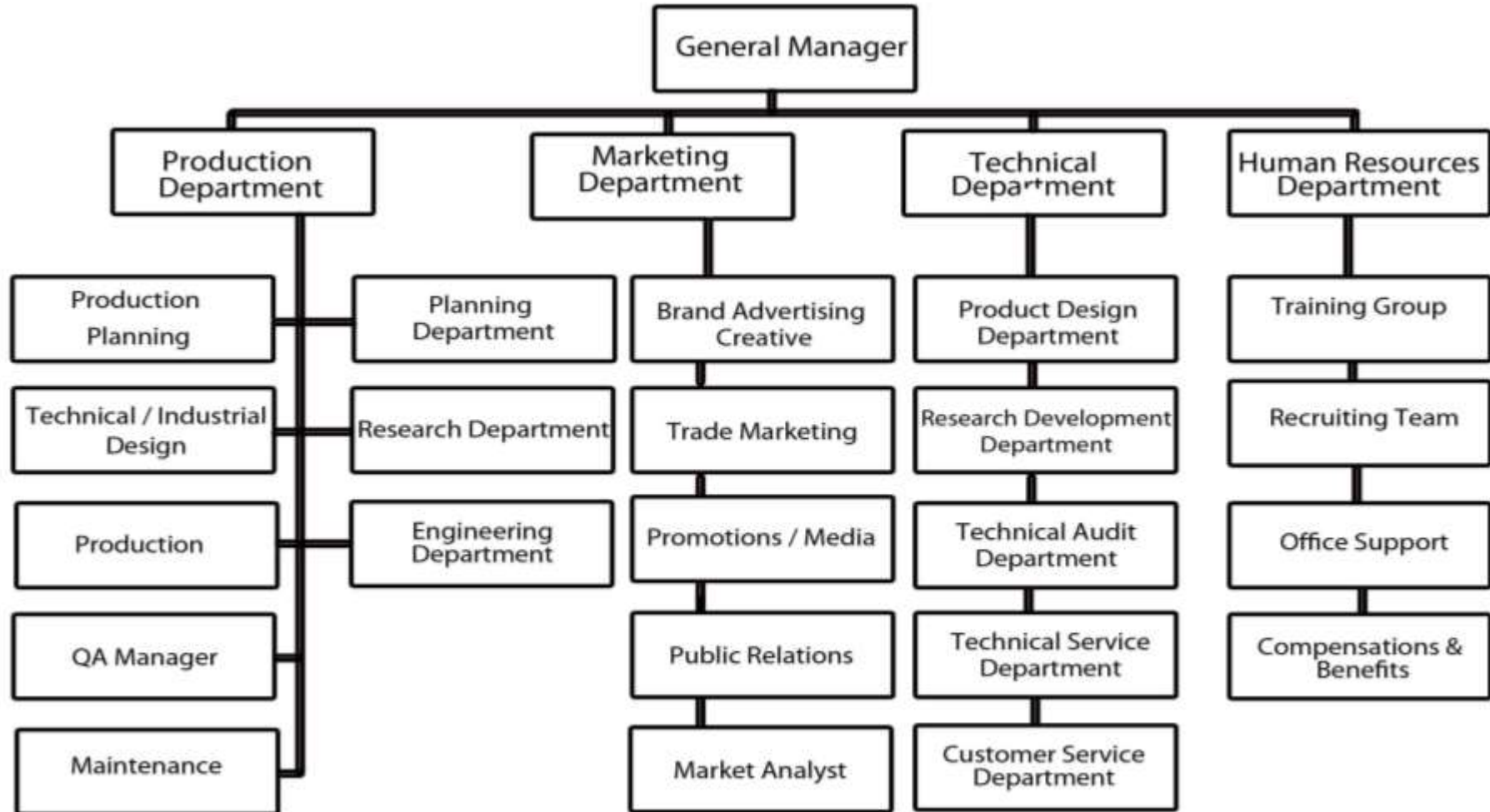
Aung Gabar Motor Services Co., Ltd is a new company investing in car assembling/manufacturing business in Myanmar.

The company has four executive members, namely, U Aung Sein, Managing Director and three directors; U Myint Thein, Daw Thandar Soe and Daw Ei Myo Myo Khine.

The company institutional structures at the project site will be 138 permanent staff (135 locals and 3 foreigner technicians).

The institutional arrangement at the project site is as follows:

**Institutional arrangement (organization chart of Aung Gabar Motor Services Co., Ltd at the project site) at the factory (project site)**



### **3.5 Environmental and Social Standards (After IFC, 2012)**

There are eight performance standards for a big company to do business in a new area.

#### **1. Assessment and Management of Environmental and Social Risks and Impacts**

- identify and evaluate environmental and social risks and impacts of the project
- adopt mitigation measures to avoid, or if avoidance is not possible, minimize or mitigate the impact; compensate for the impacts on people and on the environment
- promote improved environmental and social performance through the effective use of management system
- ensure that grievances from the effected people are responded and managed appropriately
- promote and provide means for adequate engagement with the community throughout the project period

#### **2. Labour and Working Conditions**

- promote the fair treatment, non-discrimination and equal opportunity of workers
- establish, maintain and improve the worker-management relationship
- promote compliance with national employment and labour laws
- promote safe and healthy working conditions and the health of workers
- avoid the use of forced labour and child labour

#### **3. Resource Efficiency and Pollution Prevention**

- avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities
- promote more sustainable use of resources, including energy and water
- reduce project-related GHG emissions

#### **4. Community Health, Safety and Security**

- avoid adverse impact on the health and safety of the community during the project life
- ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the community



## **5. Land Acquisition and Involuntary Resettlement**

- avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs
- avoid forced eviction
- avoid, or where avoidance is not possible, minimize social and economic impacts from land acquisition or restriction on land use by
  - (i) providing compensation for loss of assets at replacement cost (value of asset plus transaction costs), and
  - (ii) ensure that resettlement activities are implemented with appropriate disclosure of information, consultation and the informed participation of those effected
- improve or restore, the livelihoods and standards of living of displaced persons

## **6. Biodiversity Conservation and Sustainable Management of living Natural Resources**

- protect and conserve biodiversity
- maintain the benefits from ecosystem services
- promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities

## **7. Cultural Heritage**

- protect cultural heritage from the adverse impacts of project activities and support its preservation
- promote the equitable sharing of benefits from the use of cultural heritage

### **3.6 Health standards for project with health impact**

Auto parts assembling can have certain impacts are the health of the factory workers, in one way or another, though considered not serious.

Aung Gabar Motor Services Co., Ltd will take the occupational health and safety (OHS) measures for its project such as:

- Ensure the integrates of general facility design and operation
- Protect workers from physical hazards, chemical hazards, biological hazards, radiological hazards.
- Provision of Personal Protective Equipment (PPE) for workers if level of dust, smoke and noise etc are higher than guideline values level.
- Communicate, educate, train worker for OHS measures.

For safe working condition:

- Noise level at work place must not exceed 85-90 dBA (provide PPE when necessary)
- SO<sub>2</sub> must not exceed 350 µg/m<sup>3</sup> (1 hr period)
- NO<sub>2</sub> must not exceed 400 µg/m<sup>3</sup> (1 hr period)
- CO must not exceed 30,000µg/m<sup>3</sup> (1 hr period)
- TSPM must not exceed 230 µg/m<sup>3</sup> (1 hr period)
- RSPM must not exceed 150 µg/m<sup>3</sup> (24 hrs period)
- SPM must not exceed 150 µg/m<sup>3</sup> (24 hrs period) (provide PPE when necessary)
- If possible no radioactive and/or toxic substance is a normal place (provide PPE when necessary)
- All workers must pass medical examination prior to being employed.

As for Community Health and Safety (CHS) the company shall:

- ensure for water quality and availability
- ensure for structural safety of project infrastructure
- measures for life and fine safety L&FS
- measures for traffic safety
- measures for transport of hazardous materials if any, and disease prevention
- measures for preparation and response

As regards OHS:

- Work should take place in a safe and health working environment;
- Condition of work should be consistent with worker's well-being and human dignity;
- Occupational safety and health policy must be established
- Social partners (employers and employees) and other stakeholders must be consulted
- OHS programmes and policies must aim at both prevention and protection
- Continuous improvement of OHS must be promoted
- Health promotion is a central element of OHS practices
- Compensation, rehabilitation and curative services must be made available to workers who suffer occupational injuries, accidents and work related diseases
- Education and training are vital components of safe, healthy working environment
- OHS policy must be enforced

## **4. PROJECT DESCRIPTION AND ALTERNATIVES**

### **4.1 Project back ground**

#### Project objectives

- To assemble and produce BAIC brand and JMC brand; BAIC models: X55, D50, D70 and JMC model: S350 series for marketing in Myanmar.
- To sell quality sedan/suv/cars at reasonable price for the people.
- To contribute to the development of vehicle manufacturing in Myanmar.
- To enhance the Industrial Sector of the country.

### **4.2 Project location, overview map and layout maps location and size**

The propose project site is located at U Paing No. 56/2/Ka+56/2/Kha+56/2/Ga+ and 57/2, Plot no. 1082<sup>Ka</sup>, Sar Ta Linn Village Tract, Hlegu Township, Yangon Region.

The site is just outside the south western portion (the south western out skirt) of the village area and is situated between the No.2 High Way (Yangon-Bago High Way) in the east and Sar Ta Linn Chaung in the west. The No.2 High Way runs in a south to north direction while the Sar Ta Linn Chaung flows in a northwest to south east direction. The site is 6.19 miles south east of Hlegu Town and 21.73 miles north of Yangon City proper.

The coordinates at the sites are: N. Lat. 17° 03' 39.47" and E Long. 96° 18' 27.23"and the elevation is 32 ft asl.

The area of the site is 18.64 acres (75433.47 sq.m).



မြေစာရင်းပုံစံ - ၁၀၅

2016 - 04625:

မှန်ကန်ကြောင်း သက်သေခံ သက်သေမခံ သော လက်ရှိမြေပုံတွင် ယခုနှစ်အသုံးပြုသော ဦးပိုင်မြေပုံ လက်ခံရေးကားရန်ပုံစံ



တိုင်းဒေသကြီး/ ပြည်နယ် ရန်ကင်း	
ခရိုင် ဧရာဝတီ	
မြို့နယ်/ မြို့နယ်ခွဲ ဗဟန်းကျ	
ရပ်ကွက်/ ကျေးရွာအုပ်စု အားတလင်း	
ကွင်း/ အကွက်အမှတ်နှင့်အမည် ၁၀၅၅၊ အားတလင်း	
ဦးပိုင်အမှတ်/ မြေကွက်အမှတ် ၅၆/၂/ဃ	

ဦးပိုင်အမှတ်	အခွန်စည်းကြမ်းရသွ/ ပိုင်ရှင်/ ရန်ရှင်/ အငှားရန်ရှင် အမည်	ပိုင်ဆိုင်ခွင့်	မြေပိုင်းနှင့်အတန်း	ဝန်ယာ (၀က)	မှတ်ချက်
၅၆/၂/ဃ	ဒေါ်အိမ်မိုးမိုးမိုး	-	၁၃/၃၉ ကွင်း	၄.၄၁	ရန်ကင်းတိုင်း၊ ဧရာဝတီခရိုင်၊ ဗဟန်းမြို့နယ်၊ အမှတ် ၅၅ ဦးပိုင်၊ အကွက် ၁၀၅၅၊ အားတလင်း

ရေးကူးပေးသည့်အကြောင်းအရာ ဆည်လမ်းအထောက်အကူအညီအတွက်သာ အသုံးပြုခွင့်ရှိသည်။  
(အထက်ဖော်ပြပါအကြောင်းအရာအတွက်သာ အသုံးပြုခွင့်ရှိသည်။)

လျှောက်ထားသူအမည် - ဒေါ်အိမ်မိုးမိုးမိုး  
 လျှောက်လွှာတင်သည့်နေ့စွဲ - ၂၀၁၆.၂.၁၀  
 လျှောက်ထားသူသို့ ထုတ်ပေးသည့်နေ့စွဲ - ၂၀၁၆.၂.၁၀

ယခုအထက်တွင် ပြဆိုသောမြေပုံမှာ မှန်ကန်သောစာရင်း ရေးကူးထားသော ( ၂၀၁၆ ) ခုနှစ် အတွက် နောက်ထက်တွင်တောင်း မြေပုံပြန်ကြောင်း သက်သေခံလက်မှတ် ရေးထိုးပါသည်။

အမှတ်ပိုင်/မြေပိုင်စာရေးလက်မှတ် -   
 မှတ်စိပ် -   
 နောက်ဆိုင်စစ်ဆေးပြီး မှန်ကန်ပါသည်။  
 လက်ထောက်ဦးစီးမှူးလက်မှတ် -   
 စစ်ဆေးစာတင်ပြပါသည်။  
 မြို့နယ်လယ်ယာမြေပိုင်ခွင့်ရေးနှင့် စာရင်းအင်စတီကျုလက်မှတ် -

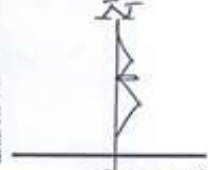
Figure – 8: Document of project site plot



မြေစာရင်းပုံစံ - ၁၀၅

2016 - 04625

မှန်ကန်ကြောင်း သက်သေခံ သော လက်ရှိမြေပုံတွင် ယခုနှစ်အသုံးပြုသော ဦးပိုင်မြေပုံ သက်သေခံ လက်ခံရေးကော်မတီ



တိုင်းဒေသကြီး/ ပြည်နယ် ၇၄ လူ့
ခရိုင် မြောက်ပိုင်း
မြို့နယ်/ မြို့နယ်ခွဲ ပျဉ်းကျ
ရပ်ကွက်/ ကျေးရွာအုပ်စု ဆားတလင်း
ကွင်း/ အကွက်အမှတ်နှင့်အမည် ၁၇၂၊ ဆားတလင်း
ဦးပိုင်အမှတ်/ မြေကွက်အမှတ် ၅၇၂



ဦးပိုင်အမှတ်	အခွန်စည်းကြမ်းခံရသူ/ ပိုင်ရှင်/ ဝန်ထုပ်/ အငှားဝန်ထုပ် အမည်	ပိုင်ဆိုင်ခွင့်	မြေမျိုးနှင့် အတန်း	ဧရိယာ (ဧက)	မှတ်ချက်
၅၇၂	ခေါ် သန္တာ ချိုး	-	၁၄/၃၉.၈၅ မြေ	၄.၇၀	ပိုင်ဆိုင်ခွင့်စတင် ရက်စွဲ ၃၀.၅.၂၀၁၁ ပိုင်ဆိုင်ခွင့် ၂/၃-၂/၂၀၁၇

ရေးကူးပေးသည့်အကြောင်းအရာ ဆောင်ရွက်ထားသည့်အကြောင်းအရာအတွက်သာ အသုံးပြုရန် (အထက်ဖော်ပြပါအကြောင်းအရာအတွက်သာ အသုံးပြုရန်မရှိပါ။)

- လျှောက်ထားသူအမည် - ခေါ် သန္တာ ချိုး
- လျှောက်လွှာတင်သည့်နေ့စွဲ - ၂၈. ၃. ၂၀၁၆
- လျှောက်ထားသူအဖို့ ထုတ်ပေးသည့်နေ့စွဲ - ၃၀. ၅. ၂၀၁၆

ယခုအထက်တွင် ပြဆိုသောမြေပုံမှာ မှန်ကန်သော ရေးကူးထားသော ( ၂၀၀၆ ) ခုနှစ် အတွက် နောက်ဆုံးတိုင်တာဖြစ်ပြီး မြေပုံပြင်ကြောင်း သက်သေခံလက်မှတ် ရေးထိုးပါသည်။

အမှုတွဲထိန်း/မြေတိုင်းစာရေးလက်မှတ် -  
 မှတ်တိုင် -  
 တိုက်ခိုင်းစစ်ဆေးပြီး မှန်ကန်ပါသည်။  
 လက်ထောက်ဦးစီးဌာန/လက်မှတ် -  
 ဦးစီးဌာနမှူး -  
 စစ်ဆေးအတည်ပြုပါသည်။  
 မြို့နယ်လယ်ယာမြေပုံပြင်နှင့်မြေပုံရေးဆွဲရေးနှင့် စာရင်းစစ်ဆေးရေးဌာနမှူး/လက်မှတ်

Figure - 9: Document of project site plot



မြေစာရင်းပုံစံ - ၁၀၅



2016 - 04625:

မှန်ကန်ကြောင်း သက်သေခံ သက်သေမခံ သော လက်ရှိမြေပုံတွင် ယခုနှစ်အသုံးပြုသော ဦးပိုင်မြေပုံ လက်ခံရေးကားရစ်ပုံစံ



တိုင်းဒေသကြီး/ ပြည်နယ် ၇၃/ကုဏ်		ခရိုင် မြောက်ဗဟို
မြို့နယ်/ မြို့နယ်ခွဲ ပျဉ်းကျ		
ရပ်ကွက်/ ကျေးရွာအုပ်စု ဘားတလင်း		
ကွင်း/ အကွက်အမှတ်နှင့်အမည် ၁၀၅/၁ ဘားတလင်း		
ဦးပိုင်အမှတ်/ မြေကွက်အမှတ် ၅၆/၂/၁		
အကျိုးပေးသည့်အကြောင်းအရာ		

ဦးပိုင်အမှတ်	အခွန်ပေးကြမ်းရောင်း/ ပိုင်ရှင်/ ဂရုန်ရှင်/ အငှားဂရုန်ရှင် အမည်	ပိုင်ဆိုင်ခွင့်	မြေမျိုးနှင့် အတန်း	ဧရိယာ (ဧက)	မှတ်ချက်
၅၆/၂/၁	ဦးအောင်စိန်	-	ကျေးဇူးမြေ	၄.၈၈	၇၀.၅.၂၀၁၁ လက်ထပ်စာချုပ် ၂/၂၀၂၀၁၂/၆

ရောင်းချပေးသည့်အကြောင်းအရာ သုံးစွဲပိုင်ဆိုင်ခွင့်အတွက် ဝယ်ယူခြင်း (အထက်ဖော်ပြပါအကြောင်းအရာအတွက်သာ အသုံးပြုခွင့်ရှိသည်။)

လျှောက်ထားသူအမည်	- ဦးအောင်စိန်
လျှောက်လွှာတင်သည့်နေ့စွဲ	- ၂၈.၇.၂၀၁၆
လျှောက်ထားသူသို့ ထုတ်ပေးသည့်နေ့စွဲ	- ၁၀.၅.၂၀၁၆

အထက်ဖော်ပြပါအကြောင်းအရာ မှန်ကန်သောစွာ ရောင်းချပေးသော (၂၀၁၆) ခုနှစ် အတွက် နောက်အက်တို့တိုင်းတာခြင်း ပြုလုပ်ကြောင်း သက်သေခံလက်မှတ် ရေးထိုးပါသည်။

အမှတ်ထိန်း/မြေတိုင်းစာရေးလက်မှတ် -

မှတ်ချက် -

တိုင်းပိုင်ဆိုင်ခွင့် မှန်ကန်ပါသည်။  
လက်ထောက်ဦးစီးမှူးလက်မှတ် -

စီမံအစဉ်ပြုပါသည်။  
ဦးစီးမှူးလက်မှတ် -

Figure – 10: Document of project site plot

မြေစာရင်းပုံစံ - ၁၀၅



2015 - 0440450

မှန်ကန်ကြောင်း သက်သေခံ သက်သေခံ သော လက်ရှိမြေပုံတွင် ယခုနှစ်အသုံးပြုသော ဦးပိုင်မြေပုံ လက်ခံရေးကူးရန်ပုံစံ



တိုင်းဒေသကြီး/ ပြည်နယ် <b>ဧရာဝတီ</b>	
ခရိုင် <b>မောင်ပိုင်</b>	
မြို့နယ်/ မြို့နယ်ခွဲ <b>ဗဟန်းကူး</b>	
ရပ်ကွက်/ ကျေးရွာအုပ်စု <b>သားဝါလင်း</b>	
ကွင်း/ အကွက်အမှတ်နှင့်အမည် <b>အ.လ.က - သားဝါလင်းကွင်း</b>	
ဦးပိုင်အမှတ်/ မြေကွက်အမှတ် <b>၅၆၂</b>	

ဦးပိုင်အမှတ်	အမွန်စည်းကြပ်ခံရသူ/ ပိုင်ရှင်/ ဂရန်ရှင်/ အငှားဂရန်ရှင် အမည်	ပိုင်ဆိုင်ခွင့်	မြေမျိုးနှင့် အတန်း	ဧရိယာ (၀က)	မှတ်ချက်
၅၆/၂/က	ဦးမောင်ဆန်း	-	ယု-၃၉ကျွမ်း	၄.၆၅	မြေပုံအမှတ် ၅၆/၂/က မြေပုံအမှတ် ၅၆/၂/က ရက်စွဲပါအတိုင်း ၂/၃-၂/၂၀/၂၀၁၅

ရေးကူးပေးသည့်အကြောင်းအရာ - စစ်ပင်အစောက်အနံ့ အောက်ပုလင်းဖြင့် ဖြန့်တင်ရန် (အထက်ဖော်ပြပါအကြောင်းအရာအတွက်သာ အသုံးပြုခွင့်ရှိသည်။)

လျှောက်ထားသူအမည် - **ဦးမောင်ဆန်း**  
 လျှောက်လွှာတင်သည့်နေ့စွဲ - **၂၀၁၅.၂.၂၅**  
 လျှောက်ထားသူအဖို့ ထုတ်ပေးသည့်နေ့စွဲ - **၂၀၁၅.၂.၂၅**  
 အထောက်အကူပြုသူ မှန်ကန်သော ရေးကူးထားသော ( ၂၀၁၅ ) ခုနှစ် အတွက် နောက်ဆုံးတိုင်တာခြင်း ဆုံးဖြတ်ကြောင်း သက်သေခံလက်မှတ် ရေးထိုးပါသည်။

အမှတ်ထိန်း/မြေတိုင်းစာရေးလက်မှတ် - **စနေ**  
 နှုတ်ဆိုစာ  
 တိုက်ဆိုင်စစ်ဆေးပြီး မှန်ကန်ပါသည်။ လက်ထောက်ဦးစီးမှူးလက်မှတ်  
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Figure – 11: Document of project site plot

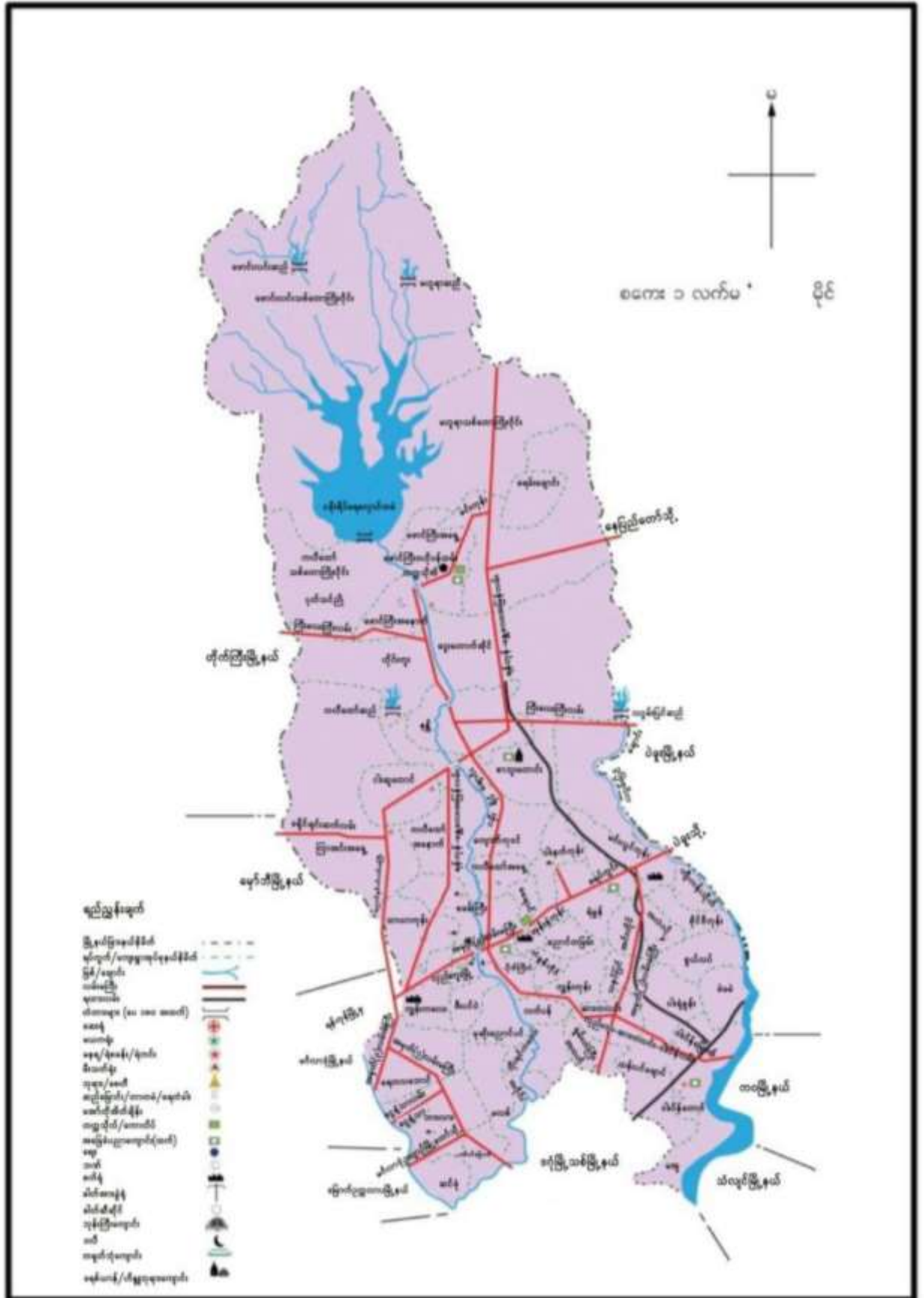
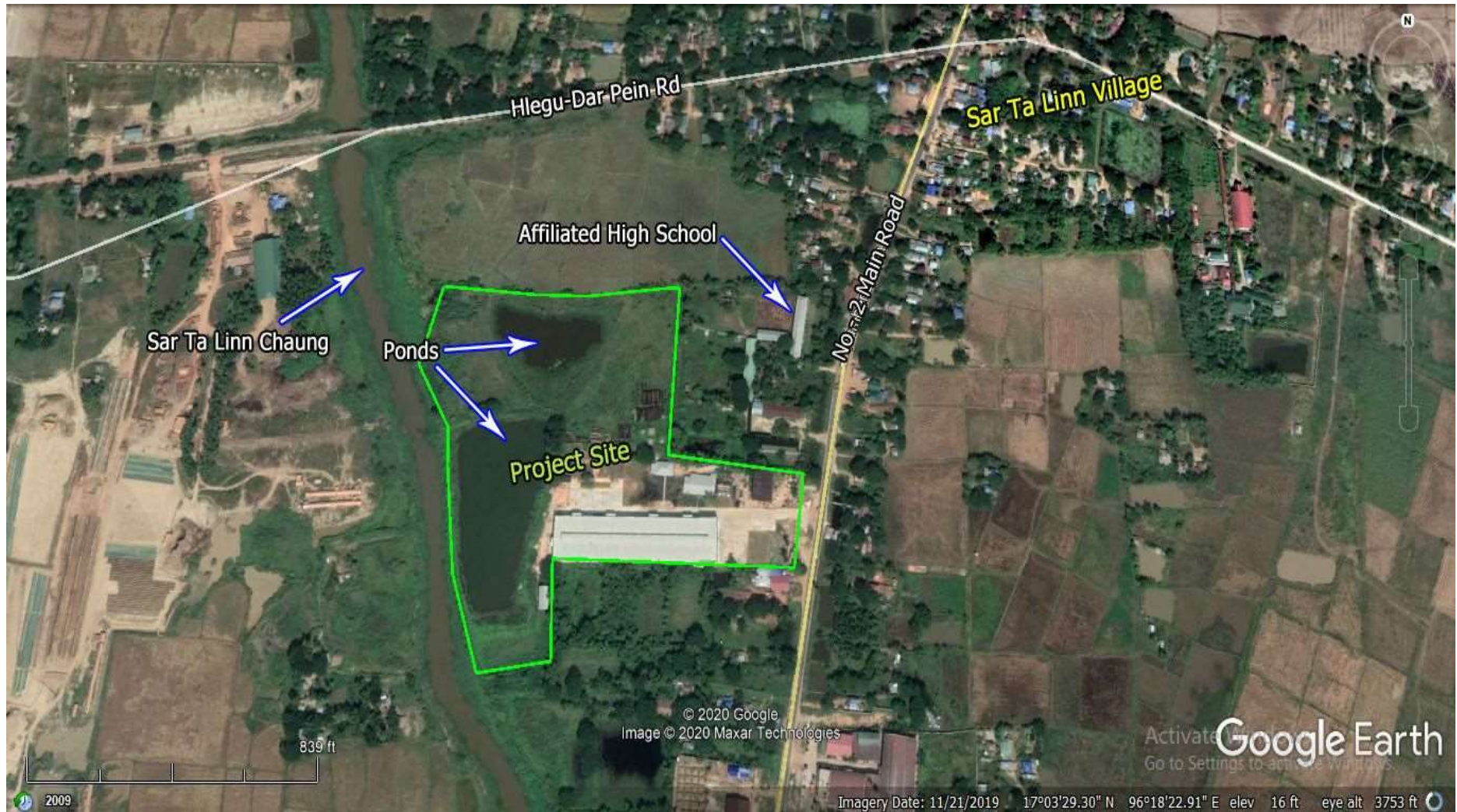


Figure – 12: Map of Hlegu Township





**Figure – 13: Satellite image showing project site**

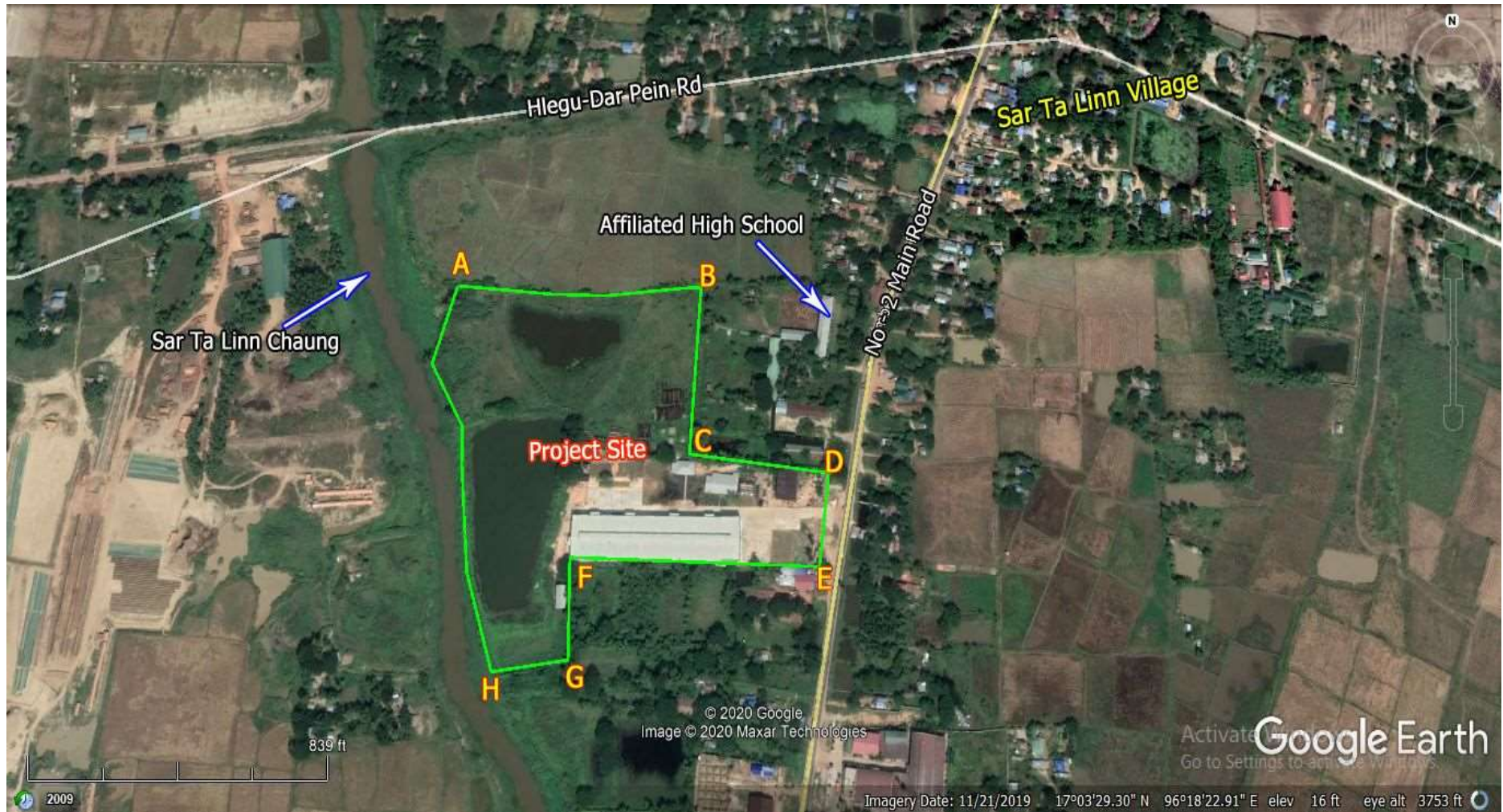
On the whole the site is irregular squarish in shape with a squarish protrusion in the east and another squarish protrusion in the south west.

The coordinates at the 8 corners (inflection points) are:

- A - N. Lat. 17° 03' 33.13" and E Long. 96° 18' 13.42"
- B - N. Lat. 17° 03' 32.88" and E Long. 96° 18' 21.25"
- C - N. Lat. 17° 03' 28.03" and E Long. 96° 18' 20.85"
- D - N. Lat. 17° 03' 27.41" and E Long. 96° 18' 25.14"
- E - N. Lat. 17° 03' 24.90" and E Long. 96° 18' 24.75"
- F - N. Lat. 17° 03' 25.32" and E Long. 96° 18' 17.17"
- G - N. Lat. 17° 03' 22.63" and E Long. 96° 18' 17.15"
- H - N. Lat. 17° 03' 22.45" and E Long. 96° 18' 14.99"

In the north, west and south west of the site are either paddy fields and grass land. In the east and south east are the south western outskirts of the village areas and in the adjacent north east is the Sar Ta Linn Affiliated High School, a public school. The main Sar Ta Linn village in the north is straddling along the both side of the No.2 High Way (Yangon-Bago High way).





**Figure – 14: Satellite image showing project plot and corners (inflection points)**

### **4.3 Description of the project**

#### **4.3.1 Installation and infrastructure**

The site is readily accessible by motor road (the No.2 High Way Road that connects Yangon and Bago cities) and also has access to gridline electricity. However public water system is not available and so the company has sourced the water from two large ponds inside the factory premise.

The main assembly plant and associated buildings are structures are all situated in the central and eastern portion of the 18.64 acres plot of land. Large portion of the plot in the north and west remain vacant.

The main building is long rectangular in shape 472' 6" x 118', and lies in an east-west direction. The western portion is the loading area and warehouse house where SKD parts are stored. Adjacent east of the main building is the office in the western while in the centre is the assembly area occupying two third of the whole building.

East of the office is car parking area. In the east, lying from south to north is: security gate, generator and transformer. North of the main building are a series of buildings and structures. Lying in an east to west in direction are: car garage, family line, painting/coating room, canteen, road test, elevated tank, shower test room, and light and mirror inspection room. In the south west corner of the plot is the bachelor line.

Road test is a specially constructed bumpy road furnished with small and large stores to test the fitness of the newly produced cars.





**Figure – 15: Layout plan of project site**



**Figure – 16: Factory (assembly plant)**



**Figure – 17: Office inside the assembly plant**



**Figure – 18: Chasis assembly line**





**Figure – 19: Interior assembly line**



**Figure – 20: Final assembly line**



**Figure – 21: Alignment**



**Figure – 22: Body inspection line**



**Figure – 23: Painting room**



**Figure – 24: Light and mirror inspection room**





**Figure – 25: Shower test**



**Figure – 26: Loading area**



**Figure – 27: Testing car on uneven road and bumpy road inside the factory compound**



**Figure – 28: Family line**



**Figure – 29: Bachelor line**



**Figure – 30: Canteen**



**Figure – 31: Toilets**



**Figure – 32: Security gate**

#### **4.3.2 Technology**

The installation/assembly and manufacturing technology deploys the Semi-Knock-Down (SKD) system. SKD is a system where "partially assembly parts of a vehicle" (the raw materials) are imported from China and then assembled/installed and manufactured at the project site. The Knock-Down (KD) or Complete Knock-Down (CKD) system involves the meticulous installation/assembly of all completely un-assembled parts of the vehicle. This system needs a lot more space and time. The vehicles to be assembled and produced are SUV type and sedan/saloon type. Three models of BAIC brand and one model of JMC to be produced during Year 1 are shown in table.



Sr. No.	Brand Name, Model	Production unit/year (Year 1)	Engine Power
1.	BAIC, model X55, 1.5	200 units	1500 CC
2.	BAIC, model D50, 1.5	500 units	1500 CC
3.	BAIC, model D70, 1.5	600 units	1500 CC
4.	JMC, model S 350, 2.0	200 units	2000 CC

The production target will be raised gradually year after year and by years 6-30 the target for X55, D50, D70 and S 350 are: 500, 1500, 2000 and 1000 respectively.

All will be for domestic market and use only. The brands to be assembled and produced are shown below:



Figure – 33: Model X55, 1.5



Figure – 34: Model D50, 1.5



Figure – 35: Model D70, 1.5



**Figure – 36: Model S 350, 2.0**

The technology will comply with ASEAN Motor Vehicle Requirement Standard. All the vehicle produced will be Left Hand Drive type.





#### **4.3.3 Production processes**

The SKD parts (auto components and auto parts) to be imported for assembly are:

1. Body and chassis Group (combination meters, interior trimming parts, lamps, wind shields and wire parts)
2. Engine assembly, Transmission and Clutch system
3. Front and rear axles
4. Suspension group
5. Steering wheel
6. Exhaust system
7. Wheels and tyres
8. Seat assembly
9. Door groups (trimming parts and electrical parts)

The above mentioned 9 items have to be imported for each model, namely, X 55, D 50, D 70 and S 350. The quantity required for model X 55, D 50, D 70 and S 350 are: 200 sets, 500 sets, 600 sets, 200 sets, respectively (That is the number of sets for all 9 items for each model).





**Table-1: SKD details, Specification**

Brand	Model	Diemnsions L×W×H (mm)	Gearbox	Emission	Wheel Base (mm)	Curb Weight (kg)	Vehicle Picture
BAIC	X 55	4480×1837×1680	CVT	Euro V	2665	1431	
BAIC	D 50	4630×1820×1480	CVT	Euro V	2670	1240	
BAIC	D 70	4785×1835×1490	CVT	Euro V	2780	1355	
JMC	S 350	4798×1895×1852	6 AT	Euro V	2750	1855	








The following table shows the examples of 9 items (SKD auto parts) to be imported for all models, together with photographs. The company has already obtained Exporter/Importer certificate No. 54672, 2-1-2019.

**Table-2: For Model X 55**

Sr. No.	Description	Model X 55
1.	Body Assembly & Chassis Group	
2.	Engine Assembly, Transmission clutch system	
3.	Front and Rear Axles	
4.	Suspension Group	



5.	Steering Wheel	
6.	Exhaust System	
7.	Wheel & Tyres	
8.	Seat Assembly	
9.	Door Group	

10.	Finished Goods X 55	
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**Table-3: For Model D 50**





Sr No	Description	BAIC D50
1	Body and chassis	
2	Engine and Transmission Assembly	
3	Front and Rear Axle	

4	Suspension Group`	
5	Steering wheel	
6	Exhaust System	
7	Wheel and Tyre	

8	Seat Assembly	
9	Door group	
10	Finished Good BAIC D50	

**Table-4: For Model D 70**




Sr No	Description	BAIC D70
1	Body and chassis	
2	Engine and Transmission Assembly	
3	Front and Rear Axle	

4	Suspension Group	
5	Steering wheel	
6	Exhaust System	
7	Wheel and Tyre	







8	Seat Assembly	
9	Door group	
10	Finished Good BAIC D70	

**Table-5: For Model S 350**

Sr No	Description	Model JMC S350
1	Body and chassis	
2	Engine and Transmission Assembly	
3	Front and Rear Axle	



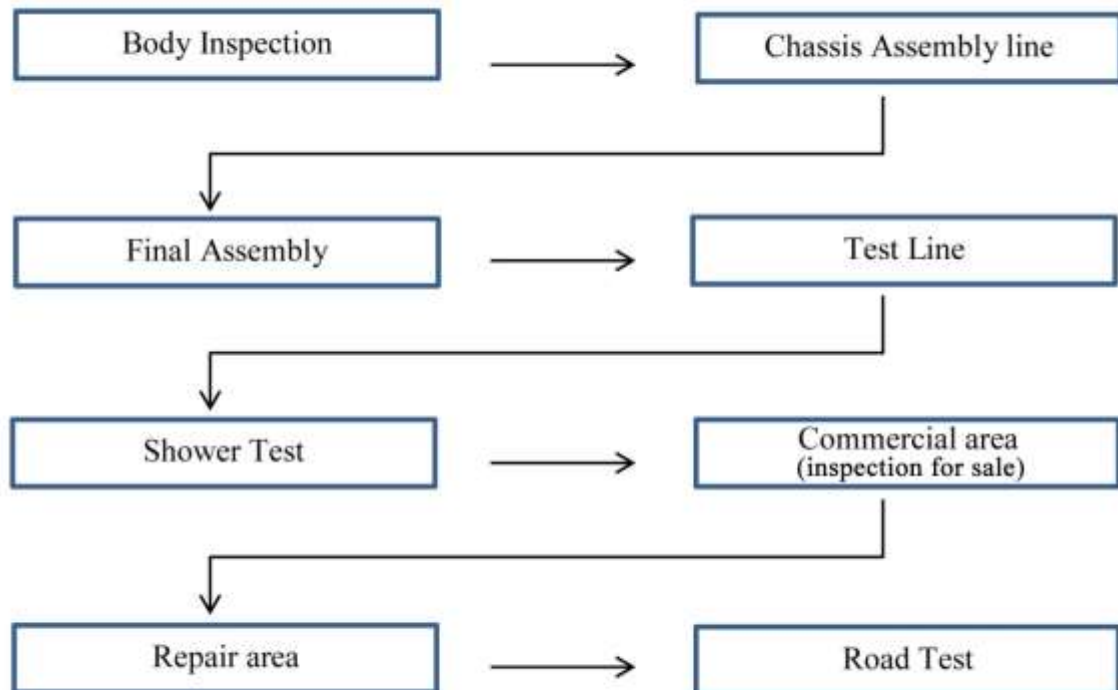
4	Suspension Group	
5	Steering wheel	
6	Exhaust System	
7	Wheel and Tyre	

8	Seat Assembly	
9	Door group	
10	Finished Good JMC S350	

The quantity to be imported, as mentioned above is each item multiply by 200, 500, 600 and 200 for X 55, D 50, D 70 and S 350, respectively).

The above mentioned SKD parts (motor vehicle parts) imported from China will be assembled and installed at the assembly plant into the final product (complete vehicle). The SKD parts (auto parts and components) are manufactured and produced by the parent company, BAIC International Development Co., Ltd, Beijing, China.

### Simplified Assembly Process flow chart



- (1) Body Inspection: inspection of car body and assembling of car body.
- (2) Chassis Assembly Line: assembly of lower parts. e.g. wirings, oil pipes, brakes, power steering, engine, fuel tank, lower chassis, front and suspension, wheels.
- (3) Final Assembling: trial state of assembly, eg- installation inside engine, wirings and pipes, seats, doors, engine oil, brake oil, etc filling.
- (4) Test Line: testing work, eg- alignment, inspection of lamps, testing the speed, inspection of ABS brake system, testing emission of CO<sub>2</sub>.
- (5) Shower Test: testing water tightness.
- (6) Commercial area: final inspection for sale.
- (7) Repair area: after undergoing test line, shower test, and commercial inspection if a car is still not in satisfactory condition it is repaired.
- (8) Road Test: the ultimate test is done at road test area. If the car passes this final test, it is ready for sale.

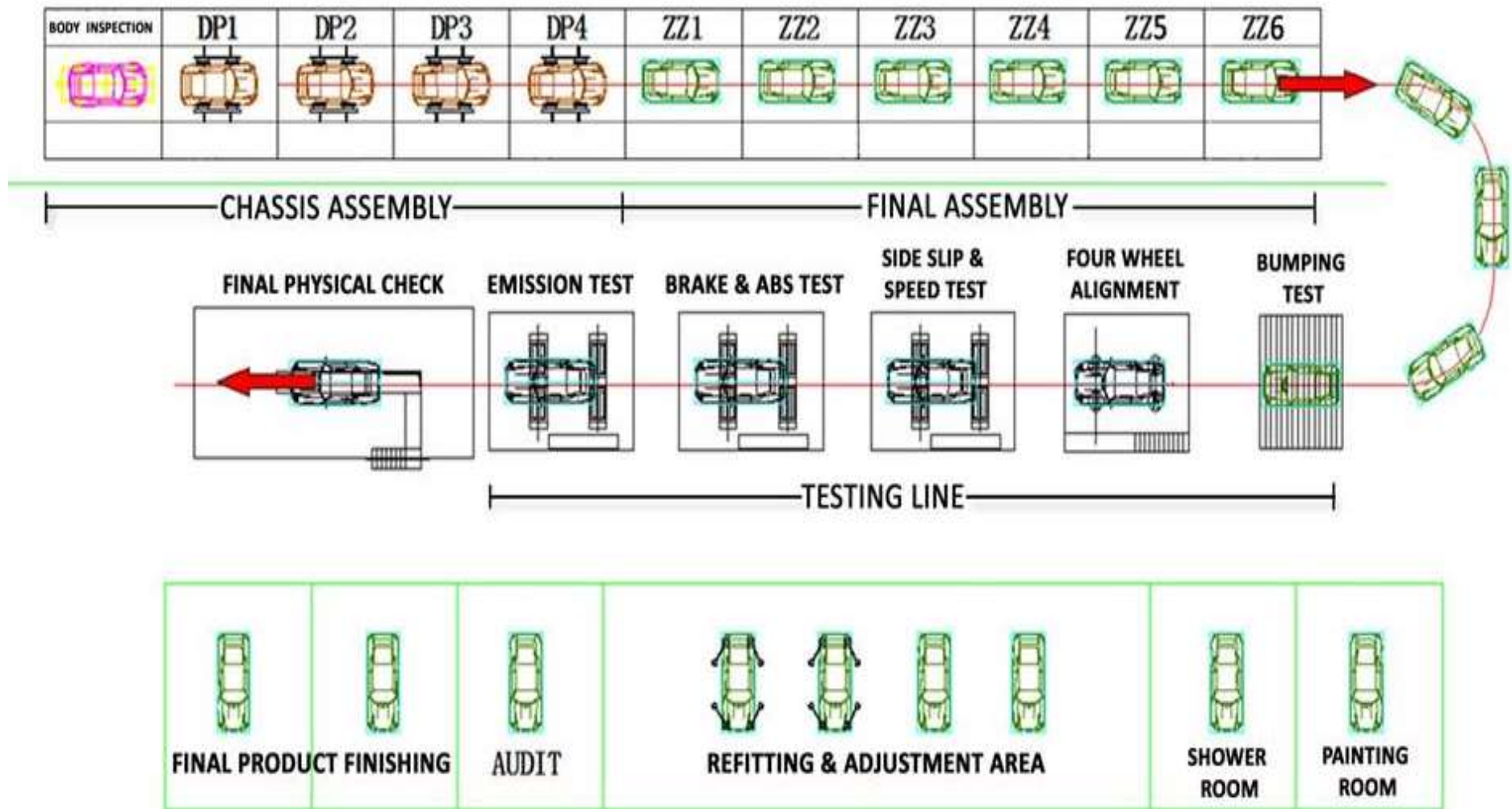


Figure – 37: Assembly line process

**Table-6: Process analysis**

<b>Production Area</b>	<b>Instruction</b>	<b>Equipment</b>	<b>Workers</b>
DP 1	Rear Axle Shock Absorber pipe line etc.	EMS	3
DP 2	Engine, Transmission and front Axle	EMS	3
DP 3	Fuel Tank & Exhaust System	EMS	3
DP 4	Wheel Assembly	EMS	2
ZZ 1	Battery Air Filter & Engine Room Wiring	VIN Engraving Machine	2
ZZ 2	Radiator & Lou denser & Fan		2
ZZ 3	Front & Rear Bumper		4
ZZ 4	Instrument Cluster & Dashboard, Front & Wind Screen, Steering Wheel	Diagnosis Machine	4
ZZ 5	Seats & Door Assembly		2
ZZ 6	Oil & Gas Filling Station	Coolant, A/C Gas, P/S Oil, Break Oil, Engine Oil, Transmission Oil, Filling Machine	2

#### 4.3.4 Uses of raw materials and resources

Actually no raw materials are needed in this project. The term “raw materials” refers only to car parts and/or partially assembled car parts (also known as SKD parts). These will be imported from China. The resources required will be only water and electricity.

Water is sourced from the large pond (southern pond) inside the factory premise.

Annual water requirement during the Construction Phase is estimated at 200,000 gallons, which were used mainly for concrete works. (Construction works were not camped inside the site but only a few staff members of the company.)

Actually water is not necessary for assembling and manufacturing process but only for shower test. Water is mostly for domestic use (sanitary) and watering plants.

Annual water requirement: for Operation Phase is estimated at 300,000 gallons.

Water is sourced from the larger pond (southern pond) inside the site into the 8600 gallons ground tank. After sedimentation the water is pumped up into the elevated tank (capacity 6300 gallons). From there water is distributed.





**Figure – 38: Water source (inside the factory compound)**



**Figure – 39: Ground tank**



**Figure – 40: Elevated tank**

Electricity: is sourced from gridline electricity.

The annual electricity requirement is 1.5 million KV hr.

The company has installed backup generators 500 KVA for use in case of power outage.



**Figure – 41: Transformer**



**Figure – 42: Generator**

Fuel requirement (annual)

Diesel	-	3,600 gallons
Petroleum	-	5,000 gallons
Engine oil	-	100 gallons

The company has no plan for storing fuel in bulk; only in one or two drums. Fuel and oil can be readily purchased from the town fuel station.

#### Chemical requirement (annual)

Thinner - 480 Litre

Emulsion paint - 72 Litre

These small amount of thinner and emulsion paint are kept inside the painting room on separate shelves. There will only be minor spray painting as final touch. The coatings on some of the motor parts may be scratched during transportation and handling and these have to be repainted or recoated. Thinner will be also used in final touch.

#### **4.3.5 Main machinery and equipment**

The essential machinery and equipment to be imported are:

**Table-7: List of machineries and equipment to be imported**

<b>Sr. No</b>	<b>PARTICULAR</b>	<b>MODEL</b>	<b>UNIT</b>	<b>QTY</b>
	TRANSPORT LINE			
1.	Chassis transport line	FMS	No	1
2.	Final transport line	Manual	No	1
	FILLING MACHINE			
3.	Coolant filling machine	Vacuum	No	1
4.	A/C gas filling machine	Vacuum	No	1
5.	Brake fluid filling machine	Vacuum	No	1
6.	P/S filling machine	Vacuum	No	1
7.	Washer fluid filling machine	Quantified	No	1
8.	Engine oil filling machine	Quantified	No	1
9.	Gear box oil filling machine	Quantified	No	1
10.	Fuel filling machine	Quantified	No	1
	ELECTRONIC TEST			
11.	Electronic Diagnose instrument		No	1
	LIFTING EQUIPMENT			
12.	Single track electric hoist		No	2
13.	Hydraulic lift		No	2
	CARVING EQUIPMENT			
14.	VIN carving machine		No	1
15.	Nameplate carving machine		No	1



	REPAIR EQUIPMENT			
16.	Double column lifting machine		No	2
17.	Work fixtures and Workstation		No	1
18.	Tools		No	1
	TEST LINE			
19.	Four wheel alignment		No	1
20.	Braking test platform	300 A	No	1
21.	Axle weight test platform	-	No	1
22.	Lamp test instrument	2.5 m	No	1
23.	Sound level test instrument	2.5 m	No	1
24.	Emission test instrument		No	1
25.	Sideslip test instrument	GFMA 11KW	No	1
26.	Speed test instrument		No	1
	LOGISTIC EQUIPMENT			
27.	Forklift (3 Tons)		No	2
28.	Vehicles Transport		No	10
29.	Parts Transport		No	5
30.	Unload Platform		No	1
31.	Commercial Area		No	1
32.	Audit Room Equipment		No	1
33.	Painting Repair Room Equipment		No	1
34.	Shower Room Equipment (Washing & Proofing Test)		No	1

#### 4.3.6 Other aspects of project

The estimated budget is Ks. 2863.62 million (including USD. 1.62 million)

##### Duration of project life

Preconstruction Phase - 6 months (2018)

Construction Phase - 3 years (2018-2020)

Operation Phase - 30 years and extendable (2021-2051 or 2021-2071)

Decommission Phase - 1 year (2052 or 2072)

## **Main tasks during phases of the project**

- The works during the Preconstruction/Planning/Design Phase involves mainly paper works e.g. planning, designing, plan for procurement of materials and machinery; submission of applications to the authorities, waiting for approval and permits etc.
- The works during the Construction Phase begin with initial construction works (access road, site clearing and fencing) and actual construction works which is estimated to last for 3 years.
- The main works during the long Operation Phase involves: daily routine works (assembling of car parts, manufacturing, storage, marketing, regular procurement of raw materials etc.
- The main works during the Decommissioning Phase involve: factory shutdown, dismantling of machinery and buildings and removal, rehabilitation of the site, and put up the site for the sale or redeploy the site for any business.

### Staff organization

About 100 construction workers were employed during the Construction Phase.

There are 135 staffs (including 3 foreigners) during the Operation Phase.

There are 56 staffs including general manager in the production department; 10 staffs in sale and marketing department; 31 staffs in repair and maintenance; 31 administration staffs; 4 staffs in human resource department and 3 Chinese experts and technicians, totaling 135.

The salaries in year 1 range from Ks. 180,000 to Ks. 2,100,000 for nationals and from USD 2,500 to 4,000 for foreigner staffs. The salaries will be increased year after year.

### Working hours

8 hours/day - 40 hours/week

Operational days - 250 days/year

### Housing/dormitory for staff

There is a dormitory for 3 foreigner staffs and some staffs and housing for all staffs who want to live in the compound. The large majority of workers commute to the factory; most are local/villagers. (Only 4 workers and families and 7 bachelor workers reside in the housing provided by the company inside the compound; the large majority commute to the work place.

### Long term plan

After operation the factory for some years the company will proceed from applying SKD system to CKD system.

The plan encompasses:

- Complete SKD or CKD 1 in Year 1 and Year 2.
- SKD 2 from Year 3.
- Locally purchase of battery and types in Year 4.
- Local production of welding assembly/floor assembly in Year 5.
- Local production of front and rear bumper in Year 6 and Year 7
- Local production of door cover assembly in Year 8.
- Local production of complete welding assembly in Year 9.
- Local production of electrostatic coating complete painting system in Year 10.

Finally, will attempt to produce 100% of the parts of the vehicle between Year 10 and Year 15. There is no detailed plan yet for CKD; the technology has yet to be acquired.

#### **4.3.7 Generation of wastes, emission and disturbances**

This assembly plant is not a factory where raw materials are transformed and produced into final products. Such a factory generates emission (smoke, dust) and high level noise. In addition large quantity of industrial solid wastes and liquid wastes are also generated. In this project context there will be little or no generation of waste, emission and disturbances as the main task is the installation and assembly of car parts into final product (whole car). There will be no welding work and major painting works in the assembly of car parts. However, minor spray painting works may have to be as final touch in some cases.

These will be described later in EIA report. Therefore, there will be no issue regarding painting and welding. Certain noise will be generated during the installation and assembly works but will be insignificant. Certain smoke will be generated from certain pumps and generators but will be insignificant.

So it can be stated that the SKD system assembly plant (factory) will be a smoke less factory and a non-waste generating factory. That is the situation for the whole long operation phase.

Wastes (solid and liquid) generate during the long phase will be only domestic wastes from staffs and workers. There can be certain spillages of fuel oil from time to time. But this issue can be tackled effectively.

### Construction Phase

Of course, there were generation of waste, emission and disturbances during the short construction phase. It is a well-known fact that construction works/civil works generates dust (due to earth works) and smoke (due to operation of engine, pump, etc) and wastes (construction tailings, construction waste, and debris). However after construction phase these impacts (waste, emission, disturbances) ceased.

Domestic wastes during the Construction Phase were minor; no construction workers camped inside the compound. A ferry system was provided for them.

### Operation Phase

The industrial solid waste to be generated during the Operation Phase is not actually industrial wastes in a true sense. These will be old wood packing materials (for packing motor parts) and certain paper and plastic packing materials and piece of iron materials, in relatively large quantity.

In addition there can be waste in the form of used containers, old batteries, old lamp, old filters, etc. in small quantity.

Industrial liquid waste will be in the form of car and machinery wash, and water used in shower test for cars etc. (There will be no real effluent water from manufacturing process, used water will simply flows down the drain). There will be no special treatment for such wastes water/used water. Used fuel oils will be collected in old drum and give away to local recyclers.

### Domestic waste

Of the 135 staffs only a few, 4 workers and families and 7 bachelors, will stay in housing for workers (large majority are local people who will commute to the work place). There will be minor domestic solid waste from housing, organic waste from kitchen and messing room, office waste and trash.

Domestic liquid waste (brown water) from kitchen, baths, office sinks will flow down the drain and dry up. No special treatment envisaged.

Black water waste from toilet will end up in septic tank and soak pit (no need for vacuum truck to remove these wastes).

#### Waste bins (garbage bins)

Waste bins are set up inside and outside the factory; at least two types are deployed; those for recyclable and those for non-recyclable. Solid waste that can be reuse, recover, and recycle will be recycled while those that cannot be recycled are disposed at the approved landfill in the north.

Virtually all packing materials (wood, plastic and iron) can be sold or reused.

However, one day in the future when the technology switches from SKD to CKD (complete knock down) welding and painting will have to be undertaken. There can be certain impact on the environment; spray painting release VOCS such as acetone, xylene and toluene. Since the main task is assembly works welding will be a minor one and the impact on the environment due to welding is insignificant. Unlike the painting of a vessel or building but only painting of sedan cars the impact of painting will be also insignificant.



**Figure – 43: Garbage bins**



**Figure – 44: Satellite image showing points for drainage line, disposal site and final discharge**

### Green House Gases (GHG) emission

It is universally known that generally a sedan/saloon/suv car emit 3.0 to 4.6 metric tons of CO<sub>2</sub> per year depending on duration of operation. In such case there is a need for mitigation for GHG. These will be described later in EIA report.

The project proponent is very aware of the fact that the vehicles, X 55, D 50, D70 and S 350 they produced are polluters of the air environment. And these emissions from vehicles also contribute to air pollution and Green House Gas effect. 1500 vehicles will be produced each year and emission from these 1500 vehicles can be quite considerable. But it is not realistic to do road transportation without vehicles which are powered by fuel yet. Electric cars and solar cars are not widely applicable yet; most are only in the developmental stage. Fuel-powered cars will have to be used for some decades. Both Aung Gabar Motor Services Co., Ltd and BAIC International Development Co., Ltd, will do their best to adhere to the EU-5 standards for auto emission.

### **4.3.8 Project alternatives**

#### **I. The Preconstruction Phase/Planning Phase**

##### The technology alternative

In Myanmar the holistic manufacturing of vehicle cannot be undertaken yet. Therefore, the so-called knock-down (KD) technology that involves the installation, assembly, manufacturing and production has to be adopted. In this project context the Semi-Knock-Down (SKD) technology is preferred to the Complete-Knock-Down (CKD) one. More effort and more meticulous works are necessary to implement CKD system and, therefore, the SKD technology is selected for this project. The SKD system is appropriate for the nation, for the time being.

However, in the future when Aung Gabar Motor Services Co., Ltd has gained experience it will attempt to undertake CKD and the company ultimate goal is to produce 100% of the parts of the vehicle.

#### **II. The Construction Phase**

##### Construction material alternative

The eco-friendly construction principle rather than the conventional construction principle is selected. The use of timber wood is minimized as a means of conservation of forest. Iron frames, materials, bricks, corrugated iron roofing and walling are utilized to minimize the use of timber wood.

Durable high quality building materials are preferred to low quality ones. The basic building materials, e.g. sand, is selected from fresh water origin rather than marines origin; the later is corrosive in nature.

### Location alternatives

The site is readily accessible by motor road and it has also good access to gridline electricity. Water can be readily sourced from surface water at two large ponds. Therefore, site location alternative is out of the question. Moreover there are no socio-economic issue such as land grabbing, forced eviction and forced relocation of people, forced labour etc. There are no natural habitats to be impacted and also no cultural, and religious components (such as monasteries, pagoda, church, historical monument, archeological site, etc.) to be impacted by the activities of the project.

### Orientation alternatives

The main building which acts as factory (assembly plant) and warehouse is suitably allocated at the southern area of the site. The company has a plan to build other buildings and plan for car parking and greening. Therefore orientation of the main building is not necessary.

### **III. Operation Phase**

The SKD system technology will be applied for most parts of the long operation phase. It is a technology that does not generate dust and smoke and industrial solid and liquid wastes (of course low level noise will be generated due to operational activities).

At the moment there is no better alternative than the SKD system. The company has applied the modern technology rather than the conventional technology when implementing this technology.

One day when the company has gained experience with SKD system and want to switch to CKD system all the pros and cons will be taken into consideration before actual implementation.

### Energy alternative

As mentioned earlier the site has easy access to gridline electricity and the company takes the advantage of this. But as an alternative for energy during power failure or power outage the company has installed one 500 KVA generator, as a backup system.

As regards fuel oil the company has no chance to select sulphur free diesel but to procure diesel that is available in the country. Diesel will be used for machinery and equipment only; the 4 models of car produced will use petroleum.

### Demand alternative

In the future the company will consider for the application of solar panels (solar energy) for some lighting and for some domestic uses as a means of conservation of electricity to certain extent.



### Supply alternative

For the consumption of water, fuel and energy the company will adhere to the principle of conservation rather than using them extravagantly; conservation is preferred to extravagance. The company will consider for the harvest of rain. Rain water can be used for watering plants, washing machinery and vehicles, suppressing dust etc.

### Activities alternative

The company will educate, train and supervise its staff for good working practice, good safety practice and good environmental practice rather than follow the traditional/conventional way in performing their jobs.

The company will educate and train them to "work smarter" rather than "work harder".

Will educate them to walk or ride bicycle rather than riding car when commuting to and from workplace to conserve fuel and to contribute to emission reduction

### The “no go alternative” or “no project alternative”

The emergence of a vehicle assembly plant (factory) inside the Hlegu Township, Yangon Region, will surely contribute to the further development of the Industrial Sector of the nation and also the Transportation Sector of the nation.

If there is no project, the site (the Plot No. 56/2 and 57/2) will remain vacant and this will not contribute anything to the development of Industry and Transportation Sector of the nation.

When compared with other ASEAN nation the motor vehicles assembled and produced in Myanmar is still very small in number. The facts and figures from ASEAN nations for 2018 (up to end of September) are as follows:

Thailand	: 1,604,116
Indonesia	: 995,837
Malaysia	: 420,498
Vietnam	: 148,317
Philippine	: 64,292
Myanmar	: 8,014
Lao, Cambodia	: NA

(Source: Internet)

This proposed project can contribute to provision of car with reasonable price for Myanmar people with medium level of income.

The "no go alternative" will therefore cannot contribute anything to the development of motor mobile industry and transportation sector of the nation. The 135 people to be employed during the operation phase will lose their employment opportunities if this project is not implemented. This is also true for the 100 or so construction workers employed during the construction phase. There will be no increase in employment for the nation.

As the project can also boost the local economy in many ways all these chance will be lost if the "no project alternative" happen.

The direct investment of Ks 2863.62 million (including USD 1.62 million) by Aung Gabar Motor Services Co., Ltd will not materialize and this cannot contribute to the increase in the GDP of the nation if the "no project alternative" prevails. There will be also no chance for an increase in earning for nation in the form of taxes, duties, loyalty, revenue etc. if the "no project alternative" happens.

## **5. DESCRIPTION OF THE SURROUNDING ENVIRONMENT**

The proposed project site is located at U Paing No. 56/2/Ka+56/2/Kha+56/2/Ga+ and 57/2, Plot no. 1082<sup>Ka</sup>, Sar Ta Linn Village Tract, Hlegu Township, Yangon Region.

The site is just outside the south western portion of the village area and is situated between the No.2 High Way (Yangon-Bago High Way) in the east and Sar Ta Linn Chaung in the west. The No.2 High Way runs in a south to north direction while the Sar Ta Linn Chaung flows in a northwest to south east direction. The site is 6.19 miles south east of Hlegu Town and 21.73 miles north of Yangon City proper.

### **5.1 Setting the study limits**

The study area encompasses the proposed project site (18.64 acres) and surrounding area within a radius of 2 miles (12.6 sq miles). The potential impact on the surrounding environment will be negligible. As the auto parts assembly plant is not a factory, the impacts, if any, can be felt or seen at most only within 1 mile radius; the outer 1 mile will be buffer zone.

The site is bounded in the east by the No. 2 High Way Road (the Yangon-Bago Road) and in the west by the Sar Ta Linn Chaung (Stream). The western corner of the main factory is only about 360 feet east of Sar Ta Linn Chaung. In the north is the plot of land owned by U Tin Win while in the south east is the land owned by U Ohn Kyai. In the adjacent north east is the Sar Ta Linn affiliated High School, a public school. The main part of the Sar Ta Linn Village is in the north, northeast and east; the site is adjacent to the southern branch of the village. (The village being straddled in 4 branches.) In the north, west and south are numerous paddy fields. (The whole area is dominated by flat paddy fields.)

There are no other factories in the near and far vicinity.

However the study on biology component will be conducted both inside the outside the 2 miles radius.

There is no reserved forest nearby.

As there are no forest or any significant biological component any impact by the project can be termed insignificant.

The impact on the socio-economic and cultural components will be minor. There are no cultural and religious monuments to be impacted by the project.

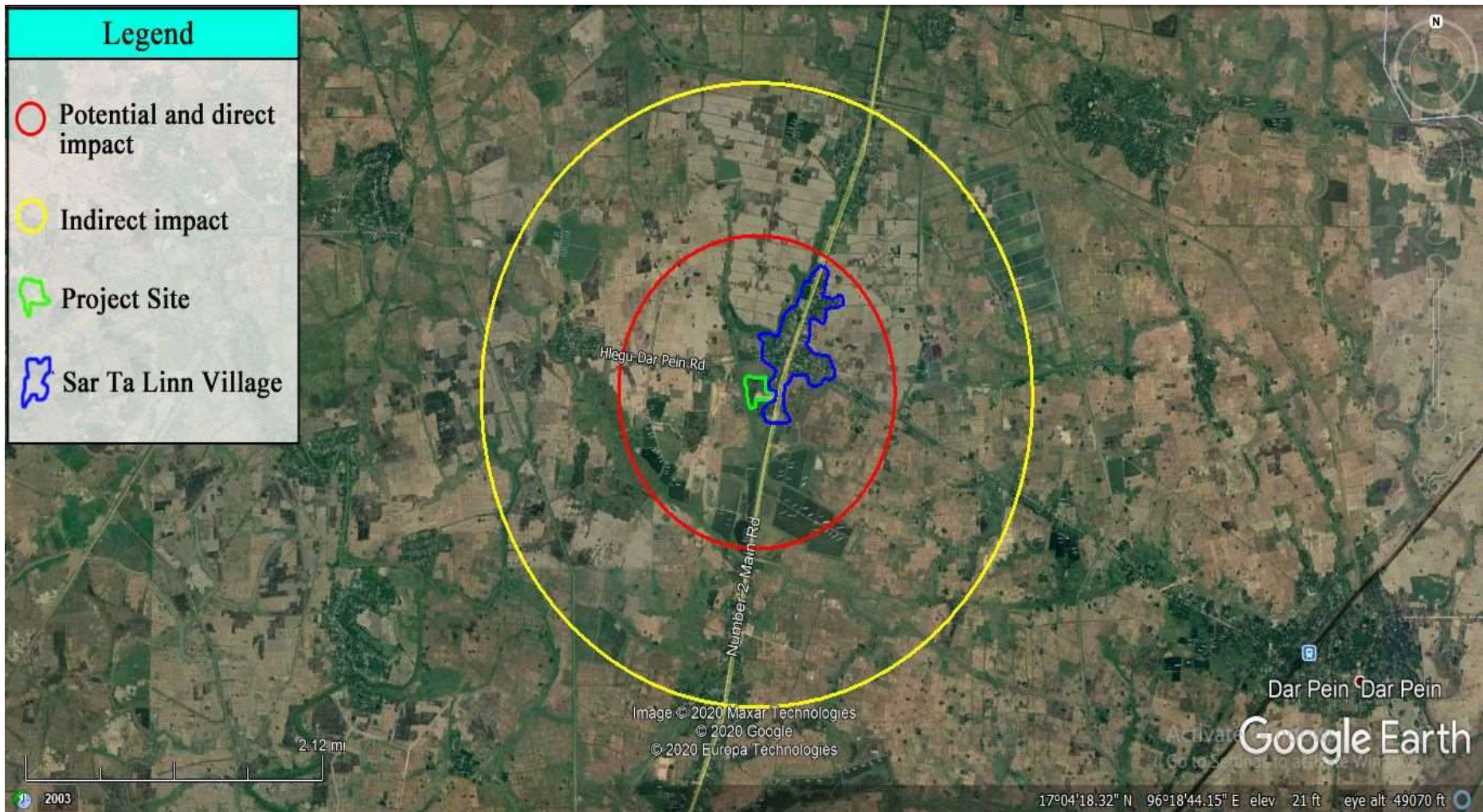
As a part of social impact assessment Sar Ta Linn Village is incorporated into the study area.

The environmental study area covers an area of 12.6 sq miles which is occupied mostly by the above-mentioned components and neighbouring fields, farms and the village.

The designation of 12.6 sq. miles for scoping of EIA study is justified because the potential impact will be felt or seen or tested or measured only within this area but cannot be felt or seen outside this area as the assembly plant is not a factory with any substantial impacts. So virtually all physical, biological and social economic data will be collected within this 12.6 sq miles area. However data on biodiversity will be also collected outside 12.6 sq. miles eg. data on flora and avifauna.

The coordinates at the sites are: N. Lat. 17° 03' 39.47" and E Long. 96° 18' 27.23" and the elevation is 32 ft asl.

The area of the site is 18.64 acres (75433.47 sq.m).



**Figure – 45: Satellite image showing study area, in the south western outskirts of Sar Ta Linn village (the area of the irregularly shaped village is shown in blue line)**

## 5.2 Methodology and objectives

EIA work involved the visual inspection of the area, the surveying work and collection of baseline environmental and social data.

The physical data such as air quality, particulate matter (PM), SO<sub>2</sub>, NO<sub>2</sub> and noise were all primary data, collected through field survey. The data for water analysis were also primary data. Soil data is also primary data while the information of local geology is secondary data.

Data on biodiversity; flora, fauna (birds, mammals, reptiles and amphibian) were all primary data collected through this study. There are no large wild mammals in the area. Data on fish was from secondary data.

The social data included both primary data collected through visual inspection and transect work, and secondary data acquired through Key Informant Interview (KII) or other secondary source (SS).

### Methodology

The methodology involves:

- Desktop study: on references from domestic and international sources.
- Site visit and visual inspection and detail study and collection and documentation of baseline data/information as well as secondary data/information.

The testing and measurement of air quality, ambient air, PM, SO<sub>2</sub> and NO<sub>2</sub> involved the use of relatively sophisticated and bulky equipment and so technicians have to be contracted. The portable air test kits has the advantage of measuring the in situ (on the spot) condition but not so reliable.

For measuring PM, SO<sub>2</sub> and NO<sub>x</sub> etc EPAS-HAZ Scanner and EPAS Air Sampler (Respirable dust Sampler Environmentech APM-460NC are deployed Noise EXTECH Sound Level Meter, BEME-TECH Vibration meter.

Portable water test kits were also not so reliable and water samples have to be brought back to Yangon for analysis at a registered private laboratory, the ISO laboratory in Insein, The technicians at this laboratory carried out the analysis work.

Noise level was measured on the spot using a portable Digital Sound Level Meter, EXTECH, 407732 which was quite reliable. Noise level was also measured by technician using sophisticated machine. Later BENETECH Vibration Meter was also used.

Soil data are primary but information on geology is secondary data obtained from secondary information from desktop study.

All meteorological data, monthly rainfall, monthly maximum and minimum temperature, humidity, wind speed etc. were secondary data. They were obtained from Hmawbi Township Meteorology Office.

The data on the biological components particularly flora were all primary data. All data on flora, birds, reptiles and amphibian were collected through this field surveys. As mentioned earlier data for fish was from secondary data or from information gathered from the locals.

The flora study involved the overall taxonomic study of the artificial flora (cultivated plants) covering both annual and perennial plants (fruit trees) as well as certain natural vegetation found in the area.

As for fauna, different methods of study have to be applied for different major taxonomic groups, namely, Aves, Amphibia, Reptilia and Mammalia (only rodents). This will be discussed later in **Chapter-5**. The study of Insecta was omitted due to lack of expertise.

The essential tool for EIA field work includes computer, GPS, camera, telescopes (especially for birds) binoculars, hand lens, microscope (especially for aquatic microorganisms), compass, portable water and air test kits, anemometer, herbarium press, measuring tapes, ropes, pruners and cutter. Tool for catching and trapping wildlife as well as lamp for nocturnal study are not necessary in this context. Secondary information for fish was gathered from fisherman. Chemical preservatives (alcohol, formalin) together with plastic containers of various sizes for the preservation of specimens (especially those that could not be identified during the survey trip but to be identified later) were also necessary.

Geological earth satellite imagery was also applied for the overview of the area covering the site, the village, the fallow land around and the overall view of that portion of the stream.

As regards socio-economic data most were secondary data. These were gathered by means of conducting Key Informant Interview (KII) and also from certain Secondary Source (SS). Certain primary data were acquired by means of visual inspection, transect walks and focal group discussion (FGD).

As for cultural components there were no important cultural, religious, historical and archeological monuments or sites in the area.

There is one Buddhist monastery, namely Pari Yati monastery in the village. There is no likelihood for the monastery to be impacted by the project.

There is also no visual component such as scenic spot or conspicuous landmark or major historical/cultural site to be impacted by the project.

## **Objectives**

The main objective is the collection, recording and documentation of all base line data for the preparation of EIA report.

### **5.3 Public administration and planning**

The No.2 High way (Yangon-Bago Road) is in the east. The project site is in the south-west outskirts of Sar Ta Linn village, with the status of a village tract, under the jurisdiction of Hlegu Township.

The village lies in a north to south direction along the Yangon-Bago high way. The Hlegu-Dar Pein Road cut across the village from west to east.

The whole surrounding area of the village is dominated by numerous paddy fields, of varying sizes and shapes. The whole area is an agriculturally well-developed area (main crop: rice).

There is no known plan yet for agricultural or industrial development plan for the area at the Regional or State level. The land uses will probably remain the same for a long time as there is no urgent need for agricultural or industrial development yet.

#### **5.4 Legally protected area**

There are no legally protected areas in the near and far vicinities.

The whole area is a lowland flat terrain with numerous paddy fields, and some grazing lands. The numerous paddy fields dominate the landscape.

There is no forest.

There are a few green patches here and there which are area of cultivated fruit trees and shade trees.

There are no park, wild life sanctuaries, nature reserves, Key Biodiversity Area (KBA), Reserved Forest (RF) protected area etc in the near and far vicinities.

The Hlaw Gar Lake and Reserved area is about 13 miles in the west.

#### **5.5 Physical components of the surrounding environment**

##### **5.5.1 Climate**

The climate is tropical monsoon climate with a hot and dry season (premonsoon), a rainy season with moderate rainfall (monsoon) and a cool season (postmonsoon). The area also has the typical hot and humid climate of southern Myanmar.

The hot dry season (summer) generally starts from March to June and is a period of hot spell. The monthly record for temperature from 2010-2021 is shown in **Table-8**. The monthly maximum temperature for 2010-2021 was 39.5°C in April (2010). The monthly minimum temperature for 2010-2021 was 14.4°C in January (2014).

The rainy season (monsoon season) generally starts from the middle of June to the end of September. The monthly record for rainfall from 2010-2021 is shown in **Table-9**. The monthly maximum rainfall for 2010-2021 was 828 mm in July (2015). The cool season (winter) generally starts from November to and continue till the end of February.



**Table-8: Monthly minimum and maximum temperature (°C) of Hmawbi Township during 2010-2021**

Monthly maximum temperature												
Max	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
2010	33.1	35.1	37.0	39.3	36.1	31.3	31.1	30.0	31.4	31.9	34.2	32.0
2011	31.1	33.6	33.2	36.1	32.1	30.2	30.1	29.6	29.9	32.2	34.9	31.1
2012	34.7	36.6	37.6	38.2	34.7	30.6	29.8	29.3	31.0	33.1	33.4	32.6
2013	32.8	36.7	37.8	39.2	35.4	30.6	29.0	29.6	30.2	31.6	33.0	30.2
2014	31.9	34.3	37.5	37.8	34.8	30.8	29.8	30.0	31.2	33.1	30.0	32.9
2015	31.9	34.5	37.6	38.0	36.0	31.8	30.9	30.8	31.8	32.4	34.5	33.5
2016	31.8	34.7	37.1	38.8	37.2	30.8	30.6	30.4	31.9	31.9	33.7	33.1
2017	32.5	34.9	36.9	36.1	37.4	31.8	29.8	30.2	32.6	32.6	24.7	32.7
2018	33.0	34.9	37.1	38.1	35.8	30.9	29.9	30.2	32.1	32.9	33.2	32.9
2019	32.6	35.8	36.6									

Monthly minimum temperature												
Min	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
2010	18.4	17.5	22.4	24.6	25.6	24.4	24.9	24.2	24.4	24.1	21.2	18.5
2011	16.7	17.9	20.8	23.8	24.8	24.9	24.6	24.5	24.5	23.7	20.9	16.9
2012	14.9	15.8	19.9	23.7	24.5	24.3	24.3	24.1	24.3	24.1	22.9	17.1
2013	14.9	18.3	20.2	22.3	24.0	23.7	23.0	23.1	23.2	23.1	21.8	16.2
2014	14.4	16.5	18.7	24.1	24.8	24.4	23.7	23.8	23.9	23.2	21.3	19.2
2015	17.1	16.3	19.9	23.6	25.0	24.6	24.6	24.7	24.7	24.0	21.8	18.1
2016	14.6	18.1	22.1	24.0	24.6	24.9	24.9	24.8	23.8	24.2	21.9	20.3
2017	18.4	18.2	20.2	23.4	25.2	24.9	24.5	24.7	24.7	24.0	22.6	18.8
2018	17.9	17.4	21.0	23.5	24.1	23.9	23.6	23.4	23.2	22.4	20.0	19.3
2019	17.1	16.8	19.2									

**Table-9: Monthly rainfall (mm) of Hmawbi Township during 2010-2021**

Month	Total rainfall per month (mm)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
January	8	81	Trace	Trace	0	0	38	Trace	2	0	
February	0	0	Trace	1	0	0	1	0	0	0	
March	0	108	Trace	0	0	Trace	23	0	0	0	
April	0	Trace	18	0	0	29	0	98	35		
May	253	284	113	222	182	256	387	319	258		
June	434	789	492	543	390	358	310	427	434		
July	278	490	686	590	760	828	581	643	666		
August	399	357	745	759	547	315	509	491	562		
September	230	453	481	603	249	264	332	326	303		
October	229	118	73	254	82	197	208	328	280		
November	0	Trace	128	25	190	25	6	10	42		
December	61	Trace	2	Trace	0	0	0	0	1		
<b>Total rainfall</b>	<b>1892</b>	<b>2680</b>	<b>2738</b>	<b>2997</b>	<b>2400</b>	<b>2272</b>	<b>2395</b>	<b>2642</b>	<b>2583</b>		

**Table-10: Monthly humidity (%), Hmawbi Township (2010 – 2018)**

Month	Humidity (%)									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	67	73	67	69	68	71	70	71	67	77
February	70	72	75	67	73	71	73	70	71	77
March	78	76	78	70	74	73	79	72	75	78
April	70	70	73	64	72	69	94	73	72	
May	70	85	79	72	77	75	76	81	78	
June	87	92	89	88	89	87	88	87	92	
July	88	91	91	92	94	90	91	93	95	
August	91	92	91	92	93	90	91	92	95	
September	88	90	86	92	89	86	92	89	92	
October	84	83	79	83	80	84	88	89	86	
November	68	67	79	74	70	77	80	80	79	
December	72	67	73	71	71	72	75	72	81	

**Table-11: Prevailing wind speed (mile/hr) in Hmawbi Township during 2010-2021**

Month	Wind speed									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
January	1.6	1.5	1.7	1.2	2.7	1.8	2.0	2.1	1.3	2.6
February	1.9	1.3	1.7	1.5	1.8	2.5	0.3	2.6	2.8	2.8
March	1.9	2.6	2.2	1.9	2.3	2.3	2.2	2.6	2.3	3.1
April	2.8	1.9	2.5	2.2	3.6	2.4	3.8	2.7	2.5	
May	2.0	1.9	2.5	3.2	3.1	2.4	2.7	2.9	2.8	
June	2.0	2.6	2.4	2.6	3.2	2.4	3.2	2.9	3.3	
July	1.6	1.8	2.0	2.8	3.3	3.3	2.9	2.4	3.6	
August	2.3	1.7	2.9	2.6	2.6	3.1	3.2	2.4	3.5	
September	2.2	2.3	2.2	1.8	2.7	3.3	1.8	2.1	2.9	
October	2.1	2.3	2.1	2.4	2.0	2.7	2.1	1.9	2.1	
November	1.8	1.4	1.8	1.8	1.4	1.9	2.2	1.9	1.9	
December	1.7	1.9	1.5	2.7	1.4	1.7	1.9	1.9	2.0	

A comparison of the values of mean monthly humidity (%) for the years 2010-2021 showed that the maximum value, 95%, was recorded in July and August 2018 while the minimum value, 64%, was record in April 2013.

The generalized prevailing wind system for the country as a whole shows the following system.

- S.W during the rainy (monsoon) season
- N.E during the cool (winter) season
- Erratic prevailing wind direction during the hot (summer) season

Due to the topography features surrounding the region and due to partial influence from the South China Sea the directions of the prevailing are rather erratic, that is, not consistent year after year. The highest wind speed of 3.8 mph was recorded in April, 2016.

During the dry hot season there was no known prevailing wind or dominant wind. The climatic condition in the South China Sea sometimes influences the meteorological conditions of the area, bringing light to median rain the area.

### **5.5.2 Topography**

As already mentioned earlier the whole area is a low land area with flat terrain. The site used to be paddy field/farm land which was transformed into a noodle factory compound and now transformed to assembly plant premise (The use of farm land for other: LaNa-39).

The whole wide area around the site as well as the village area and the areas around the village is low land flat terrain.

The elevation at the project site is only 32 feet asl.



**Figure – 46: The paddy fields in the vicinity of the site**



**Figure – 47: Sar Ta Linn Chaung west of the project site**

### **5.5.3 Local geology and soil**

The area can be classified as that of Quarternary Period (between 500,000 years ago and present). The rock is formed out of deposit of alluvial and deltaic sediments of the Ayeyarwaddy and the Hlaing Rivers. It is actually an extension of the main Ayeyarwaddy Basin.

The sediment is estimated as up to 40 feet thick and mainly consists of brownish grey silt, clay and sand.

The soil is typical fluvisol type (FAO classification) and very fertile. Therefore hundreds and hundreds of paddy fields stretch up to the horizon in all directions.

Below the sediment that is below the depth of 40 feet is the hard clay layer with some red clay. It is estimated that the deposits are probably deposited in the late Pleistocene Epoch (about 200,000 years ago) up to Recent Epoch.

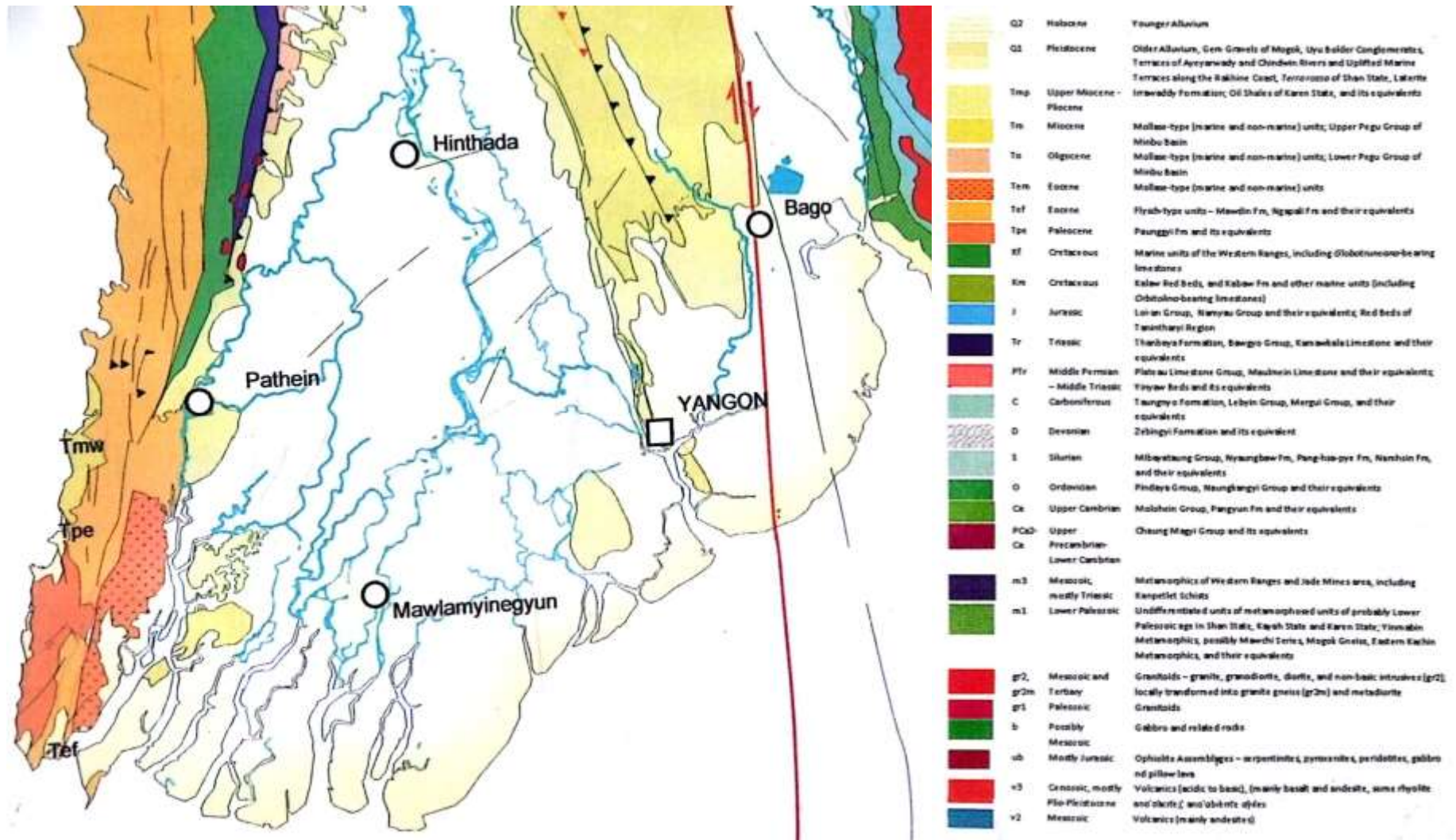


Figure – 48: General geology of the region



Soil sample was collected from project site. The coordinates are 17° 3'27.32"N, 96°18' 20.09"E.

The soil sample was brought back to Yangon and analysed at Ministry of Agriculture and Irrigation (Department of Landuse) laboratory.

### Soil test results

Sr. No	Sample plot	pH	Texture	Total N	Available Nutrient
					P
1.	Project site	Moderatly acid	Loamy sand	Low	Low

### Soil analytical data sheet

Sr. No	Sample plot	Moisture %	pH soil: Water 1: 2.5	Texture				Total N %	Available Nutrient
				Sand %	Silt %	Clay %	Total %		P ppm
1.	Project site	0.36	5.83	86.94	0.68	12.38	100.00	0.11	0.20

B = Bray & Kurtz Method

**Note:** Soil samples are free of contamination by hydrocarbon, SO<sub>2</sub> and toxic substances.



**Figure – 49: Taking soil sample**

#### 5.5.4 Hydrology

The main water course is the Sar Ta Linn Chaung (stream) in the adjacent west of the project site. It is a wide and shallow stream flowing from north to south. The water is turbid almost throughout the year.

There are two natural ponds inside the project site; water is sourced from the larger southern pond.

#### 5.5.5 Water quality

##### Ground water

There is no public water system yet and the project proponent relies on the nearby pond water which is sourced. The water is used mainly for domestic purpose as the auto assembly plant needs little or no water (no industrial uses of water).

The water sample from the lake was collected and brought back for analysis at the ISO, TECH laboratory, a registered laboratory at Insein. The coordinates for collecting water sample are 17° 3'28.54"N, 96°18'17.20"E.

The result of water analysis is shown in the ANNEX. The values are compared with the WHO guideline values. Turbidity is much higher than Guideline value (all the water in the area are relatively turbid to very turbid).

**Table-12: Analysis of water sample from the project site**

<b>Sr. No</b>	<b>Parameters</b>	<b>Lake water</b>	<b>WHO guideline values</b>
1.	pH	7.3	6.5 – 8.5
2.	Turbidity	38 NTU	5 NTU
3.	Total Hardness	20 mg/l	500 mg/l
4.	Total Alkalinity	34 mg/l	-
5.	Iron	2.70 mg/l	0.3 mg/l
6.	Chloride (CL)	14 mg/l	250 mg/l
7.	Sulphate (SO <sub>4</sub> )	10 mg/l	200 mg/l
8.	Total Solids	112 mg/l	1500 mg/l
9.	Salinity	0.1 ppt	-
10.	Nitrate	0.7 mg/l	50 mg/l

When the project is on operation semi-annual monitoring of water quality and effluent will be conducted as instructed by ECD and the report will be submitted.

## 5.5.6 Ambient air quality

### Sampling period

Air quality sampling and sound level measurement were done for 24 hrs at the project site. The coordinates at the factory site are: 17° 3'25.75"N, 96°18'24.11"E.

### Parameters

Particulate Matter (PM<sub>10</sub>), Particulate Matter (PM<sub>2.5</sub>), Sulphur dioxide (SO<sub>2</sub>), Carbon dioxide (CO<sub>2</sub>), Volatile Organic Compound (VOCs) and Ammonia (NH<sub>3</sub>) are measured in 24 hours average. Nitrogen dioxide (NO<sub>2</sub>) is measured in 1 hour average and Ozone (O<sub>3</sub>) is measured in 8 hours average.



Figure – 50: Measuring ambient air quality

Table-13: Ambient air quality (baseline data) results from the project site (in comparison with NEQEG guideline values)

Sr. No	Parameters	Averaging period	Existing values at the site	NEQEG guideline values
1.	Nitrogen dioxide (NO <sub>2</sub> )	1 - hour	6.95 µg/m <sup>3</sup>	200 µg/m <sup>3</sup>
2.	Ozone (O <sub>3</sub> )	8 - hours	36.34 µg/m <sup>3</sup>	100 µg/m <sup>3</sup>
3.	Particulate matter (PM <sub>10</sub> )	24 - hours	158.66 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
4.	Particulate matter (PM <sub>2.5</sub> )	24 - hours	95.12 µg/m <sup>3</sup>	25 µg/m <sup>3</sup>
5.	Sulphur dioxide (SO <sub>2</sub> )	24 - hours	6.39 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
6.	Carbon dioxide (CO <sub>2</sub> )	24 - hour	358.57 ppm	NEQEG - (NA)
7.	Volatile organic compound (VOC)	24 - hour	0.37 ppm	NEQEG - (NA)
8.	Ammonia	24 - hour	3.07 ppm	NEQEG - (NA)



PM<sub>10</sub> and PM<sub>2.5</sub> are very much higher than the National Environmental Quality Emission (NEQEG) guideline values (The reason unknown; but probably due to simultaneous activities of construction earth works, and operation of generators and pumps during the time of measurement).

Ozone, SO<sub>2</sub> and VOC are lower than either the National Environmental Quality Emission (NEQEG) guideline values. Guideline values for VOC and Ammonia (NH<sub>3</sub>) not available.

When the project is in operation a semi-annual monitoring of air quality and emission will be conducted (as instructed by ECD) and the semi-annual report will be submitted.

### 5.5.7 Ambient noise and vibration



**Figure – 51: Measuring noise level**

The coordinates for noise level measuring spot are the same with air measuring spot.

The ambient noise levels are as follows:

**Table-14: Quality of ambient noise level (dBA) by sample site (compared with NEQEG guideline)**

	At the factory site		NEQEG guideline	
	Day	Night	Day	Night
(Residential, institutional, educational)	51.85	52.36	55	45
Industrial commercial	-	-	70	70

The noise levels values are all lower than NEQEG value of 55dBA for day and little higher than NEQEG value 45dBA for night.

When the project is in operation a semi-annual monitoring of noise level and vibration will be conducted, as directed by ECD, and the semi-annual report will be submitted.



**Figure – 52: Satellite image showing spots where air quality and noise level were measured and soil and water samples were taken**

## **Vibration**

During the survey the vibration cannot be measured due to fact that the assembly plant (factory) was temporary shut down due to outbreak of COVID-19 pademic. When the factory is in operation the vibration will be duly measured.

### **5.5.8 Potential natural hazard of the area**

According to village elders there were no known natural hazards such as earthquake, landslide, cyclone and storm, flood, draught and wildfire within living memories.

#### **Earth quakes**

The notorious Sagaing Fault which passes through Bago City is only about 10 miles in the east. But there was no precedent of major earthquake in the area within 50 years; only small tremors (the devastating Bago earthquake happened in 1930). This infamous Sagaing Fault runs north to south from Sagaing Region to Yangon Region and further ending in Andaman Sea area. (Actually Myanmar is prone to earthquakes but this area is used to have only minor tremors.)

#### **Landslide**

The area being low flat land landslide is not envisaged.

#### **Cyclone, storm, floods**

Myanmar coastal area and delta area are prone to cyclones and storms, but there was no precedent of violent cyclones and storm in the area. The site is more than 100 miles away from the sea in the south.

There used to be occasional minor floods in the low land paddy fields of the area during the monsoon season. However the project site and the village are spared from floods.

#### **Drought and wildfire**

The area has heavy rainfall and so drought is out of the question. There are no dry forest (as in Australia and California) and therefore wildfire is also out of the question.

The impact of natural hazards on the project is not anticipated. Anyway the company will do its best for prevention of floods and have emergency plan for potential natural disaster and industrial disasters.

#### **Statistic of natural hazards for Hlegu Township (2018-2019)**

From information gathered from the Township General Administration Department of Hlegu Township, the natural hazards that occurred during the 2018-2019 ware as follow:

Number of Storm	:	4
Damage	:	119 houses/buildings
Loss	:	Kyats 20.86 millions
Number of outbreak fire	:	5
Damage	:	5 houses
Loss	:	Ks 0.5 millions

**(Source-Hlegu Township GAD)**

**5.6 Biological component of the surrounding environment**

The study on biodiversity is conducted not only within the 2 miles radius but also outside the radius where necessary, e.g. plants, birds.

**5.6.1 Flora species**

There is no forest in the area. The land scape of whole area is dominated by numerous paddy fields. There are trees (shade trees and fruit trees) in the village and along the sides of the road.

A rapid survey on natural flora (grass, herbs, bushes) and artificial flora (cultivated plants both annual and perennial plants) was conducted within a 2 miles radius (16 sq.mil) of the proposed project site.

As the flora biodiversity is low only simple taxonomic study was made.

**Diversity**

A total of 85 species of plants both natural and cultivated plants, big and small, belonging to 39 families were identified and recorded. The inventory of plant species is shown in the following table.

**Table-15: Inventory of species of flora (natural and artificial) of survey area**

No	Botanical Name	Myanmar Name	Family Name	Habit	IUCN (2021)
1	<i>Acacia auriculiformis</i> A.Cunn.	Malaysia-padauk	Fabaceae	T	LC
2	<i>Acacia mangium</i>	Man-jan-sha	Fabaceae	T	
3	<i>Achyranthes aspera</i> L.	Kyet-mauk-su-pyan	Amaranthaceae	S	
4	<i>Acmella paniculata</i> (Wall.ex DC.) R.K. Jansen	Bizet-wa	Asteraceae	H	
5	<i>Albizia saman</i> (Jacq.) Merr	Kokko	Fabaceae	T	
6	<i>Anagallis arvensis</i> L.	Hnet-ma-na-khin-sa	Primulaceae	H	
7	<i>Arivela viscosa</i> L.	Taw- hin-ga-lar	Cleomaceae	H	
8	<i>Bambusa bambos</i> (L.) Voss.	Kyakat-wa	Poaceae	B	

9	<i>Bothriochloa ischaemum</i> (L.) Keng	Unknow	Poaceae	G	
10	<i>Bougainvillea glabra</i> Choisy.	Sekku-pan	Nyctaginaceae	C/C	
11	<i>Canna indica</i> L.	Budatharana	Cannaceae	H	
12	<i>Capparis bodinieri</i> (H.Lev.) Jacobs	Unknow	Capparaceae	S	
13	<i>Centipeda mirima</i> (L.) A.Br. & Asch.	Chay-sat	Asteraceae	H	
14	<i>Cephalandra indica</i> Naud.	Kin-pon	Cucurbitaceae	C/C	
15	<i>Chloris barbata</i> Sw.	Sin-ngo	Poaceae	G	
16	<i>Chloris inflata</i> Link	Laykhwa-myat	Poaceae	G	
17	<i>Chloris virgata</i> Sw.	Feathergrass	Poaceae	G	
18	<i>Cleome burmanii</i> Wight & Arn.	Taw-hin-galar	Capparaceae	H	
19	<i>Cocos nucifera</i> L	Ohm-pin	Arecaceae	T	
20	<i>Colocasia affinis</i> Schott.	Pein	Araceae	H	
21	<i>Combretum padoides</i> Engl.& Diels	Unknow	Combretaceae	S	
22	<i>Commelina diffusa</i> Burm.f.	Wet-gyut	Commelinaceae	H	LC
23	<i>Crateva hygrophila</i> kurz.	Yay-kadak	Capparaceae	ST	
24	<i>Cynodon dactylon</i> (L.) Pers.	Myay-sa-myat	Poaceae	G	
25	<i>Cyperus compressus</i> L.	Wet-lar	Cyperaceae	G	LC
26	<i>Cyperus diffusus</i> Vahl.	Wet-kyan	Cyperaceae	G	LC
27	<i>Dactyloctenium aegyptium</i> (L.) Willd	Myat-laykwa	Poaceae	G	
28	<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Myet-thi	Poaceae	G	LC
29	<i>Eclipta alba</i> Hassk.	Kyeik-hman	Asteraceae	H	LC
30	<i>Eichhornia crassipes</i> (mart.) Solms	Beda-pin	Pontederiaceae	Aquatic	
31	<i>Eragrostis nigra</i> Nees ex Steud.	Myat-thin-don	Poaceae	G	
32	<i>Eucalyptus globulus</i> Labill	Eu-ka-lit	Myrtaceae	T	
33	<i>Eugenia kurzii</i> Duthic.	Thabye-nyo	Myrtaceae	T	
34	<i>Eupatorium japonicum</i> Thunb.	Unknow	Asteraceae	C/C	
35	<i>Ficus glomerata</i> Roxb.	Ye-tha-phan	Moraceae	T	
36	<i>Ficus hispida</i> L.	Kha-aung	Moraceae	T	
37	<i>Ficus religiosa</i> L.	Bawdi-nyaung	Moraceae	T	
38	<i>Ficus retusa</i> L.	Nyaung-ok	Moraceae	T	
39	<i>Flemingia macrophylla</i> (Willd.) Merr.	Phalan-phyu	Fabaceae	S	
40	<i>Flueggea leucopyrus</i> Willd.	Kone-chin-ya	Euphorbiaceae	S	
41	<i>Flueggea suffruticosa</i> (Pall.) Bail.	Unknow	Phyllanthaceae	S	
42	<i>Glochidion rubrum</i> Blume.	Hta-masok	Euphorbiaceae	ST	LC
43	<i>Heliotropium indicum</i> L.	Sin-na-maung	Boraginaceae	S	
44	<i>Hygrophila phlomoides</i> Nees.	Mi-kyauing-kon-pat	Acanthaceae	S	
45	<i>Ipomoea aquatica</i> Forssk.	Yay-kazon	Convolvulaceae	C/C	LC
46	<i>Ipomoea triloba</i> L.	Kan-zon	Convolvulaceae	C/C	
47	<i>Jasminum multiflorum</i> (Burm.f.) Andrews	Taw-sabe	Oleaceae	C/C	

48	<i>Jussiaea sufruticosa</i> L.	Taw-lay-nyin	Onagraceae	S	LC
49	<i>Lagerstromia speciosa</i> (L.) Per.	Pyin-ma	Lythraceae	T	
50	<i>Leea sambucina</i> Willd.	Taung-baung	Leeaceae	S	
51	<i>Limnocharis flava</i> L.	Tap-pyar-pin	Limnocharitaceae	Aquatic	
53	<i>Lippia alba</i> (mill.)	Sein-na-kat	Verbenaceae	S	
54	<i>Ludwigia adscendens</i> (L.) H. Hara	Ye-ka-nyut	Onagraceae	H	
55	<i>Ludwigia octovalvis</i> (Jacq.) Raven	Lay-nyin-gyi	Onagraceae	H	LC
56	<i>Luffa acutangula</i> (L.) Roxb.	Thabut-khar-new	Cucurbitaceae	C/C	
57	<i>Mangifera indica</i> L.	Tha-yet	Anacardaceae	T	DD
58	<i>Melochia corchorifolia</i> L.	Pilaw-akyi	Sterculiaceae	H	
59	<i>Merremia hederaceae</i> (Burm.f.) Hallier f.	Unknown	Convolvulaceae	C	
60	<i>Mikania micrantha</i> H.B.K.	Bizet-new	Asteraceae	C/C	
61	<i>Mimosa rubicaulis</i> Lam.	Japan-htika-yone	Mimosaceae	S	
62	<i>Monochoria vaginalis</i> (Presl) Kunth	Kadauk-sat	Pontederiaceae	Aquatic	LC
63	<i>Oldenlandia corymbosa</i> L.	Sula-napha	Rubiaceae	H	LC
64	<i>Operculina turpethum</i> L.ex.Manso.	Kya-hin-pin	Convolvulaceae	C/C	
65	<i>Oxalis corniculata</i> L.	Monato	Oxalidaceae	H	
66	<i>Paspalum urvillei</i> Steud.	Vasey's grass	Poaceae	G	
67	<i>Passiflora foetida</i> L.	Taw-suka	Passifloraceae	C/C	
68	<i>Pennisetum alopecuroides</i> Etouffee	Pandaw-ni	Poaceae	G	
69	<i>Phyllanthus urinaria</i> L.	Mye-zi-phyu	Euphorbiaceae	H	
70	<i>Physalis minima</i> L.	Bauk-pin	Solanaceae	H	LC
71	<i>Portulaca oleracea</i> L.	Mya-byit	Portulacaceae	H	LC
72	<i>Roystonea regia</i> (H.B.K) Cook	Cuba-ohn	Arecaceae	T	CR
73	<i>Saccharum spontaneum</i> L.	Kaing	Poaceae	G	LC
74	<i>Scoparia dulcis</i> L.	Danna-thukha	Scrophulariaceae	S	
75	<i>Senna alata</i> L.	Pway-kaing-mezali	Fabaceae	S	
76	<i>Sesbania aegyptiaca</i> Pers.	Ye-tha-gyi	Fabaceae	S	
77	<i>Sesbania cannabina</i> (Retz.) Pers.	Nyan-pin	Fabaceae	S	LC
78	<i>Sida cordifolia</i> L.	Tabyatsi-ywet-wine	Malvaceae	S	
79	<i>Sphaeranthus indicus</i> L.	Kadu	Asteraceae	H	LC
80	<i>Spondias pinnata</i> (L.) Kurz	Taw-gyway	Anacardiaceae	T	
81	<i>Streblus asper</i> Lour.	Ohm-Nae	Moraceae	T	
82	<i>Tectona grandis</i> L.f	Kyun	Verbenaceae	T	
83	<i>Trichosanthes cordata</i> Roxb.	kyi-ar-gyi	Cucurbitaceae	C/C	
84	<i>Urena lobata</i> L.	Ket-si-nae	Malvaceae	S	
85	<i>Vernonia cinerea</i> (L.) Less.	Kadu-pyan	Asteraceae	H	

T	= Tree	C	= Climber
ST	= Small Tree	C/C	= Climber/Creeper
H	= Herb	G	= Grass
S	= Shrub	LC	= Least Concerned
CR	= Critically Endangered	DD	= Data Deficient

The IUCN category is actually on a global perspective; in this context species that are supposed to be in IUCN List still thrive well.

## 5.6.2 Fauna species

### Natural biodiversity (natural fauna)

#### Avian fauna

The only fauna commonly found are avian fauna (birds).

A total of 79 species of birds belonging to 38 families were found and identified.

**Table-16: Bird species recorded in the area**

Sr no.	Family name	Scientific name	IUCN (2021)
	<b>ANTIDAE: DENDROCYGNINAE</b>		
1	Lesser Whistling-Duck	<i>Dendrocygna javanica</i>	LC
	<b>ANATIDAE: ANATINAE</b>		
2	Northern Pintail	<i>Anas acuta</i>	LC
	<b>ARDEIDAE: BOTAURINAE</b>		
3	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	LC
	<b>ARDEIDAE: ARIDEINAE</b>		
4	Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	LC
5	Pond-Heron	<i>Ardeola sp</i>	
6	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	
7	Purple Heron	<i>Ardea purpurea</i>	LC
8	Great Egret	<i>Ardea alba</i>	LC
9	Intermediate Egret	<i>Mesophoyx intermedia</i>	
10	Little Egret	<i>Egretta garzetta</i>	LC
	<b>PHALACROCORACIDAE</b>		
11	Little Cormorant	<i>Phalacrocorax niger</i>	
	<b>ANHINGIDAE</b>		
12	Oriental Darter	<i>Anhinga melanogaster</i>	NT
	<b>FALCONIDAE: ACCIPITRINAE</b>		
13	Oriental Honey-Buzzard	<i>Pernis ptilorhynchus</i>	LC
14	Black Kite	<i>Milvus migrans</i>	LC



15	Shikra	<i>Accipiter badius</i>	LC
	<b>RALLIDAE</b>		
16	Crake	<i>Rallina sp</i>	
17	Watercock	<i>Gallicrex cinerea</i>	LC
18	Common Moorhen	<i>Gallinula chloropus</i>	
	<b>COLUMBIDAE: COLUMBINAE</b>		
19	Rock Pigeon	<i>Columba livia</i>	LC
20	Red Collared-Dove	<i>Streptopelia tranquebarica</i>	LC
21	Spotted Dove	<i>Streptopelia chinensis</i>	
	<b>CUCULIDAE: CUCULINAE</b>		
22	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	LC
23	Asian Koel	<i>Eudynamys scolopaceus</i>	LC
	<b>CUCULIDAE: CENTROPODINAE</b>		
24	Greater Coucal	<i>Centropus sinensis</i>	LC
25	Lesser Coucal	<i>Centropus bengalensis</i>	LC
	<b>TYTONIDAE: TYTONINAE</b>		
26	Common Barn-Owl	<i>Tyto alba</i>	LC
	<b>STRIGIDAE</b>		
27	Collared Scops-Owl	<i>Otus lettia</i>	LC
28	Spotted Owlet	<i>Athene brama</i>	LC
	<b>APODIAE: APODINAE</b>		
29	Asian Palm-Swift	<i>Cypsiurus balasiensis</i>	LC
30	House Swift	<i>Apus affinis</i>	LC
	<b>CORACIIDAE</b>		
31	Indian Roller	<i>Coracias benghalensis</i>	LC
	<b>ALCEDINIDAE: HELCYONINAE</b>		
32	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	VU
	<b>ALCEDINIDAE: ALCEDININAE</b>		
33	Common Kingfisher	<i>Alcedo atthis</i>	LC
	<b>MEROPIDAE</b>		
34	Little Green Bee-eater	<i>Merops orientalis</i>	LC
35	Blue-tailed Bee-eater	<i>Merops philippinus</i>	LC
	<b>UPUPIDAE</b>		
36	Common Hoopoe	<i>Upupa epops</i>	LC
	<b>RAMPHASTIDAE: MEGALAIMINAE</b>		
37	Coppersmith Barbet	<i>Megalaima haemaccephala</i>	
	<b>PICIDAE: JYGNINAE</b>		
38	Eurasian Wryneck	<i>Lynx torquilla</i>	
	<b>PICIDAE: PICINAE</b>		
39	Gery-capped Pygmy Woodpecker	<i>Dendrocopos canicapillus</i>	LC
40	Spot-breasted Woodpecker	<i>Dendrocopos analis</i>	LC



	<b>ORIOLIDAE</b>		
41	Black-naped Oriole	<i>Oriolus chinensis</i>	LC
	<b>AEGITHINIDAE</b>		
42	Common Iora	<i>Aegithina tiphia</i>	LC
	<b>RHIPIDURIDAE</b>		
43	White-throated Fantail	<i>Rhipidura albicollis</i>	LC
	<b>DICRURIDAE</b>		
44	Black Drongo	<i>Dicrurus macrocercus</i>	LC
45	Ashy Drongo	<i>Dicrurus leucophaeus</i>	LC
	<b>CORVIDAE</b>		
46	House Crow	<i>Corvus splendens</i>	LC
47	Large-billed Crow	<i>Corvus japonensis</i>	
	<b>LANIIDAE</b>		
48	Brown Shrike	<i>Lanius cristatus</i>	LC
	<b>NECTARINIDAE</b>		
49	Olive-backed Sunbird	<i>Cinnyris jugularis</i>	LC
	<b>DICAEIDAE</b>		
50	Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>	LC
	<b>PLOCEIDAE</b>		
51	Baya Weaver	<i>Ploceus philippinus</i>	LC
	<b>ESTRILDIDAE: ESTRILDINAE</b>		
52	White-rumped Munia	<i>Lonchura striata</i>	LC
53	Scaly-breasted Munia	<i>Lonchura punctulata</i>	LC
	<b>PASSERIDAE:</b>		
54	House Sparrow	<i>Passer domesticus</i>	LC
55	Eurasian Tree-Sparrow	<i>Passer montanus</i>	LC
	<b>MOTACILLIDAE</b>		
56	White Wagtail	<i>Motacilla alba</i>	LC
	<b>STURNIDAE: STURNINAE</b>		
57	Jungle Myna	<i>Acridotheres fuscus</i>	LC
58	Common Myna	<i>Acridotheres tristis</i>	LC
59	Chestnut-tailed Starling	<i>Sturnus malabaricus</i>	LC
	<b>MUSCICAPIDAE: SAXICOLINAE</b>		
60	Eastern Stonechat	<i>Saxicola maurus</i>	
61	Pied Bushchat	<i>Saxicola caprata</i>	LC
	<b>MUSCICAPIDAE: MUSCICAPINAE</b>		
62	Taiga Flycatcher	<i>Ficedula albicilla</i>	LC
63	Oriental Magpie-Robin	<i>Copsychus saularis</i>	LC
	<b>PYCNONOTIDAE:</b>		
64	Streak-eared Bulbul	<i>Pycnonotus blanfordi</i>	LC
65	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	LC
66	Red-vented Bulbul	<i>Pycnonotus cafer</i>	LC

	<b>HIRUNDINIDAE: HIRUNDININAE</b>		
67	Barn Swallow	<i>Hirundo rustica</i>	LC
	<b>PHYLLOSCOPIDAE</b>		
68	Greenish Warbler	<i>Phylloscopus trochiloides</i>	LC
69	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	LC
70	Dusky Warbler	<i>Phylloscopus fuscatus</i>	LC
	<b>TIMALIIDAE</b>		
71	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	LC
72	White-throated Babbler	<i>Turdoides gularis</i>	LC
	<b>ACROCEPHALIDAE</b>		
73	Thick-billed Warbler	<i>Acrocephalus aedon</i>	
	<b>MEGALURIDAE</b>		
74	Lanceolated Warbler	<i>Locustella lanceolata</i>	LC
75	Striated Grassbird	<i>Megalurus palustris</i>	
	<b>CISTICOLIDAE</b>		
76	Zitting Cisticola	<i>Cisticola juncidis</i>	LC
77	Common Tailorbird	<i>Orthotomus sutorius</i>	LC
78	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	LC
79	Plain Prinia	<i>Prinia inornata</i>	LC

## Herpetofauna

Eleven species of amphibian and reptilia were found and identified.

**Table-17: Herpetofauna species recorded in the area**

No.	Family Name	Scientific Name	Common Name	IUCN (2021)
1.	Bufoidea	<i>Duttaphrynus melanostictus</i>	Common Toad	LC
2.	Dicroglossidae	<i>Fejervarya limnocharis</i>	Paddy Frog	LC
3.	Ranidae	<i>Hylarana erythraea</i>	Red-eared Frog	LC
4.	Rhacophoridae	<i>Polypedates leucomystax</i>	Common Flying Frog	LC
5.	Agamidae	<i>Calotes veriscolor</i>	Garden Fence Lizard	
6.		<i>Calotes mystaceus</i>	Blue Forest Lizard	
7.	Gekkonidae	<i>Hemidactylus brookii</i>	Brook's House Gecko	
8.		<i>Hemidactylus garnotii</i>	Garnot's House Gecko	
9.	Scincidae	<i>Eutropis multifasciata</i>	Common Sun Skink	
10.	Colubridae	<i>Flowea piscator</i>	Chequered Keelback Water Snake	
11.		<i>Amphiesma stolata</i>	Buff-striped Keelback	LC

## **Mammalia**

Regarding mammalian fauna only small rodent eg. House Rat *Rattus rattus* and Asian House Mouse *Mus musculus* were found during scoping study.

## **Aquatic fauna**

As regards aquatic fauna fish known to inhabit the Sar Talinn Chaung are:

- *Mystus vittatus*, nga-sin-yaing; *Channa striata*, nga-yant; *Ambassis baculi*, nag-zin-zart; *Oreochromis nilotica*, tilapia; *Clarias batrachus*, nga-ku; *Punticus chola* and *P. stigma*, nga-khone-ma.

These are from secondary information and data from the local people. The stream however cannot support even small scale fisheries. The local farmers actually catch the fish from their paddy fields or ponds in paddy field, an old fashion aquaculture.

## **5.7 Infrastructure and services**

The Sar Ta Linn Village is on the No.2 High Way, Yangon-Bago Road and is easily accessible by vehicles. The village is also on the intersection of No.2 High Way and Dar Pein-Hlegu road which runs in an east to west direction.

Actually the village is built along the main No.2 High Way Road, straddling along both sides. The large majority of houses are on both sides of No.2 High Way and also some are along that East-West Road.

The village has also good access to gridline electricity. The villagers source water mostly from shallow wells. There are also many village community water ponds and the villagers rely more or rain water in the pond.



**Figure – 53: Sar Ta Linn Village**



**Figure – 54: Sar Ta Linn village administrative office**



**Figure – 55: Yangon-Bago No.2 High Way Road**



**Figure – 56: Village transformer**





**Figure – 57: One of the village community water ponds**



**Figure – 58: Affiliated High School (public school) at Sar Ta Linn**



**Figure – 59: Village library**

**Table-18: Data on infrastructure and services**

<b>Sr. No.</b>	<b>Infrastructure and services</b>	<b>Sar Ta Linn Village</b>
1.	<b>Accessibility</b>	Yangon-Bago No.2 High Way Road and at the intersection of No.2 High Way and the East-West, Hlegu-Dar Pein Road.
	- Motor road	
	- Rail way	
	- Water way	x
2.	<b>Access to gridline electricity (%)</b>	100 %
3.	<b>Education facility</b>	Sar Ta Linn Affiliated BEHS (public school)
	- Number of students	997
	- Number of teachers	32
4.	<b>Health facilities</b>	Village clinic (patients mostly go to Hlegu Hospital)
5.	<b>Library</b>	Village Library
6.	<b>Material possession</b>	
	Television set %	100 % of households have TV set.
	Hand Phone %	100 % of households have hand phone.
	Motor cycle %	70 % of households have motor cycle
	Private car (number)	40 cars

## 5.8 Socio-economic components

Sar Ta Linn village, with the status of a village tract is within the 2 miles radius study limit.

Assessment of socio-economic components of the village was carried out applying desktop survey (from available information), visual inspection of the village and life of the villagers and conducting Key Informant Interview (KII).

The village has a population of 3253 and 100% are Bamar; about 97% are Buddhist while 3% are Christian.

The main occupation is farming, predominantly rice paddy farming, and growing bean by some. Many are also involved in animal farming; mostly poultry, while many villagers are working in factories (in Yangon Region) and elsewhere.

**Table-19: Data on basic socio-economic aspects of village**

Sr. No.	Socio-economic attributes	Sar Ta Linn village
1.	Households	774
	Population	5253 (M.1607, F.1646)
2.	<u>Ethnicity %</u> Bamar	100%
3.	<u>Religion</u> Buddhists	3203
	Christians	50
4.	<u>Main occupation</u>	
	- Farmers (rice and beans etc.	407 persons
	- Animal farming (mostly poultry)	103 persons
	- Merchants/vendors/hawkers	35 persons
	- Fishermen	5 persons
	- Making and selling bricks	20 persons
	- Working at factories (Yangon Region) and elsewhere	220 persons
	<u>Government employees</u>	
	- Teachers	8 persons
- Nurse and mid wife	15 persons	
- Soldiers	5 persons	

**Note:** Daily wages range from Ks 5000-7000. The unemployment rate is relatively high; some went to Thailand and worked there.

**Source:** from KII interviews.

#### Living condition

As in the case of a typical rural village the majority of the locals are poor to very poor (but are better off than those locals in the far flung mountain regions and in the Dry Zone area)..

#### **Materials possession**

3 households have one saloon car each while there are 10 pickups and light trucks. 30% of the houses are brick houses and 60% are wooden houses.

70% of households have motor cycles while 100% have hand phones and TV sets.

As regards public services the village has access to electricity and the area is accessible by motor road.

There is no post office; one village clinic. There is a small village bazaar.

### Access to public services and natural resources

The village, being on the No.2 High way (Yangon-Bago High way) is readily accessible by cars. The Hlegu-Dar Pein Road also runs across the village.

The village has also access to gridline electricity and the whole village is electrified. Most villagers used electricity for cooking.

There is no public water system and water is sourced from shallow wells or from community water ponds.

Land uses - The village being surrounded by numerous paddy fields, in all sides the land uses mainly is agriculture (paddy rice farming, other crops farming and some husbandry). The land uses can be broadly divided into: agricultural or cultivated land, residential areas (village area) certain grazing land, water bodies (streams, natural ponds) etc.

The land uses of the whole area of Hlegu Township are as follow:

1. Cultivated area	: 150937	acres
(a) paddy fields	: 82929	acres
(b) gardens	: 67789	acres
(c) nypa palm	: 219	acres
2. Reserved Cultivated area	: 12673	acres
(a) paddy fields	: 10427	acres
(b) gardens	: 2209	acres
(c) nypa palm	: 37	acres
3. Grazing land	: 2185.64	acres
4. Industrial uses area	: 249	acres
5. Town area	: 1139	acres
6. Village area	: 4284	acres
7. Others	: 105800.76	acres
8. Reserved Forest/Public forest	: 89666	acres
9. Virgin land	: 2296	acres

**Source:** Township General Administration Department.



## 5.9 Public health component of the surrounding environment

The locals have easy access to public health care. The village has a village clinic; the Hlegu Township Hospital is about 6 miles in northwest.

Regarding health status there are no available data on the mortality, morbidity HIV/AIDS etc.

Malaria is not an issue but dengue can be still an issue during the wet season of a year.

Sporadic cases of cholera, though not serious, usually occur during the early rainy season.

Every household has its own toilet or latrine.

No.	Township	Diseases									
		Malaria		Diarrhea		TB		Dysentery		Liver cirrhosis	
		Cases	Mortality	Cases	Mortality	Cases	Mortality	Cases	Mortality	Cases	Mortality
1.	Hlegu	5	-	683	-	520	10	884	-	11	-

No.	Township	HIV/AIDS	
		Cases	Mortality
1.	Hlegu	43	4

**Sources:** Township General Administration Department, Hlegu Town.



**Figure – 60: Village clinic**



**Figure – 61: Hlegu Township Hospital**

#### **5.10 Cultural components of the surrounding environment (religious, cultural, historical, archeological attributes etc)**

The large majorities (97%) of the locals are Buddhists; 3% are Christian.

There is one village Pagoda (Kan Oo Mingalar Pagoda) and one Buddhist monastery with 17 monks. There is also one Thar Thanar Dipaka Religious Hall. The famous Maha Atula – Tha Kyat Man Aung 5-tiered Pagoda is in Hlegu Town.

There is also one village guardian spirits (Nat) shrine, Ywar Daw Shin Nat Shrine.

Myanmar Buddhists still worship nat spirit and the locals are not an exception. The Buddhists believe in the 31 abodes of life. The lowest abode of nat spirit (there are 6 abodes of nats) is close to that of human being and these nat are worshiped. Many still keep this tradition of worshipping or rather propitiating the nat while the main faith is Buddhism. Offertory (Hnget-pyaw-pwei, Ohn-pwei) for the nat spirits usually included one coconut and three or five combs of bananas arranged on a receptacle, usually a large bowl or a tray. Or the offertory could be a coconut (nat-ohn-thee) hung up at a place as offering to the nat.

There is no known annual or seasonal festival for nat spirit in the area.

Regarding cultural heritage there is no historical monuments, no archaeological site or site of natural or spiritual values in the area. There are no sacred sites, sacred rocks, sacred trees etc in the area.

The construction workers have been instructed to report back promptly if they accidentally find any archaeological evidences or UXO while doing the construction work.

The project cannot have any negative impact on the cultural component of the surrounding environment.



**Figure – 62: Kan Oo Mingalar Pagoda**



**Figure – 63: Pari Yati Monastery**



**Figure – 64: Thar Thanar Dipaka Religious Hall**



**Figure – 65: Maha Atula - Tha Kyat Man Aung 5-tiered Pagoda (Hlegu Town)**



**Figure – 66: Village Guardian "Nat Shrine"**

### **5.11 Visual components of the surrounding environment**

As the whole area is a wide flat low land with no hills or mountain but only paddy fields all around, there is no outstanding landmark. There are also no scenic spot of aesthetic beauty for tourist attraction.

There are no large historical monuments or building in the area. There are also no large and prominent structures.

It is anticipated that this auto assembly plant will not have any considerable impact on the visual component of its surrounding environment. The factory does not stand out prominently in contrast to the surrounding. After the creation of green belt (planting of trees) at its periphery the whole premise can become a green zone with copious shade trees.

At night time the project proponent will use dim light only for security reason so as not to have any offensive light (light pollution) to the locals and to avoid the attraction of insects at night.



## **6. IMPACT AND RISK ASSESSMENT AND MITIGATION MEASURES**

### **6.1 Impact and risk assessment methodology**

The methodology was based mainly on prediction and this was based from personal practical experience and also from theoretical knowledge from available references for conducting EIA.

Prediction and identification of the impacts, both negative and positive, and subsequent assessments were made after comprehensive group discussion with EIA practitioners and appraisers.

The visual inspection of the proposed project site was essential for the prediction, identification and assessment of the impacts.

The method addresses both project-related effects and cumulative environmental effects. If possible both qualitative and quantitative assessments are made.

The methods generally involve 8 main steps:

- i) scoping of the assessment (based from references from abroad)
- ii) existing condition (through field study)
- iii) assessment of project related environmental effects (based from references from abroad)
- iv) assessment of cumulative environmental effects (if any anticipated)
- v) determination of significance (pragmatic way; not involving mathematical and computer modeling and complex formulae)
- vi) follow-up and monitoring (not conducted yet)
- vii) consideration for mitigation measures (based from reference)
- viii) consideration for potential accidents, malfunctions and unplanned events (based from references)

The approach is an integrated approach covering all the 5 main Valued Environmental Components (VECs), namely, the physical, biological, socio-economic, cultural and visual component, of the environment.

To sum up, the Experts Consensus Method or Ad hoc method is applied in risk and impact assessment. This method may not be so accurate but it will never go wrong as common sense and simple logic are applied. It is a pragmatic way of thinking and pragmatic way of doing things method. In addition Experts Consensus Method/Ad hoc Method the risk/impact matrix rating table by IFC is also applied which is based on likelihood multiply by consequences (likelihood x consumes = outcome).

## Risk rating matrix

Actual risk outcome					
Low (1-3)	Moderate (4-6)	High (8-12)		Extreme (15-25)	
Consequence	Likelihood				
	Rare 1	Unlikely 2	Possible (moderate) 3	Likely 4	Almost certain 5
Catastrophic (Extreme) 5	5	10	15	20	25
Major (High) 4	4	8	12	16	20
Moderate (Medium) 3	3	6	9	12	15
Minor (Low) 2	2	4	6	8	10
Negligible 1	1	2	3	4	5

**Note: - Consequence x Likelihood=actual outcome**

- Red: avoid, control, mitigate;
- Yellow and orange: control, mitigate;
- Green: accept/assume

Actual risk outcomes are categorized into 4 levels:

Low - (Scoring 1-3)

Moderate - (Scoring 4-6)

High - (Scoring 8-12)

Extreme - (Scoring 15-25)

**Note: -** This simple, pragmatic and straight forward matrix method is selected for assessment of impact and risk. Moderation is undertaken applying Experts Consequences Method (Ad hoc method).

As the project is not in full operation yet for long time all the impact/ potential impact described are, more or less, prediction and/or anticipation. The next steps of identification and subsequent assessment are also based from predication and anticipation on envision. In short these are all theoretical aspects. (Impacts can be seen, felt and measured only when the factory is in full Operation Phase for many years.)

Mitigation measures to be put in place are therefore, also based from all these theoretical aspects.

As the project site is on a plot of land formerly for noddle factory, there is no forest and any impact on the biodiversity (biological component) will be negligible.

As the main task in the assembly of auto parts, not holistic manufacturing works, the impact on the socio-economic component, if any, will be also negligible. In the same way the impact on the cultural and religious monument (pagoda, monastery, chruch, mosque, hindu temple) in the near vicinity will be minor. The buildings and structure to be built will not stand out prominently against and contrst to the background landscape affecting the visual component of the environment.

The spatial boundry for the assessment is within a 2 miles radius from the site. Sar Ta Linn village is incorporated into the study area for detail assessment of socio-economic and cultural impacts.

## **6.2 Impact and risk identification assessment and mitigation for each project phase**

### **6.2.1 Identification and assessment of environmental impact**

0, 9, 8 and 2 potential negative impacts were predicated, identified and assessed for the Pre-construction Phase, Construction Phase, Operation Phase and Decommissioning Phase, respectively.

The positive/beneficial impacts during the Construction and Operation Phase were also mentioned. While it was very necessary to mitigate negative impacts it was also very necessary to optimize or enhance the positive impacts.

#### **6.2.1.1 Potential negative impacts during the Preconstruction Phase**

No negative impact was envisaged and identified during this phase. Theoretically the probable social impacts during the Preconstruction Phase can be:

- Land disputes, land grabbing and forced eviction.
- Public outcry and protest (anti-project)
- Polarization of locals into pro and anti-project groups
- A hike in the prices of land properties
- False claims for compensation by certain unscrupulous locals
- None of these have happened.

### **6.2.1.2 Potential negative impacts during the Construction Phase**

The Construction Phase starts after the Planning Phase. In this Aung Gabar Motor Services Co., Ltd context the Construction Phase last for up to 3 years.

The works during the Construction Phase generally involve the fencing of the site, clearing of land, sourcing of water and electricity, mobilization of materials and workers to site and the actual construction of the auto assembly plant and associated buildings and structures.

There were, no doubt, many negative impacts during this phase. The followings are real or potential impacts identified or predicted and assessed.

#### **6.2.1.2.1 Impact: mobilization and preparation activities for construction**

Mobilization action, preparation action and transportation action in early phase and later phase of construction can cause nuisance to the public or road users.

The rapid mobilization of large volume of building materials, timber, bricks, cement, sand, gravel, iron materials, etc. can overspill inside or outside the site and on the road side. These can cause nuisance and also hinder the smooth and easy movement of people in the area and also vehicles and motorcycles.

#### **6.2.1.2.2 Occupational Health and Safety issue (Potential accidents at workplace)**

Accidents can occur from time to time during construction work either to construction workers or neighbours if they are close to construction site. This can also happen to passers-by near the construction site.

The slipshodness of the construction workers and the falling of bits and pieces of construction materials or tools from above can cause minor or major injury to other workers or passers-by.

Certain accidents can be fatal.

The 10 most common construction site accidents worldwide are:

- fall from heights (scaffolding); slip and fall; electrocution; falling debris, materials and objects; getting caught-in between objects and materials; fire and explosion; over exertion; machinery accidents; getting hit by a vehicle; and trench (for wiring and pipes) collapses.

#### **6.2.1.2.3 Impact on air quality**

##### **(i) Nature of impact: dust**

Dust is one of the main issues during the Construction Phase. Wind speed and direction plays an important role in the impact. The clearing of land and earth work such as digging, excavation and refilling of earth greatly generate dust. The loading and unloading of building materials such as sand, cement bags, gravel, lime powder and the stockpiling of these materials also generate dust.



Vehicular movements, the operation of certain equipment and machinery such as engines and pumps as well as the batching of cement (the mixing of cement with sand, gravel, lime powder and water) also emit a lot of dust.

Nuisance and health impacts are associated with increased level of dust.

Construction works are always associated with dust but temporary.

#### **(ii) Nature of impact: smoke and fugitive emission**

Smoke generated during the Construction Phase is low. The sources of emissions are from vehicles and some machines used during construction work such as engines and pumps.

Smoke can have impact on health if the level is high. The emission of Green House Gases (GHG) can eventually leads to global climate change.

#### **6.2.1.2.4 Impact: noise and vibration**

Noise is generated from construction work in many ways. Cement mixing machine doing cement batching produces loud noise; engines and pumps also generate noises. Carpentry works that involve noisy saws and planes, drilling machine and hammer also generate relatively loud noises.

Movements of vehicles, loading and unloading of materials etc. also produce noise. Concrete roads also generate more noise than tarred roads.

The National Environmental Quality Emission Guideline value for noise level, as prescribed by ECD, is 55 dBA during daytime, 45 dBA during night time. The internationally accepted noise level in the work place must not exceed 85 dBA.

Prolonged exposure to the noise level above 85 dBA can impair hearing and in severe case can become permanent impaired hearing (deaf). High noise level is, therefore, a major health impact. Noise generally causes nuisance and disturbance to the community.

Vibration is generated from machinery or mechanical operation during construction work and also from heavy trucks on road. Vibration is usually associated with loud noise; it can damage machines and equipments and also, to some extent, damage buildings or structures.

Construction works are always associated with noise and vibration but temporary.

#### **6.2.1.2.5 Potential impact on soil**

During the Construction Phase there can be potential and real impact on soil due to ground clearing, excavation work, digging and moving of large quantity of earth. There can be potential destruction of soil profile by mixing of top soil and sub-soil.

Erosion and siltation can be quite a serious issue during rainy season, if not well-managed. These can have impact on the drainage system and can also cause ground water contamination. There can be movement of sediment and pollutants into water courses.

Fuel oil or chemical spills can contaminate the soil and eventually ground water if not well-managed.

#### **6.2.1.2.6 Potential impact on water**

As public water system is not available the factory will rely on the water from the natural pond inside the factory premise. The demand for water during the Construction Phase is quite high. Relatively large quantity of water has to be used in mason work or concrete work such as the batching of cement and other works. The daily suppression of dust by water spray also needs quite a lot of water. The domestic consumption by the workers especially for sanitation purpose during working hours can also have certain impact on the natural pond water.

There can be also domestic sewage which can percolate into ground water, if not well-managed.

There is one water course, the Sar Ta Linn Chaung or water body, two ponds nearby and so there can be impact on surface water, if not well-managed.

#### **6.2.1.2.7 Impact of waste (construction waste)**

Waste water may not be an issue during the Construction Phase as virtually all the water used is for construction purpose only.

Solid waste generated during the Construction Phase will be large quantity of debris in the form of bits and pieces of building materials; construction waste; iron materials, timber, soft wood, bamboo used as scaffolds, left over brick, sand, gravel and so on.

Many of the leftover materials are unused or surplus materials because even well-experienced planning and design engineers may not be able to estimate the exact quantity of building materials to be used. There will always be unused or surplus timber, iron bars, cement, brick etc, not to mention nails and other small iron items. Unless systematically resold, reused, recycled and systematically disposed off these materials can pose a great impact on the area. There can be other litters inside the factory compound as a result of construction work.

#### **6.2.1.2.8 Potential social issue**

This impact can be a two-way impact. The project which attracts a large number of construction workers can have an impact on the workers. On the other hand, these workers can have an impact on the project.

During the Construction Phase there is the potential of the occurrence of undesirable social issues such as quarrels, disputes, brawls among the workers themselves or with the locals youths; theft, misappropriation of materials and money, vandalism, unethical sexual practices or sexual offensive and so on. All these have potential to hinder the progress of construction works.

#### **6.2.1.2.9 Potential security issue**

The Construction Phase is the period when it is usually difficult to maintain security. The working atmosphere is rather fluid and dynamic in nature. The in (entering the jobs) and out (quitting the jobs) of workers tend to happen almost all the time. This is the period when cases of thefts, misappropriations and vandalisms happen most.

Unlike the permanent employees during the Operation Phase who are well-disciplined, the temporary workers during the Construction Phase are usually quite difficult to discipline. The building contractor usually has no chance to hand pick them but to select them in haste due to the nature of construction work.

There is always the potential security issue for the proposed project. If left unchecked the construction workers can pose a potential for security issue.

Some of the local and neighbours may also pose a security issue.

All these nine potential negative impacts envisaged during the Construction Phase are temporary or transient. After Construction Phase all will be ceased. All construction wastes accumulated after construction works will be cleared and the site, tidied up.

**Note:** Impact on biodiversity not envisaged, there is no forest or shrub to be cleared. The site was formerly the site of a noodle factory; the ground is a flat plain; no need to cut the land or to level the land.

#### **6.2.1.2.10 Positive (beneficial) impact during the Construction Phase**

The positive or beneficial impacts during the Construction Phase are in socio-economic aspects. The economic benefits to the region are expected to be substantial.

The proposed project will invigorate and boost the local economy and will bring economic benefits to local people who are involve in extraction/production and sale of building materials of all sorts, both raw materials and manufactured goods.

Contractors of raw materials such as sand, gravel and bricks get the chance for doing lucrative and brisk business in providing these raw materials for sales. The extraction or production of these raw materials will also provide jobs for many locals.

Timber merchants and merchants of soft wood and bamboo (for scaffolding) as well as merchants of certain construction material locally available can promote their sales. At the same time more jobs for the locals can be provided by these merchants; small business men and small sub-contractors will be also benefited by the production, extraction and sale of these building merchandize.

The proposed project have provided jobs for about 100 local construction workers from Sar Ta Linn, Dar Pein and Inn Taing for 3 years. This is quite a substantial contribution to provision of jobs for young people and unemployed people, partially solving unemployment problem when unemployment is high in the country. Many unskilled workers will have the chance to become skilled workers during the period of three years.

Benefit will accrue to the country as a result of the project, that is, a direct investment inflow of Ks 2863.62 million including US\$ 1.62 million. Follow up benefit such as tax, duty, royalty; revenue etc. will go into the national coffer.

Aung Gabar Motor Services Co., Ltd will bear in mind that while negative impacts should be mitigated or minimized positive impacts should be promoted or enhanced.

### **6.2.1.3 Potential negative impacts during the Operation Phase**

This phase will last for 30 plus years (30 years and extendable 5 years twice). The main tasks during this long operation phase are assembling, manufacturing and marketing of the BAIC brand models, X 55, D 50, D 70 and JMC brand model, S 350 vehicles.

#### **6.2.1.3.1 Potential traffic issue**

The proposed assembling plant is facing the No.2 High Way (Yangon-Bago High Way) in the east and there can be certain traffic issues. The company has to use its vehicles daily during the Operation Phase – eg. transportation of raw material (car parts) and other commodities.

There will be an increase in traffic flow on the No.2 High Way (Yangon-Bago High Way) and beyond. There are road users of all sorts – motorists, motorcyclists, cyclists and pedestrians. There can be issue when vehicles, especially trucks, are leaving or entering the Yangon-Bago Highway at the intersection.

However, the impact can be termed insignificant, as the company will not have to use many vehicles or a daily basis but only from time to time.

#### **6.2.1.3.2 Impact on air quality**

The generation of dust, smoke and the emission of gases have been already addressed in the Construction Phase.

Dust, smoke and fugitive emission will also occur during the Operation Phase, but to a much lesser extent.

Dust can be generated outside the assembling plant due to vehicular movements; smoke (fugitive emission) can be generated due to operation of vehicles, machinery and equipment such as engines and pumps.

In this Operation Phase the authority will be more concerned with the air quality inside the plant. It is the quality of air inside the building, if polluted, can have potential effect on the health and performances of the employees. Good indoor air quality is essential for asthma and allergic preventions and also prevention of head aches and nausea.

Potential air emission in the factory compound (that is outside the assembling plant) will be mainly from vehicles, generator and pump etc. CO, NO<sub>2</sub>, SO<sub>x</sub>, oxides, hydrocarbon and Particulate Matter (PM<sub>1</sub>, 2.5, 10) are products of combustion from vehicles and generators, pumps etc.

As regards air quality inside the assembling plant this will be addressed in "Occupational Health and Safety" and "Accidents at workplace" later.

Works inside the factory will mainly involve assembling and installation and the factory is more like a "smoke less factory". However, there may be minor spray painting for certain motor parts scratched during transportation or handling. VOC can be generated from minor spray painting for final touch (e.g. xylene, toluene, and acetone).

The impact on air environment is on the whole, insignificant.

However authority of Aung Gabar Motor Services Co., Ltd is very aware of the fact that the vehicles they are producing are the small polluters of air environment. It is generally accepted that a sedan car emits 3.0 to 4.6 metric ton of CO<sub>2</sub> per year depending on duration of operation.

The company will produce 1500 vehicles in Year 1 and production will be increased to 5000 by Year 6. The emission contributed by these 1500 – 5000 vehicles per year will be quite considerable.

#### **6.2.1.3.3 Noise and vibration**

Noise inside the compound/premise will be mainly from the vehicular movement and also from machines, generator and pumps. During power outage generator has to be operated, generating loud noise.

Noise inside the assembling plant will be generated from a variety of assembling and installation works etc., and also involving the use of machinery and equipment. On the whole the noise level inside the factory/plant building will be relatively high.

Vibration is generated from the above-mentioned vehicular movement and operation of machinery, generator, pump etc and vibration, if high, can damage certain machinery but not the building and structure.

The potential impact of noise on the employees will be described latter in "Occupational Safety and Health" and "Accidents at work place" later.

Low noise level generated from the assembling plant will have little or no impact on the surrounding environment.

#### **6.2.1.3.4 Impact of project on gridline electricity and vice versa (impact of electricity consumption and electricity outage)**

During the Operation Phase the assembling plant consumes substantial amount of electric energy. The operation of the plant can have an impact on the main gridline electricity to a certain extent.

On the other hand the power outage due to defect in electricity or natural disaster or load-shedding can have a negative impact on the plant, especially if the duration of power outage is long. Substantial quantity of diesel fuel will have to be used for the backup generator. This will have a negative economic impact on the factory business. Power load-shedding is commonly practiced by electricity authority whenever there is case of power over load somewhere else. This is probably the easiest and pragmatic way of regulating power supply. Most power outages happening in Myanmar are not due to natural disasters, but due to load-shedding by the electricity authority.

The lack of adequate power supply is still a bottleneck for the development of the nation, especially the infrastructural and industrial developments.

Aung Gabar Motor Services Co., Ltd will adhere to its work frame for electricity consumption (1.5 million kilowatt/year) and conserve energy, as practical as possible.

#### **6.2.1.3.5 Impact of waste**

##### Solid waste

Unlike during the Construction Phase where large quantity of debris, construction tailings and refuse are generated the debris waste generated during the Operation Phase will be negligible.

There will be virtually no debris or tailings from the assembly line since manufactured parts and components are assembled.

However, there can be substantial quantity of old packing materials (e.g. wood, plastic materials, foams, pieces of iron) for packing motor parts imported from China. Most of these packing material wastes can be either reused or put up for sale; the remaining will be disposed at the approved landfill.

Debris, scrap and refuse can be generated from the welding zone (if certain welding has to be undertaken) but only in small quantity (no welding is required).

Solid waste from the office and messing room will include used papers, used toners, cardboard items, plastic items, packing waste trash etc and organic waste from kitchen and messing room. Certain quantity of solid waste such as fallen leaves, debris, weeded or mowed grass and weed, will be generated outside the factory (inside the compound).

## Liquid waste

Since little water is used for industrial purpose industrial waste water will be non-existent or very negligible (only occasional shower testings). Domestic waste water will be also minor as there will be only 11 staffs living inside the compound. Maintenance and washing of machinery and vehicles will also use water occasionally. Liquid waste in the form of used fuel oil hydrocarbons, paints, thinner etc can be also substantial in such a big factory. Used paints, solvent paints etc and used batteries are considered hazardous or dangerous wastes.

Waste will be well-managed and reduced, reused, recycled, and recovered as practical as possible.

### **6.2.1.3.6 Occupational health and safety (potential accidents at workplace)**

Six serious safety hazards in the workplace of a factory or assembling plant are:

- Chemical hazards (eg. a variety of paints, varnish, thinner etc. inhalation and dermal contacts, if painting and varnishing has to be done) (But there may only spray painting and varnishing work, which can release VOCs such as acetones, flounce and xylene which are quite harmful for respiratory tracks and lung).
- Hazardous materials/substance – e.g. flammable, combustible, toxic, corrosive ones have to be used.
- Falls, slip, trips (due to spillage of oil on the floor; uneven floor).
- Heavy machinery (eg. forklift due to carelessness or lack of good training).
- Fire (eg. from engine, welding equipment, electrical equipment).
- Confined space (eg. depletion of O<sub>2</sub>).
- Non-employees (people who should not be there in the first place).

As regards occupational health hazards most of the industrial diseases are caused by dust, chemicals and fumes. Common industrial diseases are: Occupational asthma, occupational detmatitis, industrial deafness, asbestos related illness, hand-arm vibration syndrome, latex allergies and legion naires disease.

Working in an assembly line normally seems to be safe but when working for long hours over along period unexpected occupational hazards and accidents can occurs. Shared dining, shared hygiene facilities and crowded condition can contribute to spreading of diseases. Monotonous nature of work at assembly line can lead to psychological disorder eg-outbreak of hysteria.

Regarding occupational health hazards in an assembly line, workers who are working standing up for long hours can suffer from stress and strain, sore feet, swelling of legs, general muscular fatigue, lower back pain etc.

Assembly line workers can be exposed to risk of, exhaustion and overuse injuries which can be termed minors, such as:

- Repetitive strain injuries (doing the same movement over and over can wear out bones, ligaments, cartilages, nervous system, muscles).
- Assembly line workers can be exposed to the threat of machinery; working repetitive work for long hours can lead to carelessness and slackness of attention resulting in accidents.
- Assembly line workers can be exposed to inhalation and contact with harmful or toxic chemicals including certain paints, varnish, thinner etc, if paint and thinner have to be used sometimes (But no substantial painting and thinning will be necessary).

The Occupational Health and Safety (OHS) impact can be two-way. OHS can impact the staffs/employees while the impacted staffs/employees (in the form of sick leaves and staff-turnovers) can have negative impact on the project (eg. decline in productivity).

#### Accidents in assembly line zone

Machinery in an assembly line can easily cause bodily harm if proper protocols are not followed. Common types of injuries are:

- Loss of limbs in machinery accidents
- Fractures and shattered bones
- Blows to the head from falling objects
- Repetitive uses injuries -- at least suffer from stress and strain
- Exposure to hazardous materials eg- chemicals, inhalation of solvents, fibers of asbestos
- Slips, trips and falls (rarely happen in assembly line)

"The accidents in workplace impact" can be serious eg- loss of life and limbs and impeding the operation of the factory especially production.

#### **6.2.1.3.7 Potential social issue**

The potential social impacts during the Construction Phase have been already mentioned. Social issues such as quarrels; disputes; brawls among workers themselves or with the locals; theft; misappropriation, vandalism unethical sexual practices or sexual offensive, spread of sexually transmitted disease (STD), HIV etc. All these have the potential to hinder or jeopardize the progress of the production work.

Unlike the construction workers during the Construction Phase employees during the long Operation Phase are well-selected, trained and disciplined. So the social impacts may not be so serious. However, there can always be social illness and ill-social behaviour among certain employees.



#### **6.2.1.3.8 Potential security issue**

Potential security issues were already mentioned in the Construction Phase. But these were mostly in the form of theft and vandalism.

The issue during the Operation Phase can be also mostly in the form of theft and vandalism. There is always the potential issue of theft when many locals are living below the poverty line.

Vandalism and sabotage cannot be ruled out given the fact that many people have anti-rich and anti-big business mind set or class antagonistic mind set. So far there is no precedent of terrorists attacking or destroying a factory. A plant can be a soft target for terrorists; security should be tight or effective.

#### **6.2.1.3.9 Positive (beneficial) impacts during the Operation Phase**

The potential positive impacts during the Construction Phase had been already mentioned.

The positive impacts during the Operation Phase are long term positive socio-economic impacts.

The most significant positive impact that can be easily seen is job creation. 135 workers, mostly locals from Sar Ta Linn, Dar Pein and Inn Taing, will be employed permanently. This is a not so small benefit for the country, and a very big benefit for the region, especially in this time of high unemployment. It is a well-known fact that many of our youths have to go abroad for jobs and have to work in unfavourable work places and working conditions.

The proposed salaries for the 135 employees in the first year range from 180,000 kyats (the lowest blue collar job) to 2,10,000 kyats (the highest white collar job) are quite reasonable.

These employees can enjoy certain social benefits such as; free ferry and overtime wages. There will be a worker welfare teashop and food shop with reduced price for the workers. There will be recreation facility for them and they will have the rights to enjoy their leisure time. (Housing will be provided for all staff but they prefer to stay at home and commute to the work place: large majority are local villagers).

There can be employment opportunities from vacant posts from time to time or extra jobs when the plant operation progresses well and when there is a probable expansion of the plant business in the near future. The company has plan for increasing the production especially the electric sedan cars. The door is still open for this. There can also emerge part time jobs or jobs associated with the operation of the factory.

The benefit that will accrue to the nation as result of the direct investment inflow of Ks 2863.62 million (including US\$ 1.62 million) has been already mentioned. This will contribute in one way, or another, to the GDP of the nation, to a certain extent. The follow up

economic benefit to the country in the form of income tax, duties and revenues from the assembling plant project (including those from the workers) will also contribute to the economy of the nation in one way or another.

Above all, the project will contribute to the further development of the Industrial Sector of the Nation, especially the automobile industry. It will also contribute to the development of the Transportation Sector of the Nation and will offer more Sedan/Saloon/SUVcars with reasonable prices for family uses.

#### **6.2.1.4 Potential negative impacts during the Decommissioning Phase**

Because this phase will begin 30 plus years later this will be dealt not in detail but only in general.

The main task during this phase will be:

- The isolation (disconnect electric cable, phone line, water pipes etc.) and shut down of the assembling plant
- The decommissioning work involves demolition and dismantling works for building and structure
- Dismantling of machinery
- Materials that are still useable shall be reused or put up for sale; those that are not useable will be disposed off at appropriate dump site
- Contaminated soil and water, if any, will be removed and disposed off; tidying up the compound.

A contractor and party will be hired for this job.

##### **6.2.1.4.1 Impact: Occupational health and safety (accidents at workplace)**

This is the same as the potential accident during the Construction Phase. Good engineering practice and good safety practices are necessary not only for the construction works, but also for the decommissioning works. Accidents tend to occur more during the decommissioning works than during the construction works.

##### **6.2.1.4.2 Potential residual impact**

After the very long Operation Phase the soil (and ground water probably) can be contaminated. This has to be remediated. The structure of the soil has to be restored to its original condition.

### Summary of Impact assessment

Summary of Assessment of impact identified during the Construction, Operation and Decommissioning Phase applying Risk/impact Rating Matrix and Experts Consensus Method (Experts moderation method).

#### During the Construction Phase

Sr.	Impact/potential impact	Like- lihood	Consequ- ence	Outcome		Outcome after mitigation
1	Impact mobilizations and preparation activities of construction	2	2	4 (moderate)	Mitigation measures	low
2	Occupational Health and Safety issue (potential accidents at work places)	1	2	2 (low)		low
3	Impact on air quality	5	2	10 (high)		low
4	Noise and vibration	5	2	10 (high)		low
5	Impact on soil	3	2	6 (moderate)		low
6	Potential impact on water	1	2	3 (low)		low
7	Impact of waste	3	3	9 (high)		low
8	Potential social issue	1	2	2 (low)		low
9	Potential security issue	2	1	2 (low)		low

#### During the Operation Phase

Sr.	Impact/potential impact	Like- lihood	Consequ- ence	Outcome		Outcome after mitigation
1	Potential traffic issue	1	2	2 (low)	Mitigation measures	low
2	Impact on air quality	3	2	6 (moderate)		low
3	Noise and vibration	5	2	10 (high)		low
4	Impact of project gridline electricity and vice versa	1	2	2 (low)		low
5	Impact of waste	2	2	4 (moderate)		low
6	Occupation health and safety issue	1	2	2 (low)		negligible
7	Potential social issue	1	2	2 (low)		low
8	Potential security issue	1	2	2 (low)		low

### During the Decommissioning Phase

Sr.	Impact/potential impact	Likelihood	Consequence	Outcome		Outcome after mitigation
1	Occupation health and safety (potential accident at work place)	1	2	2 (low)	Mitigation	low
2	Potential residential issue	3	2	6 (moderate)		low

### **6.2.2 Identification and assessment of the likelihood and severity of the natural and industrial hazard related to the project**

#### **Natural hazards**

The whole area is a flat low land and is about 100 miles away from the sea in south. There is no mountain range between and so the area is directly under the influence of the south west monsoon winds during the wet rainy season (May to September). In Myanmar Violent Storms (Cyclones) occur from time to time during the rainy season, especially during the earlier part of the rainy season.

The coastal area of Rakhine State, Ayeyarwaddy Region and Yangon Region can be termed as prone to cyclones. But this industrial zone is quite far away from the coastal area (100 miles away) and so is not prone to Cyclones. The exceptional case: the super cyclone, Nargis (2008) which had wreaked havoc to many States and Regions had also devastated this area. On the whole the area is not prone to violent storms or major floods. There can be minor floods during July and August. It is also not prone to excessive rainfall and/or severe draught and also wild fire. (no case of wildfire so far).

The area is not very far (10 miles) from the southern tip of the Sagaing Fault line. But it is not prone to earth quakes or tremors. (No precedent of major earthquakes within memory). Tremors can happen from time to time within a decade.

So it can be stated that there can be no likelihood and severely of natural hazards at the project site.

#### **Industrial hazards**

No industrial hazards are anticipated during the short construction phase of 3 years. Large quantity of building wastes will be generated during this phase but they are not hazardous materials. All the construction tailings and wastes will be cleared and the site tidied up after the construction work. Also no industrial hazards are anticipated during the long operation. The auto part assembly plant that applies SKD technology will be a "smoke less factory" and "industrial wasteless factory". No serious smoke and dust (emission) will be generated due to assembling and installation activities. Also no industrial waste (solid and liquid) will be generated.

There can be certain industrial waste in the forms of packing materials such foams, wooden boxes, plastic materials, containers etc from time to time when auto parts or components imported arrived at the assembly plant. But these packing materials will not arrive on a daily or weekly, but only occasionally. Some of the packing materials will be reused or put up for sale, while the remaining will be systematically disposed off at the landfill.

The SKD technology actually needs no painting (only minor spray painting for finishing touch) and no welding works. No chemicals or paints are used in the assembling works. (Small quantity of paint may be required for finishing touch work).

It can be simply stated that there can be no substantial industrial hazards due to the implementation of this project.

### **6.2.3 The design, layout, functioning, management and implementation of appropriate impact and risk mitigation measures**

As already described earlier in this chapter (6.2, 6.2.1.2, 6.2.1.3, and 6.2.1.4). The impact/potential impacts identified during the Preconstruction Phase, Construction Phase, Operation Phase and Decommissioning Phase are: 0, 9, 8 and 2, respectively.

For each and every impact/potential impact different options of mitigation measures to be taken are described in this sector. The design, management and implementation of a variety of mitigation measures to be put in place for each and every impact are described in technical details.

#### **6.2.3.1 Mitigation measures to be taken during the Preconstruction Phase**

No mitigation measures necessary as no impact is actually anticipated or envisaged during this phase. (Mentioned earlier in 6.2.1.1)

#### **6.2.3.2 Mitigation/corrective measures to be taken during the Construction Phase**

##### **6.2.3.2.1 Mitigation for impact of mobilization and preparation activities for construction work**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- carefully plan for mobilization, storage and preparation works
- have logistic plan for heavy trucks loaded with building materials
- systematically store or pile up all the building materials within the premise
- ensure that the wall or fence is reliable and can effectively prevent theft
- prevent the spilling over of the building materials outside the premise or on nearby roads, No.2 Yangon-Bago Highway.
- temporary parking of heavy trucks, should be made inside the compound

#### **6.2.3.2.2 Mitigation for impact of Occupational Health and Safety issue (potential accidents at workplace)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for zero accident
- set up "Safety First" sign boards at places where workers can see easily
- create safety condition for all workers; create accidents free environment
- educate, train and supervise construction workers for good working practice, good engineering practice, good safety practice and good house-keeping practice so that these good practices will be ingrained in each and every worker's mind
- try to meet all statutory requirement for safety construction (rules, regulation, labour Act)
- provide adequate Personal Protection Equipment (PPE) where necessary
- keep first aid kits well-stocked with medicine and drugs
- accidents or near-missed to be duly reported
- prohibit the drinking of alcohol during working hours; ban the use of narcotics among workers
- plan and manage for effective emergency response
- cover the whole structure during the Construction Phase with nylon lace or netting to prevent accidental falling of debris and tools etc (a common engineering practice implement in construction work)
- provision of firefighting equipment and tools,
- provision of adequate sanitation – eg. toilets, clean water,
- provision of Personnel Protective Equipment (PPEs)
- apply safe and effective procedures for storages of fuel and chemicals; display warning sign/pictogram
- display addresses/phone numbers of Fire Brigade, Red Cross Society, Ambulance Service, Hospital, Police Station so that everyone can see easily
- take out insurance for the factory/plant and also fire insurance

#### **6.2.3.2.3 Mitigation for impact on air quality**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan for air quality management to meet statutory requirement (rules, regulations, Municipal Act, NEQEG guideline values prescribed by ECD)
- plan in the Pre-construction Phase for the procurement of equipment, vehicles that emit less smoke (to be certified for emission compliance)
- keep equipment and vehicles well-maintained, well-operated and well-lubricated
- use fuel with low emission rate, if possible
- avoid open burning of debris
- spray water for suppression of dust
- restrict vehicular movement; maintain road clear of mud and dirt
- limit open stockpile of earth, sand etc
- minimize drop height during loading and unloading of earth, sand or lime
- provide PPE to workers who are exposed to smoke or dust for long period
- the local community should be able to file complaints regarding dust and smoke
- cover bulk materials during transportation
- plant fast growing trees to trap dust

#### **6.2.3.2.4 Mitigation for noise and vibration**

Aung Gabar Motor Services will take the following measures:

- plan in the Preconstruction Phase for procurement of equipment, machinery and vehicle that emit lower noise level (that is eco-friendly equipment vehicles).
- plan for noise management to meet NEQEG guideline values for noise and vibration.
- avoid construction works at night;
- schedule high noise activities only during day time hours.
- limit transportation during unsocial hours to reduce noise.
- switch off or throttle down equipment during idel hours.
- limit the speed of vehicle to mitigate noise as well as vibration.

- if possible install silencers, noise abators on inlet and outlet of fans to reduce noise level.
- keep machinery and equipment well-maintained, well-operated and well lubricated to reduce noise level.
- design stable foundation to mitigate vibration; if possible install vibration absorbers.
- provide PPEs, ear plugs, ear muffs to workers exposed to high noise level.
- the local community should be able to file complaints regarding noise and vibration.

#### **6.2.3.2.5 Mitigation for potential impact on soil**

Aung Gabar Motor Services will take the following measures:

- draw up a plan for management of soil
- try to avoid potential destruction of soil profile
- separate top soil (for later creation of green belt) from sub-soil (for construction work-earth filling etc.)
- draw up a plan for prevention and mitigation of contamination of soil
- manage to meet statutory requirement (rules, regulations, Municipal Act)
- prevent spill of fuel oil and chemicals; clean up spill with absorbent promptly (do not wash down with water)
- properly instruct workers with respect to handling of fuel and chemical and cleanup of spills
- bund fuel or chemical depot to prevent spreading of spill
- display warning signs; identify high risk spill area (generator, fuel drums)
- implement soil conservation techniques to prevent soil erosion (during rainy season)
- Prevent wash water from carrying earth and materials into drainage system
- resurface and stabilize the exposed ground surface after earth work
- the ground should not be laid bare for long period during the rainy season
- dispose all waste materials (from construction work and from domestic use) at approved land fill
- train workers for good house keeping; do not litter
- the local community should be able to file complaints if their lands are impacted



#### **6.2.3.2.6 Mitigation for potential impact on ground water**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for the conservation of water
- also plan and manage to prevent the pollution of natural pond water (no surface water to be impacted)
- do not use water more than necessary during the Construction Phase
- if possible recycle water; it can be used for dust suppression or for watering plants
- discipline workers for the conservation of water;
- harvest rain water where possible (during the rainy season)
- monitor the daily use of water for construction
- avoid the spillage of fuel oil which will contaminate the soil and eventually ground water;
- if there is spillage clean up spill with absorbent promptly (do not wash down with water)
- properly train workers with respect to handling of fuel oil and clean up of accidental spill
- adequately maintain vehicles and machinery to prevent spillage resulting to ground water contamination
- bund fuel depot to prevent spreading of fuel oil
- display warning signs; identify high spill areas (generator, fuel drums etc)
- avoid disposing of waste (solids and liquids) into water body, into the pond, and Sar Ta Linn Chaung), nearby
- the local community should be able to file complaint, if there is any impact on their drinking water

#### **6.2.3.2.7 Mitigation for impact of waste (construction waste)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan for the management of waste
- manage to meet statutory requirement (rules, regulations, Municipal Acts)
- draw up a plan for management of solid waste
- avoid open burning of debris

- clear the ground regularly; ensure dumping at approved landfill
- educate workers for good housekeeping; do not litter
- plan for reuse and disposal of construction tailings and left overs
- at the end of Construction Phase put up construction spoils, left over materials for sale
- hire a contractor and party for tidying up the site after Construction Phase
- the local community should be able to file complaints if regarding waste disposal

**Note:** There will be virtually no waste water during the Construction Phase. All required water will be used up during mason works or concrete works etc.

#### **6.2.3.2.8 Mitigation for potential social impact/issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan for management of social illness and anti-social behaviour
- educate and train workers on discipline and code of conduct
- try to build good relation with the locals
- conduct public consultation so that the locals will have a positive perception on the project
- educate the workers for appropriate behavior when dealing with locals; to respect their culture and tradition
- plan to avoid or minimize the potential negative impacts on the socio-economic life of the locals
- apply punitive measures such as suspension of the wrong doer
- manage misbehavior and social illness of workers
- strictly prohibit the drinking of alcohol during working hours; ban the use of narcotics and stimulants
- deal with workers on a fair and square basis
- avoid unhealthy relationship with workers; they should not be over worked and underpaid
- maintain the good relation between the company and the locals
- provide adequate welfare programme for workers

**Note:** The local community should be able to file complaint regard social impact.

#### **6.2.3.2.9 Mitigation for potential security issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a security management plan
- campaign against social evil to ensure security and order
- undertake effective walling of the compound
- all accesses must be controlled; effectively control all accesses
- set up security gates; deploy adequate guards or watchmen
- do not let the workers (mostly construction workers) enter the neighbouring ward without preauthorization; do not let workers mingle freely with locals
- store building materials under lock and key as far as possible
- ask the building contractor to discipline his workers
- apply punitive measures, such as suspension or termination of employment if necessary
- provide ID cards for all workers for easy identification

#### **6.2.3.3 Mitigation/corrective measures to be taken during the Operation Phase**

##### **6.2.3.3.1 Mitigation for potential traffic issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a traffic management plan
- schedule the logistics; avoid rush hours; avoid road with heavy traffic road; if possible
- educate drivers, staffs (motorists and motorcyclists) for defensive driving; drive at reduced speed; follow road regulations
- set up signage or traffic sign at the entrance of the site and suitable places
- avoid overloading of truck, or any vehicles
- regular maintenance of cars and motor bikes
- keep a log book for each vehicle
- ensure that drivers are not overworked, over-fatigued
- aim to achieve zero road accident
- local community should be able to file complaints regarding traffic issue

Note: All these facts are actually for mitigation for potential traffic issue anticipated during the Operation Phase. As for tackling the traffic issue for the long term basis beyond the scope of the EIA report:

- The company will ensure that all the vehicles produced are up to ASEAN Motor Vehicle Requirement as stated earlier
- The company will adhere to Left Hand Drive principle to be compatible with the motor traffic system in Myanmar
- The company will ensure that thorough vehicle testing is conducted for every vehicle produced before distribution and marketing.

#### **6.2.3.3.2 Mitigation for impact on air quality**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan and implement for air quality management for the long term Operation Phase
- try to meet all statutory requirements (rules, regulations); follow the NEQEG guideline values prescribed by ECD, MOECA (2015)
- if possible cover the whole compound/premise with concrete plinth or at least sealed (hardened) high traffic area
- spray water adequately to suppress dust
- Also deploy sweepers to clean dirt
- reduce the speed of vehicle to reduce dust generation
- plan for effective mitigation and management of smoke and emission
- avoid open burning of solid waste
- use well-maintained and well-operated equipment and vehicles
- regularly check all the engines of vehicles and machinery
- use vehicles and machines that emit less smoke and use less fuel (procure ecofriendly vehicles and machinery in the first place)
- conserve fuel and prevent unnecessarily emission of gas (smokes)
- plant trees and create green zone; trees will sequester CO<sub>2</sub> in the smoke, trees will also trap dust.
- provide adequate PPE such as face masks, nose and mouth covers to workers
- the local community should be able to file complaints regarding dust and smoke

#### **For the management of air quality inside the assembling plant:**

- plan for good ventilation and natural air flow as far as possible
- follow safety procedures including good ventilation
- avoid the use of "air fresher" (not good for health; only good ventilation is necessary)
- if possible, designate "smoking zone" in one part of the factory
- use exhaust ventilation with pressure control
- avoid chemical products with repugnant odour

All these facts are actually for the mitigation for impact on air environment anticipated during the operation phase of the project. It is universally accepted that a generally a Sedan/Saloon/SUV car emits 3.0 to 4.6 metric tons of CO<sub>2</sub> per year, depending on duration of operation. The cars produced from this site are fairly eco-friendly cars.

It is the responsibility of the buyer to consider for reduction of GHG emitted from his car.

Some of the main points to reduce GHG from own car are:

- if possible walk and ride bike rather than drive a car
- use a fuel efficient car (these models are fuel efficient EU emission No. 5)
- use a low sulphur fuel oil – diesel
- use gasoline lower in lead
- change the air filters regularly
- avoid unnecessary driving
- change your driving style - 35 mph is the best for fuel consumption and for emission
- keep your car well-maintained, well-operated and well-lubricated

#### **6.2.3.3.3 Mitigation for noise and vibration**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan for effective management of noise and vibration
- try to meet all statutory requirements (law, regulation)
- follow the NEQEG guideline values for noise and vibration prescribed by ECD, MOECAAF (2015)
- restrict or limit vehicular movements
- plan for appropriate choice of machinery and vehicles (that emit low noise level); method of working, efficient material handling
- installation of noise abating devices eg- silencers, mufflers at air inlet and outlet of fan and compressor; place noisier sources far away in overall design
- well-operated, well-maintained and well-lubricated vehicles and machinery generate lower noise level and prevent undesirable noise level
- modified old machinery, vehicles and equipment by incorporating minor design change for reducing noise level
- develop green belt (plant trees) inside the compound; trees abate noise and serve as noise sink (pollution sink)
- create smooth road surface as far as possible to mitigate vibration due to vehicular movement

- create suitable foundation design for machinery and equipment (eg. grinder, compressor and pumps etc.) to mitigate vibration
- if necessary install vibration absorbers or vibration abators
- provide adequate PPE eg- ear muffs, ear protectors to workers exposed to long hours of high noise level; conduct regular noise monitoring to ensure that the levels are within noise exposure standard (not higher than 85-90 dBA)especially for generators and pumps
- local community should be able to file complaints regarding noise and vibration

**For the management of noise level inside the assembling plant:**

- fit mufflers or silencers on all noisy machines and equipment especially inlet and outlet fans, etc. if necessary.
- position, enclose and isolate noisier equipment, if possible.
- minimize sound level inside the plant as far as possible
- provision of PPE for workers where necessary (ear plugs and ear muffs)
- limit transportation during unsocial hours to reduce noise
- conduct a noise survey and mark out dedicated areas with signage where there are elevated noise levels
- reduce vibration exposure time, where possible.

**6.2.3.3.4 Mitigation for impact of project on gridline electricity and vice versa**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- consider for application of environmentally sound idea and technology when sourcing for electricity
- acquire conservation of energy knowledge in the planning and design phase of the assembling plant.
- plan and manage for the conservation of electricity energy
- design the building to take advantage of sunlight and air flow
- optimize building orientation for sunlight; allowing sun-light to penetrate building to provide light to illuminate interiors
- ensure that the consumption of electricity be in the work frame as stated earlier
- monitor electricity consumption weekly
- use electrical equipment, devices that are energy efficient, particularly use energy efficient equipment associated with heating, ventilation, air conditioning and cooling (HVAC)

- use high efficiency light bulbs, lamps, tubes etc
- use day light as much as possible
- use day light control (adjust interior lighting by incoming day light so that there is no need to switch on the light during day time)
- ensure that the backup generator is operational immediately after power outage or use automatic backup system
- liaise with electricity authority from time to time

#### **6.2.3.3.5 Mitigation for impact of wastes (solid & liquid)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and implement the management of wastes

#### **For liquid wastes**

- if necessary, treat all the waste water before discharge into the sewage system (the readily available chemical water treatment is chlorine at 5 mg/l or Monochloramine at 3 mg/l which are effective and cheap). This is not necessary at all as the assembling plant will produce no effluent; no water is required for assembling works; small quantity will be necessary for car shower test.
- monitor waste water drainage from time to time, especially for domestic waste water and storm water.
- The domestic waste water from a few employees reside in the housing (only 4 family members and 7 bachelor workers) will also simply flows down the drain and dry up (no need for special treatment)
- The domestic black water (from toilet) will end up in septic tank and soak pit (no need for vacuum truck to remove the sewage)
- monitor the pond water quality to check for contamination
- comply with the NEQEG guideline values (for effluent) prescribed by ECD
- manage the used water and domestic waste water to a level that is consistent with the conventional treatment and discharge of sanitary waste water
- ensure that waste water is not discharge into watercourse, that is into Sar Ta Linn stream.

#### **For solid waste in general:**

- plan and implement the management of solid wastes
- dispose the solid wastes outside the factory at an approved landfill or dumping site
- avoid open burning of debris or trash in the compound
- recycle scrap metal, if any

**For solid waste inside the plant** and at the office and messing room, at housing, etc. (domestic waste).

- when buying things for use, buy in bulk quantity wherever possible (to reduce packing waste)
- use refillable bulk dispenser, (eg- toiletries) rather than individually pocked products
- buy products with minimal product packing (because all packing materials become waste)
- implement organic-waste compositing of some wastes from the kitchen for organic fertilizer to apply in lawn, and green
- segregate wastes into categories; waste that can be recycled and that has to be disposed off, using two different waste bins
- dispose waste only after all waste prevention and possible recycling strategies have been explored (adhere to the principles of 4 Rs, reduce, reuse, recover and recycle as far as possible)
- dispose wastes only at approved landfill
- return packaging materials such as plastic, paper and drums etc. to supplier for reuse; recycle packaging materials whenever possible
- give priority to reduction of solid waste, recovery and reuse

#### **6.2.3.3.6 Mitigation for Occupational Health and Safety issue (Potential Accidents at workplace)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a comprehensive plan and manage for the safety working conditions for workers; create a safety working conditions at the work place.
- try to meet all statutory requirements for safety at work places
- educate, train and supervise workers for good working practice, good engineering practice, good safety practice and good housekeeping practice so that all these good practices are ingrained in their minds and become good habits; especially train them for corrects use of machinery and safety devices; correct lifting technique; where possible install mechanical lifting aids. eg. forklift,
- educate, train and supervise them for skills; for handling and operation of equipment; handling and application of chemicals; especially harmful one
- educate them for good health practice, hygiene, environmental awareness and occupational health hazards, and other hazards awareness.
- all workers must pass a medical examination prior to employment
- conduct yearly medical checkup for workers
- draw a programme for workers' health monitoring and implement it



- provide free Medicare for workers
- compensation, rehabilitation and curative services will be made available to workers who suffer occupational injuries, accidents and work related diseases
- toxic and hazardous chemical, if any, shall be stored in a safe place (enclosed and secured room with roofing and concrete floor) and labeled with pictograms; keep MSDS file (only thinner and paints)
- chemical with different hazard symbols should not be stored together
- fuel oil will not be stored in bulk – (fuel will be purchased from town fuel stations)
- install device to prevent spills and overfills for fuel and chemicals, if necessary.
- maintain and inspect storage unit regularly
- keep all machinery, equipment and vehicles well-maintained, well-operated and well-lubricated; and also well-lubricated for sophisticated equipment.
- check the machinery for signs of wear and tear, degradation, leaks, weak etc
- check on automatic safeguards on machines to prevent accidental injuries
- draw up a plan and manage for zero accidents at work place
- beware of all the common accidents and common injuries mentioned earlier that used to happen (as well as potential accidents and injuries) and implement a prevention, protection and mitigation measures for each
- provide adequate PPEs – outfits, boots, helmet, gloves, face mask, goggles, ear muff, ear plug, etc. also tools such as sit – stand tools for workers who have to stand for long hours
- also provide adequate First Aid Kits well-stocked with medicines & drugs
- provide adequate sanitation facility eg. toilets, clean water, baths room etc. for workers
- unknown to many workers certain materials and chemical may be toxic or hazardous. eg. asbestos. Educate them and provide PPEs and other protection measures for them
- beware of the stress, strain and psychological impacts on workers doing monotonous and tedious work for long hours
- minimize manual labour; maximize mechanical labour
- relieve them from strain and stress from time to time; plan job rotation to relieve from long hours of repetitive work.
- reorganize staff organization at assembly line occasionally for better cooperation among them
- redesign work station; make tool redesign, create adjustable fixtures; readjust work brakes, make job rotation etc (to increase team cooperation and enhance productivity)
- train some workers for First Aid training.

#### **6.2.3.3.7 Mitigation for potential social impact**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan to avoid or minimize – potential negative impacts on the socio-economic life of the locals
- try to build and maintain good relative with the locals; avoid friction between the locals and the company as far as possible.
- buy local produces as possible.
- conduct public consultation from time to time so that the locals will have a positive perception of the project
- educate workers for appropriate behaviours when dealing with locals; to respect their culture and tradition
- plan and manage for antisocial behaviours, misbehaviours and social illness
- discipline workers for work place regulation and code of conducts including social conduct
- take disciplinary action/punitive action for wrong doer eg. suspension, discharge
- prevent and manage disputes, quarrels, brawls among workers and also between workers and locals.
- strictly prohibit the drinking of alcohol during working hours; totally ban the use of narcotics
- deal with workers on a fair and square basis – (not overworked, underpaid)
- community should be able to file complaint regarding social impact, if any, (through Grievance Redress Mechanism, GRM)
- the company will consider and execute CSR activities during the Operation Phase

#### **6.2.3.3.8 Mitigation for potential security issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for site security
- ensure that the fence/wall is secure
- do not let the assembling plant become a soft target for terrorists
- implement strict security as far as possible
- deploy adequate security staffs; security guards at gate; inside the plant and at office

- if possible install security/watching towers
- perform security check on each and every one entering and leaving the plant and compound.
- in addition to worker suits issue Identity Cards for all employees for easy identification
- keep all important materials secured and safe; eg. under lock and key as far as possible
- campaign against social evil to ensure security and order
- apply punitive measures such as suspension and termination of employment if a worker infringes security regulation

#### **6.2.3.4 Mitigation/corrective measures to be taken during the Decommissioning/Rehabilitation Phase**

##### **6.2.3.4.1 Mitigation measures for potential accident at workplace (OHS issue)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for safe and effective decommissioning work
- hire a decommissioning contractor and party for the demolition of buildings/structures and dismantling of equipment; and also for tidying up the site
- dispose those that are no longer usable at the approved City landfill
- obsolete machinery and equipment will be made into scrap and sent to smelting mill
- put up for sale materials and machinery that are still usable and saleable
- remove soil contaminated by fuel and/or chemical spills, if any, and dispose at the city landfill
- plant trees and commence rehabilitation work and restore the site to original condition as far as possible

##### **6.2.3.4.2 Mitigation for potential residual issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- clear and remove all residual eg- chemicals, if any
- remove all soil contaminated by the fuel oil, if any
- test the soil for the last time to ensure that no contaminants remain
- test the water and air for the last time for contamination
- restore the plot and soil to its original condition
- vegetate or rehabilitate the plot

## **6.2.4 Characterization and assessment of residual impacts and risks and comparison with applicable regulations, standards and guidelines**

### **Potential residual impacts**

Substantial residual impacts are not anticipated during the whole life of the project.

#### During the Construction Phase

Large quantity of solid wastes in the form of construction tailings, construction wastes, unused construction materials, discarded construction materials and debris are generated during this phase.

These wastes will be regularly collected and disposed at the approved land fill. When the Construction Phase is completed all the solid wastes will be removed and disposed, and the site will be cleared. A contractor and party will be hired to do the tidying up job.

Therefore there can be no residuals impact after the Construction Phase.

There can be certain accidental spills of fuel, chemical, etc. from time to time during the Construction Phase. All accidental spillage of fuel oils and chemicals will be immediately removed (not using water for wash down but absorbents – eg. rugs, and/or saw dust will be used to removed and clear the spills). There will be no chance for residual impact and subsequent contamination of soil and ground water.

Therefore there can be no residual impacts and contamination of soil after construction phase.

#### During the Operation Phase

The same good practice for the removal and clearance of solid and liquid wastes and fuel & chemical spillages will be undertaken during the Long Operation Phase. There can be no substantial residual impact during and after the Operation Phase.

That auto parts assembly plant is not a factory that generates large quantity of smoke and dusts, emit high level sound and generates large quantity of solid wastes and liquid wastes.

The auto parts assembly plant that applies the SKD technology is actually a "smoke less factory", a "silence factory" and "waste less factory".

Therefore there will be no residuals during the long operation phase.

Generally welding and painting works are not necessary; only welded parts and painted parts will be imported for assembly and installation. In exceptional cases there can be certain final touches regarding painting but here will not be any residual paints or chemicals.

#### During the Decommissioning Phase/Rehabilitation Phase

After the completion of the long Operation Phase a decommissioning task (the comprehensive clearance and tidying up of the site) will be undertaken. A decommissioning contractor and party will be hired to carry out this decommissioning task.

The plant will be shutdown; all the buildings and structures will be dismantled or demolished. The machinery and equipment will be dismantled.

Certain old building materials that are still usable and saleable will be put up for sale. Those that are obsolete will be removed and disposed at the approved city landfill.

Machinery and equipment that are usable and saleable will be put up for sale and those that are no longer usable will be made into scrap iron and sent to a smelting plant.

The soil, if contaminated, will be removed and discarded. The soil will be tested for the last time to ensure that there is no contamination. In the same way the ambient air and water will be tested for the last time to ensure that the ecology is restored.

After that the site will be rehabilitated (planting trees) and restored to its quasi-ecological condition.

Therefore no serious residual impact is anticipated during the whole life of the project.

### **6.2.5 Comprehensive monitoring plan**

Monitoring of physical, biological and social environments is of paramount importance for the successful implementation of a project.

First of all the working environment will be monitored for occupational hazards. But virtually all activities taken places at a project site need to be monitored for effective and successful implementation of the project.

Monitoring Plan (MP) is an essential tool for ensuring that mitigation measures for each and every negative impact is undertaken effectively throughout the life of the project. It is also an essential tool for ensuring that the positive (beneficial) impacts are enhanced, or CSR programme are effectively and meaningfully implemented. Monitoring will be planned, designed and implemented by professionals or specially trained persons eg. EMP cell members.

Monitoring Plan (MP) is actually an integral part of Environmental Management Plan (EMP); these two are the different sides of the same coin.

In implementing monitoring plan, the NEQEG guideline values by ECD, 2015 will be the reference guideline values and monitored results/values will be always compare with NEQEG guideline values for compliance. Attempts will be made until all are within the said guideline values; (already described earlier in **Chapter-3**).

Frequency of monitoring will be as stated in the table (6 months) quarterly, monthly, weekly and daily as stated).

All activities will be recorded and report of monitoring will be submitted to the authority in time, preferably, every 6 months.

Monitoring Plans for Construction, Operation and Decommissioning Phases of the project are shown in tabulated forms.

**Table-20: Summary of monitoring programme for Construction Phase in tabulated form (the pragmatic approach)**

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Cost (once off cost)
1.	Air environment/ air emission	- monitor ambient air - monitor all the parameter for emission shown in the NEQ emission guideline values prescribed by ECD (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 1,700,000
2.	Noise and vibration	- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 70,000
3.	Water environment/ effluent	- monitor all the parameters for the effluent shown in the NEQ effluent level values prescribed by ECD for construction phase (Already depicted in <b>Chapter-3</b> )	17° 3'27.44"N 96°18'22.22"E	Once during construction phase	Hired technicians	Ks 80,000
4.	Contamination of soil and ground water	- monitor spillage of fuel oil, grease, chemical, etc, if any	17° 3'26.09"N 96°18'21.80"E	Weekly	EMP cell members	Free of charges

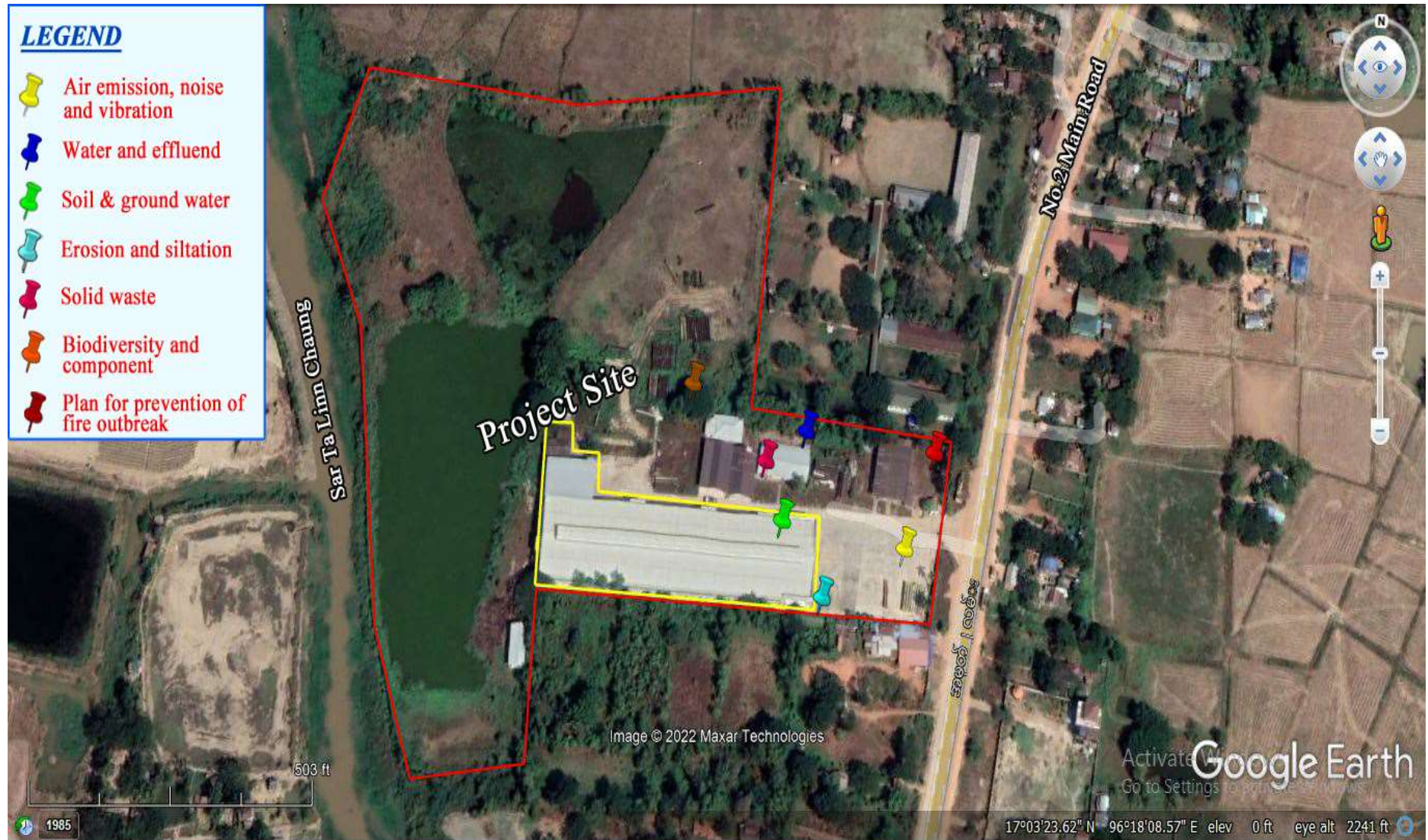
5.	Erosion and siltation	- monitor earth work and drainage system	17° 3'24.98"N 96°18'22.57"E	Weekly (especially during rainy season)	EMP cell members	Free of charges
6.	Solid waste (construction failing, debris)	- monitor type, amount generated reused, recycled, and disposed of	17° 3'26.96"N 96°18'21.46"E	Weekly	EMP cell members	Free of charges
7.	Biodiversity component	- monitor clearing of grass and small vegetation	17° 3'28.09"N 96°18'20.03"E	Weekly	EMP cell members	Free of charges
8.	Plan for prevention of fire outbreak	- monitor the plan and the readiness for prevention of fire - monitor the stock piling of building materials that can easily catch fire	17° 3'27.20"N 96°18'24.67"E	Weekly	EMP cell members	Free of charges

**Note:** By the time EIA study was conducted the Construction Phase was already completed; so actual monitoring will be undertaken during the long Operation Phase.

There will be a specific regular monitoring on physical environment namely air, water, soil quality on a semi-annual basis. This will be undertaken throughout the long Operation Phase in accordance with instruction by the environmental authority, the ECD.

Technicians will be hired for undertaking these specific monitoring.





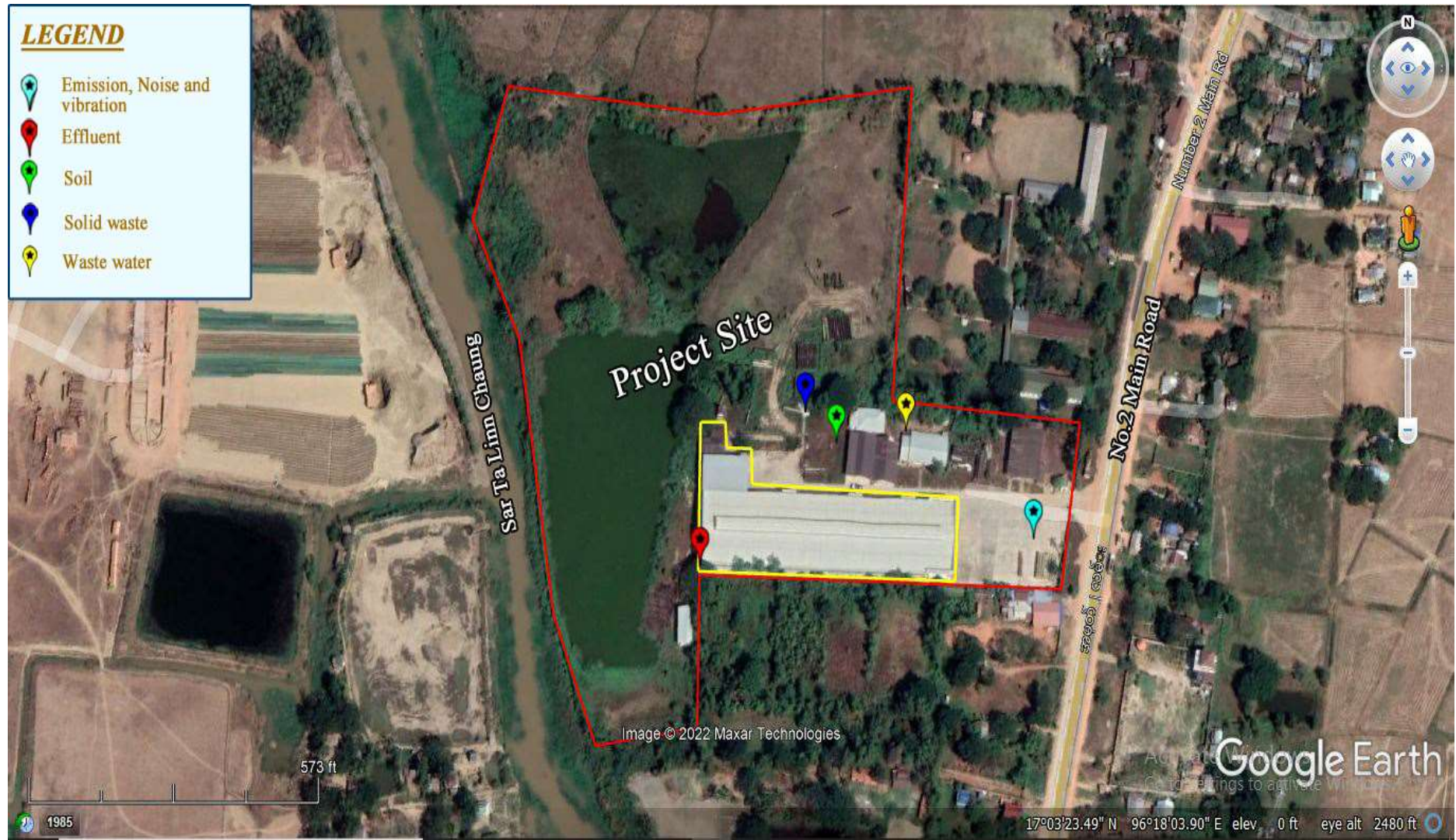
**Figure – 67: Monitoring spots/sites during Construction phase**



**Table-21: Summary of monitoring programme for Operation Phase (tabulated form)**

(a) The pragmatic approach

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Costs (once off cost)
1.	Emission	- monitor all the parameters for emission for comparison with NEQEG emission guideline values prescribed by ECD Section-2.3.3.3 (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	- Every six months	- Hired technicians	Ks 1,700,000
2.	Effluent	- monitor all the parameters for effluent for comparison with NEQEG effluent guideline values prescribed by ECD Section-2.3.3.3 (Already depicted in <b>Chapter-3</b> )	17° 3'25.31"N 96°18'17.30"E	- Every six months	- Hired technicians	Ks 80,000
3.	Noise and vibration	- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD Section-2.3.3.3 (Already depicted in <b>Chapter-3</b> ) - monitor the wearing of PPE	17° 3'25.75"N, 96°18'24.11"E  At work place near noisy machine	- Every six months  - From time to time	- Hired technicians  - EMP cell members	Ks 70,000  Free of charge
4.	Soil	- monitor contamination of soil (if any)  - monitor soil erosion (if any)	17° 3'27.32"N, 96°18' 20.09"E  Inside the compound	- From time to time  - Rainy season	- Hired technicians members  - EMP cell members	Ks 140,000  Free of harge
5.	Solid waste	- monitor the packing materials collection and disposal - monitor trash/garbage generated, collection and disposal	17° 3'27.83"N 96°18'19.46"E  - Inside the compound	- Daily  - Weekly	- EMP cell members  - EMP cell members	Free of charge  Free of charge
6.	Waste water	- monitor the management of domestic waste water	17° 3'27.51"N 96°18'21.51"E	- Daily	- EMP cell members	Free of charge



**Figure – 68: Monitoring spots/sites during Operation phase**

(b) The generalized monitoring of other parameters (practiced in many countries)

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Remarks
1.	Weather	- monitor weather	- At the site	- Daily	- EMP cell members	- Free of charge
		- listen to weather news, fore cast	- At the site	- Daily	- EMP cell members	- Free of charge
2.	Daily activities at work places	- monitor daily activities of workers at work places	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
3.	Water consumption	- monitor water consumption	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
4.	Fuel consumption	- monitor fuel oil purchased, used, used oil generated, oil waste	- Inside the assembling plant	- Monthly	- EMP cell members	- Free of charge
5.	Monitor electricity consumption	- monitor electricity consumption	- Inside the assembling plant	- Weekly	- EMP cell members	- Free of charge
6.	Routine operation of machinery equipment, etc	- monitor operation hours of machinery and equipment	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
		- monitor distance travel of vehicles	- Every car	- Weekly	- EMP cell members	- Free of charge
		- monitor log books	- Every log book	- Weekly	- EMP cell members	- Free of charge
7.	Occupational health and safety measures and emergency measures	- monitor OHS measures taken	- At the work place	- Weekly	- EMP cell members	- Free of charge
		- inspect facilities for emergency preparedness	- At the work place	- Monthly	- EMP cell members	- Free of charge
		- monitor training (fire fighting and first aid) and drill	- At the f work place	- From time to time	- EMP cell members	- Free of charge
8.	Social illness, ill social behavior	- check disciplinary action taken	- At the work place	- Occasionally	- EMP cell members	- Free of charge
		- monitor conducts of workers	- At the work place	- Occasionally	- EMP cell members	- Free of charge
9.	Security	- monitor performance of security staffs	- At the site	- Monthly	- EMP cell members	- Free of charge

10.	Capacity building	- monitor effectiveness of capacity building programme and other trainings	- At the site	- From time to time	- EMP cell members	- Free of charge
11.	Compliance with regulation	- monitor all main activities to ensure compliance with legal requirements and corporate commitment	- At the site	- Monthly	- EMP cell members	- Free of charge
12.	Effectiveness of mitigation measures	- monitor mitigation measures taken and check their effectiveness	- At the site	- Weekly or monthly	- EMP cell members	- Free of charge
13.	Green belt creation and landscaping	- monitor the creation of green belt and landscaping - monitor the nursery of sapling and on-growing	- Inside the compound	- Monthly - Monthly	- EMP cell members - EMP cell members	- Free of charge - Free of charge

**Note:** EMP cell member are full time staff and well-paid. Honourarium fees for two villagers.

**Table-22: Summary of monitoring programme for Decommissioning/Rehabilitation Phase (tabulated form)**

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Remarks
1.	Decommissioning and Rehabilitation	- monitor the Decommissioning process including the removal of all residuals, if any - monitor rehabilitation process	- Inside the compound - Inside the compound	- Weekly - Monthly	- EMP cell members - EMP cell members	- Free of charge - Free of charge

**Note:** There will be specific regular monitoring on physical components, namely, air, water, soil quality on a semi-annually basis throughout the whole long Operation Phase, as instructed by the environmental authority, the ECD. Technicians will be hired for this task and the semi-annual report will be duly submitted to ECD.

## **6.3 Location of sources of impacts and their potential spatial and temporal distribution**

### **The construction phase**

As already mentioned earlier the potential impacts anticipated and identified during the construction phase are:

- impact of mobilization and preparation for construction work
- potential accident at workplace (OHS)
- impact on air quality
- noise and vibration
- potential impact on soil
- potential impact on water
- impact of waste (construction waste)
- potential social issue
- potential security issue

The location of sources of impacts is inside the construction site (the project site). Only potential social issue can happen out the site (e.g. at the nearby village).

And as already mentioned earlier all this impacts/potential impacts are generally minor or insignificant and are transient or temporary. All these impacts will cease after the end of construction phase.

With the exception of potential social impact the sources or potential sources of all other impacts are inside the project site.

The extents of these impacts are within the foot print of the project site, except social impact which can be beyond the foot print.

Since all the impact are all transient (the construction phase of 3 years) and insignificant no actual spatial and temporal distribution of the impacts are envisaged.

### **The Operation Phase**

As already mentioned earlier the potential impacts anticipated and identified during the Operation Phase are:

- potential traffic issue
- impact on air quality
- noise and vibration
- impact of project on gridline electricity and vice versa
- impact of waste
- potential accidents at workplace (OHS)
- potential social issue
- potential security issue

And as already mentioned earlier all the impacts/potential impacts are generally insignificant but are long term. (This is not a big factory that spewing out dark smoke, emitting loud noise and generating large quantity of industrial solid waste and liquid waste. It is just an auto assembly plant).

With the exception of "potential traffic issue", "impact of project on gridline vice versa" and "potential social impact" the sources of all other impacts are either inside the factory or inside the factory compound. In otherword, all sources are within the footprint of project site. Traffic issue, impact on gridline and potential social issue can happen beyond the foot print.

As virtually all the impact are insignificant there can be no spatial and temporal distribution of impacts regarding this auto parts assembly plant. (Say for example, if the project is a large factory spewing out large quantity of smoke into the air shed there can be certain change in temporal distribution depending on prevailing wind that blows during a certain season. For instance, the prevailing wind blows from S.W to N.E during the monsoon season and the temporal distribution of impact (smoke) will be from S.W to N.E during that season (that is beyond the footprint of the project site). The prevailing wind blows from N.E to S.W during the post monsoon season and therefore the temporal distribution of impact (smoke) will be from N.E to S.W and beyond the footprint of the project. As this auto-parts assembling plant is actually a "smoke less" factory the spatial and temporal distribution of impacts of emission are not significant.

As regards effluent is can be envisaged this way. For instance, a large factory that generates large quantity of effluent can have spatial and temporal distribution of the impact (effluent). During the dry months (pre monsoon and post monsoon month) effluent distribution will be within the factory site (at net work of drainage) and at discharged point. But during the wet season (monsoon season) distribution of effluent can be beyond the project site and discharged point due to rain water influx and/or storm water.

However, in this auto-parts assembling plant it is not only a "smoke less" factory but also an "effluent less" factory as no water is used in assembling processes, Therefore, there can also no temporal distribution of effluent.

The imapcts will be seen or felt only within the foot print, except the traffic, gridline and social impact.

### **The Decommissioning Phase**

The two potential impacts are:

- potential accident at workplace (OHS)
- potential residual impact

These are also generally insignificant and temporary. The sources are within the foot print. There can be no conceivable spatial and temporal distribution of these insignificant and transient impacts.

## 7. CUMULATIVE IMPACTS ASSESSMENT

The term cumulative impact refers to either:

- The addition of impacts from other sources (combined impact or simultaneous impacts) at the same time,

OR

- Successive addition of impacts (or incremental cumulative impacts) over a long period

Green House Effect that leads to global warming is the result of the accumulation of CO<sub>2</sub> (in other word cumulative impacts of CO<sub>2</sub>) in the atmosphere from different sources all over the world.

It is necessary to understand and minimize cumulative environmental impacts in order to prevent "death by a thousand cuts".

Since the auto parts (SKD parts) assembly plant is not a factory that has substantial or serious negative impacts (smoke, dust, high level noise, large industrial wastes etc) the term "cumulative impact" is actually out of context.

### Simultaneous impacts happening at the same time

There are no other assembling plants or factories or projects (other sources) in the area and therefore there will be no other simultaneous impact or combined impacts on the environment.

### Incremental or successive impacts over the years

As the assembling plant will be in operation for 30 years there will be incremental/successive impacts (incremental cumulative impacts) over the year.

As the main works are only assembling of auto-parts the operation of this proposed project (auto part assembly) will have only insignificant impact on the surrounding environment.

The term cumulative impact in this project context is out of context. However to befit a standard EIA report the cumulative impact, if any, will be addressed. (Over the years there can be successive cumulative impact/incremental cumulative impact from only this plant source).

### **7.1 Methodology and approach**

Usually cumulative effects are not considered if a project has no substantial impact, say for example, if a factory or plant is a small one, or if there are no other factories or plant in the vicinity.



As the term "cumulative" implies the appropriate time to conduct CIA should be at least 5-10 years after the commencement of the Operation Phase.

Cumulative Impact Assessment (CIA) is more or less similar to EIA but only for the long term impact assessment and/or combined impact assessment.

The process of CIA can be put in this way:

- It is a process of analyzing the potential impacts and risks of the project in the context of potential effects of human activities and natural environmental and social external drivers on the chosen Valued Environmental and Social Component (VESC).
- It is a process of proposing concrete measures to avoid, reduce or mitigate such CIs and risks to the extent possible.

General process or steps for implementing CIA involves 5 steps:

Step-1 : Scoping Phase

Step-2 : Establish information or base line status of Valued Environmental and Social Components (VESC)

Step-3 : Assess Cumulative Impacts (CI) on VESC

Step-4 : Assess significance of predicted CI

Step-5 : Management of CI; plan design and information

CIA and CIM (Cumulative Impact Management) are necessary whenever there is concern that a project may contribute to cumulative impact on one or more VESC. (For example-when there is a big factory and other factories occur within this area or when more than one project of any kinds occur within this area and impact the same VESC.)

Several methods/approaches are available for the CIA but there is no one method that could always be used.

For CIA specifically for an auto parts assembly plant project the following factors have to be considered:

- Site location, condition
- Capacity of the assembly plant
- Wastes (solid and liquid) if any, to be generated
- Land or water environment (surface and ground water) to be impacted



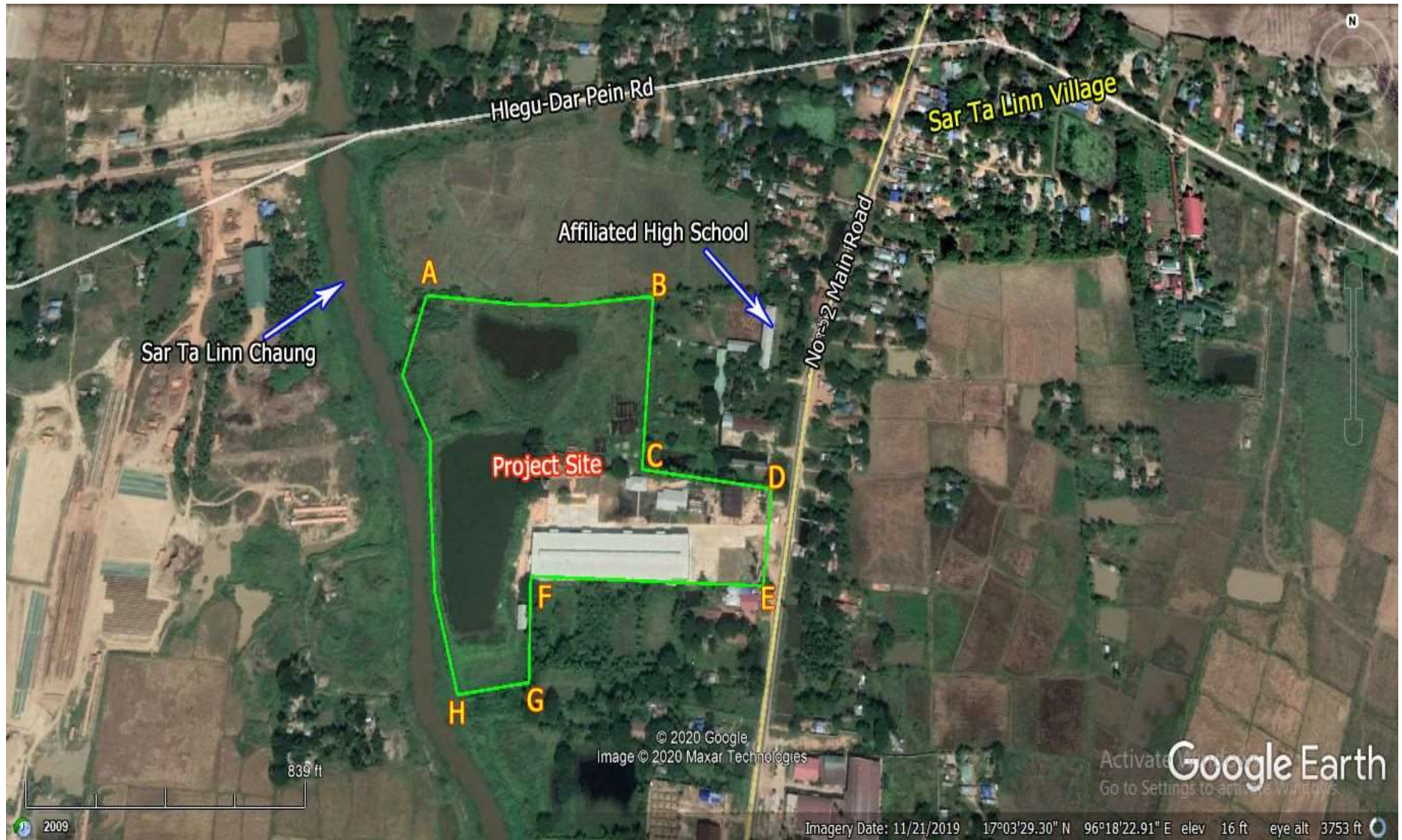
- Effective prevention/mitigation/remediation measures
- Any social economic impact and mitigation measures
- The predicted or anticipated environmental (physical, biological, socio-economic) situation at least 10 -20 years from now.).

In developed and industrialized the subjects of CIA and CIM have developed to an advanced phase. But actually these are the works of scholars or pure academicians that involve the application of computer programming, complex mathematical models, mathematical formulae, statistical calculations and manipulations. In short, CIA is a multi-disciplinaries task that involves scientists and social scientists and is beyond the scope of this EIA report.

## **7.2 Cumulative impact assessment**

### **7.2.1 Brief description and map of relevant existing and future private and public projects and development**

In this Sar Ta Linn village area Aung Gabar Motor Services Co., Ltd is the only company operating in the area. So far, there is only this one project which existing in this area. No other future private and public project and development are heard of, yet.



**Figure – 69: Satellite image showing project plot and corners (inflection points)**

### **7.2.2 Identification and assessment of the potential cumulative impacts on the components in the surrounding environment and the project contribution to such impact**

The project site is not within an industrialized zone and there are no simultaneous sources of impacts from other activities by other projects.

The auto parts assembly plant to be operated by Aung Gabar Motor Services Co., Ltd is actually a "smoke less", "noise less" and "waste less" factory. Therefore considerable or substantial cumulative impacts are also not envisaged or anticipated.

### **7.2.3 Determination of the leverage and influence that the project may have over the significant and project related cumulative impacts**

In Chapter-6 of this EIA report impact and risk identifications, assessments and mitigations are already described in technical details.

There are no impacts anticipated or envisaged for the Preconstruction Phase. There are 9, 8 and 2 potential negative impact anticipated and identified for the Construction, Operation and Decommissioning Phases, respectively. As described earlier all potential impact are generally minor or negligible or insignificant.

All impacts are mitigable and if meaningful mitigation measures for each and every impact are taken in a timely manner there can be no significant cumulative impact.

Therefore, the leverage and influence that the project may have over the significance and project related cumulative impacts, if any, will be negligible.

However, from theoretical perspectives, incremental cumulative impact caused by this project can be considered and calculated as follows.

The auto-parts assembling plant does not generate any substantial emission like a factory with boiler/furnace and stack. However, this auto-parts assembling plant can indirectly contribute to incremental cumulative impact in the form of air pollution to the atmosphere in this way. This plant can assemble produce up to a total of 1500 sedan cars (4 models) per year starting from Year 1 to Year 5. By Year 6 and onwards up to 5000 sedan cars can be produced. Therefore, it is expected that by Year 30 up to 150,000 cars can be produced. A sedan car has the potential for emitting 3.0-4.6 tons of CO<sub>2</sub> per year. Therefore 450,000 tons to 690,000 tons of CO<sub>2</sub> can be emitted from all the cars produced from this assembling plant.

Therefore, over a period of 30 years the incremental cumulative impact in the form of CO<sub>2</sub> emission by the cars produced from this plant will be 450,000 to 690,000 tons.

However, as the auto parts assembling plant does not require any raw materials/natural resources there will be no incremental accumulative loss of natural resources over the years. For instance a large cement factory requires thousands of tons of limestone as raw material for the production of cement. Therefore, the incremental cumulative impact in the form of loss of limestone over the years will be tremendous. There is no such as issue in the assembling plant.

#### **7.2.4 Description of measures to mitigate the project, contribution to the cumulative impacts**

Since no considerable or substantial cumulative impacts are envisaged or anticipated during the construction, operation and decommissioning phases of the project mitigation measures to be taken for cumulative impact, if any, are not necessary. Mitigation measures to be put in place for each and every impact/potential impact that can occur during the three phases of the project are already described in technical and meticulous details in Chapter-6, 6.2.3 and will not be repeated here. (At least there are more than 9 mitigation measures to be taken for each and every impact).

All impact/potential impacts described earlier are mitigable. Therefore, if all mitigation measures to be put in places for each and every impact are duly taken in a timely manner there can be no chance of incremental or successive cumulative impact over the years. The timely implementation of mitigation is imperative.

## **8. ENVIRONMENTAL MANAGEMENT PLAN**

EMP is the key to ensure that the environmental quality of the area does not deteriorate due to the implementation of a project. EMP involves the management of the overall environmental issue including the physical, biological, socio-economic, cultural and visual environmental. EMP is a long term systematic approach from planning, development, implementation, monitoring and feedback. EMP also involves management for the quality of the projects.

In this project context the planning and design of an environmentally friend auto-parts assembling plant that fully utilized ecolized eco-friendly machinery, equipment and vehicles that emit less smoke, lower noise level, and those that are fuel efficient; and also the conservation of water and efficient management of wastes (solid, liquid) as practical as possible.

### **8.1 Project description by project phase**

As already mentioned earlier this project is for the construction and operation of an auto assembling plant for assembling, manufacturing and sales of motor vehicles in Myanmar. These will be again briefly described by project phase.

The project is for the construction and operation of an auto-parts assembling plant at Sar Ta Linn village Tract area Hlegu Township, Yangon Region (on plot No.1082 Ka).

The area of the project site is 18.64 acres.

The proposed auto-assembling plant has the capacity of assembling and producing 1500 sedan (of four Models) in Year 1. After Year 6 and onwards 5000 sedan cars will be produced.

The estimated budget is Ks 2863.26 million (including USD 1.62 millions).

Water will be sourced from a nearby natural pond; electricity will be sourced from National Gridline electricity.

The raw materials are the auto-parts have to be imported. Each sedan can require 9 main auto compounds (readily available in China's company). 34 items of main machinery and equipment are also to be imported.

About 100 construction worker are deployed during Construciton Phase while 135 staffs including 3 Chinese expert/technicians will be employed during the Operation Phase.

Working hours is 8 hrs/day, 40 hrs/week, 250 working days/years.

All sedans assembling and produced will be for local markets.

### 1. The Preconstruction Phase/planning phase/design Phase

The works involve planning, designing and also variety of official paper works, that is, bureaucratic procedure.

The planning involves contacting Chinese company and hiring Chinese experts and technicians for designing the auto-parts assembling plants and facilities and for the procurement of machinery and equipment (those that are ecofriendly). Chinese experts and technicians are also required for the smooth and efficient operation of the auto-parts assembling plant, maintenance and also for technology transfer and training of Myanmar nationals.

A variety of official paper works involved many ministries and departments are to be undertaken for the official approval of the proposed project and also for importing raw materials (auto parts), machinery and equipment.

From environmental perspective, the preparation and writing of scoping report and EIA report and submitting the report to the environmental authority, the ECD.

The phase last for 6 months.

### 2. The Construction Phase

After approval from the relevant authorities construction works begin. A construction company is hired for the construction of the facility under the supervision of Chinese experts. The main building and structures include:

- the main auto-parts assembling plant
- the office
- the warehouse and stores
- housing for some staff and
- canteen

In addition there is the painting/coating room, shower test room, inspection room, road test area, parking area etc. All construction works can be categorized into: preparation work, earth work and foundation work, structural construction (major construction work) and finishing/final touches.

The Construction Phase last for 3 years.

### 3. The Operation Phase

After complementation of all construction works and installation works the Chinese experts will test run the plant.

Then the routine operation of the assembling plant will go on and continue for a long time up to the end of the Operation Phase (30 years).

The Chinese experts and technicians will educate train and supervise Myanmar staffs for good engineering practice, good working practice and good safety practice in the daily routine operation of the assembling plant for a certain period. Training in maintenance works will be also provided, and there will be a transfer of technology to Myanmar staff.

The routine works during the long Operation Phase will involve the regular import of raw materials (auto-parts) from China in batches and the daily routine assembling, installation and production of auto vehicles. Moreover the quality control work and testing works will be conducted. Finally the finished products (the assembled vehicles) will be ready for market.

#### 4. The Decommissioning Phase

At the end of the Operation Phase the auto-parts assembling plant and facility will be isolated and shutdown.

All the buildings and structures will be dismantled; all the machinery and equipment will be dismantled.

Old construction materials, machinery and equipment that are still useable and saleable will be put for sales; those that are not saleable will be given away to locals who want them or disposed at the landfill. Iron scraps will be sent to smelters.

The soil, if contaminated (with fuels) will be removed. The air, water and will be tested for the last time to ensure that the ecology of the site is not deteriorate. Technicians will be hired for testing the air, water and soil quality.

A decommissioning and rehabilitation contractor and party will be hired for tidying up the site and rehabilitation of the site.

This phase will not last for 1 year.

### **8.2 Project environmental, socio-economic and where possible health policy, legal requirement and institutional arrangements**

The project's environmental, socio-economic policies are already described earlier in Chapter-3 of this report.

Commitments made by the project proponent and consultant firm are also already mentioned in Chapter-3 of this report.

Legal requirement and institutional arrangement for NECCCCC, ECD and the project proponent are also mentioned earlier in Chapter-3 of this report.

In this section of Chapter-8 the Health Policy as well as the institutional arrangement of National Health Committee (NHC) are described.

### **8.2.1 Health policy**

The health policy of the Nation is "Health for All".

The policy guidelines for health service provision and development have been provided in the constitution. **Article-28** of the constitution of the Republic of Union of Myanmar (2008) States that:

The Union shall:

- i) earnestly strive to improve education and health of the people

Article 367:

Every citizen shall, in accord with the health policy laid down by the Union, have the right to health care.

#### **National Health Policy (1993)**

The National Health Policy was developed with the guidance of the National Health Committee in 1993.

The National Health Policy has placed "Health for All" goal as a prime objective. There are 15 main points regarding the National Health Policy (1993). The first main point No.1 is:

- to raise the level of health of the country and promote the physical and mental well-being of the people with the objective of achieving "Health for All"

The main point, No.9 concerns environment which states:

- to intensify and expand environmental health activities including prevention and control of air and water pollution

#### **Health Legislation**

Certain portion of health legislation also addresses environmental sanitation and communicable disease prevention, as far as environmental affair is concerned. That includes the control of disposal of human and other wastes, concerns for water purity and hygiene of housing and food sanitation.

Certain health legislation that are relating in one way or another, to environmental affairs are:

- The Public Health Law (1972)

Which includes environmental sanitation and cleanliness of food, among others

- Prevention and control of communicable Diseases Law (1995) (Revised 2011)

This law describes measures to be taken in relation to environmental sanitation, among others.

- The control of smoking and consumption of Tobacco Product Law (2006)

This law describes the creation of tobacco smoke free environment, among other. This is of relevant at the work place and project site where many employees are working.



## **Health Development Plan and Myanmar Health Vision 2030**

This long term plan has been drawn up to meet any future health challenge. This plan has 9 main objectives and one of them is:

- to develop a health system in keeping with the changing political, socio-economic and environmental situations

### **8.2.1.1 National Environmental Health Agenda**

Environmental Health is actually one of the intergral parts of Environmental Protection and Conservation aspect. EIA, IEE and EMP works normally encompass the physical, biological, socio-economic, cultural and visual components of the surrounding environment. The third component, that is, socio-economic, includes public health component, (mortality and morbidity, diseases, accident and injuries etc.).

The Occupational and Environmental Health Division under the Department of Public Health is the focal point agency concerning Occupational and Environmental Health aspects.

This Department (Division) is involved in:

- environmental monitoring eg- air quality, water quality
- work place assessment eg- air quality, waste and water quality, heat stress, light, noise level

Health Impacts Assessment (HIA) and Social Impacts Assessment (SIA) are actually important parts of environmental protection and conservation works.

### **8.2.1.2 Environmental, Health and Safety (EHS)**

The International Finance Corporation (IFC), a division of World Bank, has prescribed EHS general guidelines for general industrial practices. It provides guidance to users on EHS issues in doing their business.

The applicability of the EHS guideline shall be tailored to the hazards/risks or impacts identified as the result of EIA.

The IFC's EHS General Guidelines encompass Environmental, Occupational Health and Safety (OHS) and Community, Health and Safety (CHS).

#### **Environmental**

This main section includes:

- a) air emission and ambient air quality
- b) energy conservation
- c) waste water and ambient water quality

- d) water conservation
- e) hazardous materials management
- f) waste management
- g) noise management and
- h) contaminated land management

### **Occupation Health and Safety (OHS)**

The Occupation Health and Safety guideline by IFC encompasses:

- general facility design and operation
- physical hazards
- chemical hazards
- biological hazards
- radiological hazards
- Personal Protective Equipment (PPE)
- special hazard environments
- communication, training and monitoring

### **Community Health and Safety (CHS)**

The Community Health and Safety guideline by IFC encompasses:

- water quality and availability
- structural safety of project infrastructure
- life and fire safety L&FS
- traffic safety
- transport of hazardous materials and disease prevention
- emergency preparedness and response

#### **8.2.1.3 Occupational Health and Safety (OHS) by ILO**

OHS is defined by International Labour Organization (ILO) as:

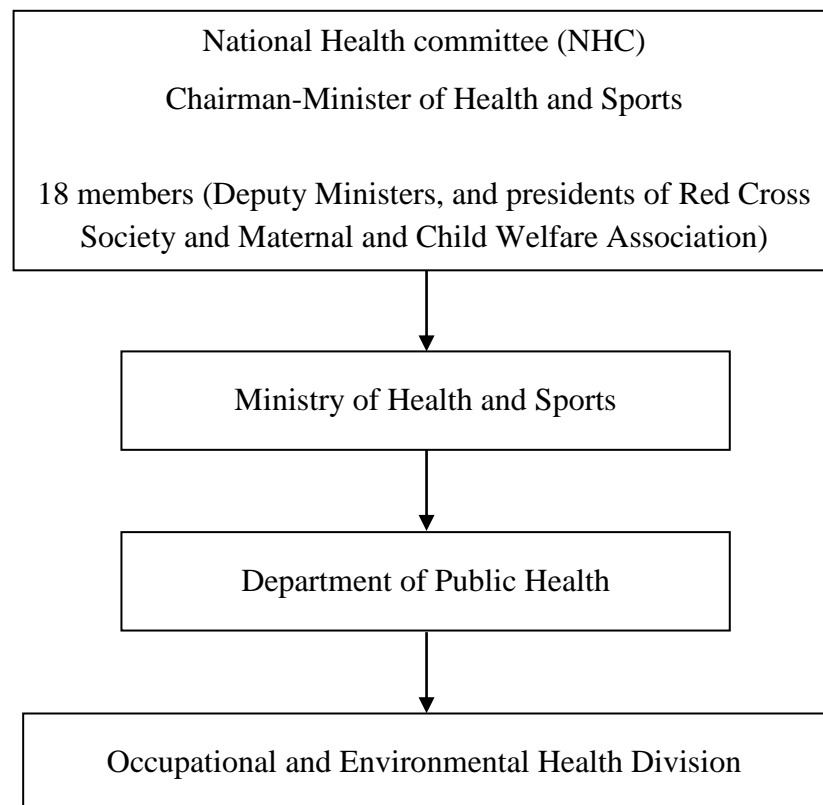
- The science of the anticipation, recognition, evaluation and control of hazards arising in or from the work place that could impair the health and well-being of workers taking into account the possible impact on the surrounding communities and the general environment.

### Some core principles of OHS

- All workers have rights and employers must ensure that:
  - work should take place in a safe and healthy working environment;
  - condition of work should be consistent with worker's well-being and human dignity;
- Occupational safety and health policy must be established
- Social partners (employers and employees) and other stakeholders must be consulted
- OHS programmes and policies must aim at both prevention and protection
- Continuous improvement of OHS must be promoted
- Health promotion is a central element of OHS practices
- Compensation, rehabilitation and curative services must be made available to workers who suffer occupational injuries, accidents and work related diseases
- Education and training are vital components of safe, healthy working environment
- OHS policy must be enforced

### 8.2.2 Institutional Arrangement of National Health Committee (NHC)

#### Institutional Arrangement (organization)



The National Health Committee (NHC) is an umbrella organization comprising 18 members from 9 ministries and one member of Nay Pyi Taw Council, and presidents of Red Cross Society and Maternal and Child Welfare Association.

The Chairman of NHC is the Union Minister of Health and Sports while the Vice Chairman is the Union Minister of Labour. 9 deputy ministers under 9 ministries, a member of Nay Pyi Taw Council, the president of Red Cross Society, and the presidents of Maternal and Child Welfare Association are also members of NHC.

The Deputy Minister of Health and Sports is the secretary while the Director General of Department of Health Planning, is the Joint secretary.

### **The Occupational and Environmental Health Division (OEHD)**

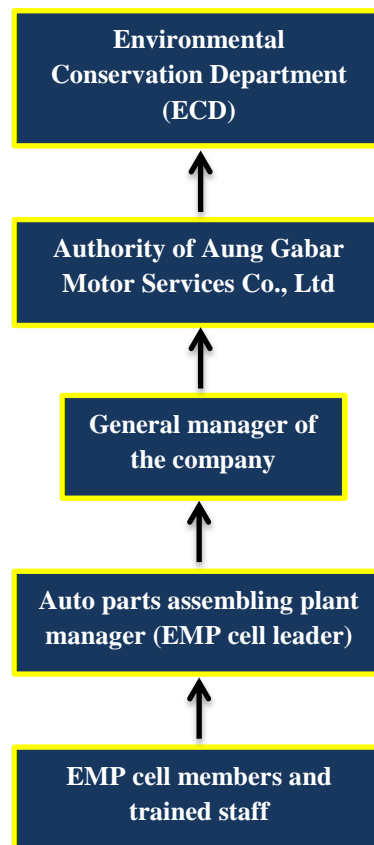
The Occupational and Environmental Health Division (OEHD) under the Department of Public Health is the focal agency involved in environmental and health affairs.

The occupational and Environmental Health Division is involved in implementing Environmental Health Programme in the country.

At the moment it is involved in:

- Environmental monitoring: on air quality and water quality
- Medical monitoring: health assessment on workers (periodic medical examination, performing physical examination, chest X-ray, biomarker survey on workers)
- Work place assessment: eg- on air quality, waste (solid) and waste water, heat stress and light, noise level, soil quality, water sanitation and hygiene etc. in certain factories.
- Assessment of environmental health probably related to climate change and general health impact assessment.

Institutional Arrangement of Aung Gabar Motor Services Co., Ltd for the implementative of EMP



The execute EMP a nucleus organization (EMP) cell is organized. The cell comprises one EMP cell leader and 6 EMP cell members, including for villagers.

There are also specially train staffs for working with EMP cell members.

### **8.3 Summary of impacts and mitigation measures**

Impacts and mitigation measures to be put in place for each and every impact have been described in technical details earlier in **Chapter-6**.

They are again summarized as follow:

#### **Mitigation/corrective measures to be taken during the Construction Phase**

##### **1. Mitigation for impact of mobilization and preparation activities for construction work**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- carefully plan for mobilization, storage and preparation works
- have logistic plan for heavy trucks loaded with building materials

- systematically store or pile up all the building materials within the premise
- ensure that the wall or fence is reliable and can effectively prevent theft
- prevent the spilling over of the building materials outside the premise or on nearby roads, No.2 Yangon-Bago Highway.

## **2. Mitigation for impact of Occupational Health and Safety issue (potential accidents at workplace)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for zero accident
- set up "Safety First" sign boards at places where workers can see easily
- create safety condition for all workers; create accidents free environment
- educate, train and supervise construction workers for good working practice, good engineering practice, good safety practice and good house-keeping practice so that these good practices will be ingrained in each and every worker's mind
- provide adequate Personal Protection Equipment (PPE) where necessary
- keep first aid kits well-stocked with medicine and drugs
- plan and manage for effective emergency response
- provision of firefighting equipment and tools,
- provision of adequate sanitation – eg. toilets, clean water,
- apply safe and effective procedures for storages of fuel and chemicals; display warning sign/pictogram

## **3. Mitigation for impact on air quality**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan in the Pre-construction Phase for the procurement of equipment, vehicles that emit less smoke (to be certified for emission compliance)
- keep equipment and vehicles well-maintained, well-operated and well-lubricated
- avoid open burning of debris
- spray water for suppression of dust
- restrict vehicular movement; maintain road clear of mud and dirt
- provide PPE to workers who are exposed to smoke or dust for long period

#### **4. Mitigation for noise and vibration**

Aung Gabar Motor Services will take the following measures:

- plan in the Preconstruction Phase for procurement of equipment, machinery and vehicle that emit lower noise level (that is eco-friendly equipment vehicles).
- avoid construction works at night;
- limit transportation during unsocial hours to reduce noise.
- limit the speed of vehicle to mitigate noise as well as vibration.
- if possible install silencers, noise abators on inlet and outlet of fans to reduce noise level.
- keep machinery and equipment well-maintained, well-operated and well lubricated to reduce noise level.
- design stable foundation to mitigate vibration; if possible install vibration absorbers.
- provide PPEs, ear plugs, ear muffs to workers exposed to high noise level.

#### **5. Mitigation for potential impact on soil**

Aung Gabar Motor Services will take the following measures:

- try to avoid potential destruction of soil profile
- separate top soil (for later creation of green belt) from sub-soil (for construction work-earth filling etc.)
- draw up a plan for prevention and mitigation of contamination of soil
- prevent spill of fuel oil and chemicals; clean up spill with absorbent promptly (do not wash down with water)
- properly instruct workers with respect to handling of fuel and chemical and cleanup of spills
- implement soil conservation techniques to prevent soil erosion (during rainy season)
- Prevent wash water from carrying earth and materials into drainage system
- the ground should not be laid bare for long period during the rainy season
- dispose all waste materials (from construction work and from domestic use) at approved land fill
- train workers for good house keeping; do not litter

## **6. Mitigation for potential impact on water**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for the conservation of water
- also plan and manage to prevent the pollution of natural pond water (no surface water to be impacted)
- do not use water more than necessary during the Construction Phase
- discipline workers for the conservation of water;
- monitor the daily use of water for construction
- avoid the spillage of fuel oil which will contaminate the soil and eventually ground water;
- if there is spillage clean up spill with absorbent promptly (do not wash down with water)
- bund fuel depot to prevent spreading of fuel oil
- avoid disposing of waste (solids and liquids) into water body, into the pond, and Sar Ta Linn Chaung), nearby

## **7. Mitigation for impact of waste (construction waste)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan for management of solid waste
- avoid open burning of debris
- clear the ground regularly; ensure dumping at approved landfill
- educate workers for good housekeeping; do not litter
- plan for reuse and disposal of construction tailings and left overs
- at the end of Construction Phase put up construction spoils, left over materials for sale
- hire a contractor and party for tidying up the site after Construction Phase

## **8. Mitigation for potential social impact/issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan for management of social illness and anti-social behaviour
- educate and train workers on discipline and code of conduct
- try to build good relation with the locals
- conduct public consultation so that the locals will have a positive perception on the project



- educate the workers for appropriate behavior when dealing with locals; to respect their culture and tradition
- manage misbehavior and social illness of workers
- deal with workers on a fair and square basis
- maintain the good relation between the company and the locals
- provide adequate welfare programme for workers

## **9. Mitigation for potential security issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a security management plan
- campaign against social evil to ensure security and order
- undertake effective walling of the compound
- set up security gates; deploy adequate guards or watchmen
- store building materials under lock and key as far as possible
- apply punitive measures, such as suspension or termination of employment if necessary
- provide ID cards for all workers for easy identification

## **Mitigation/corrective measures to be taken during the Operation Phase**

### **1. Mitigation for potential traffic issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a traffic management plan
- schedule the logistics; avoid rush hours; avoid road with heavy traffic road; if possible
- educate drivers, staffs (motorists and motorcyclists) for defensive driving; drive at reduced speed; follow road regulations
- set up signage or traffic sign at the entrance of the site and suitable places
- avoid overloading of truck, or any vehicles
- regular maintenance of cars and motor bikes
- keep a log book for each vehicle
- aim to achieve zero road accident

## **2. Mitigation for impact on air quality**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a plan and implement for air quality management for the long term Operation Phase
- spray water adequately to suppress dust
- Also deploy sweepers to clean dirt
- reduce the speed of vehicle to reduce dust generation
- avoid open burning of solid waste
- use well-maintained and well-operated equipment and vehicles
- use vehicles and machines that emit less smoke and use less fuel (procure ecofriendly vehicles and machinery in the first place)
- conserve fuel and prevent unnecessarily emission of gas (smokes)
- plant trees and create green zone; trees will sequesterate CO<sub>2</sub> in the smoke, trees will also trap dust.
- provide adequate PPE such as face masks, nose and mouth covers to workers

### **For the management of air quality inside the assembling plant:**

- plan for good ventilation and natural air flow as far as possible
- if possible, designate "smoking zone" in one part of the factory
- avoid chemical products with repugnant odour

## **3. Mitigation for noise and vibration**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan for effective management of noise and vibration
- restrict or limit vehicular movements
- plan for appropriate choice of machinery and vehicles (that emit low noise level); method of working, efficient material handling
- installation of noise abating devices eg- silencers, mufflers at air inlet and outlet of fan and compressor; place noisier sources far away in overall design
- well-operated, well-maintained and well-lubricated vehicles and machinery generate lower noise level and prevent undesirable noise level
- develop green belt (plant trees) inside the compound; trees abate noise and serve as noise sink (pollution sink)
- create smooth road surface as far as possible to mitigate vibration due to vehicular movement

- create suitable foundation design for machinery and equipment (eg. grinder, compressor and pumps etc.) to mitigate vibration
- if necessary install vibration absorbers or vibration abators
- provide adequate PPE eg- ear muffs, ear protectors to workers exposed to long hours of high noise level; conduct regular noise monitoring to ensure that the levels are within noise exposure standard (not higher than 85-90 dBA)especially for generators and pumps

**For the management of noise level inside the assembling plant:**

- fit mufflers or silencers on all noisy machines and equipment especially inlet and outlet, a fans, etc. if necessary.
- position, enclose and isolate noisier equipment, if possible.
- minimize sound level inside the plant as far as possible
- provision of PPE for workers where necessary (ear plugs and ear muffs)
- if possible, enclose noisy machines to isolate workers from the noise
- limit transportation during unsocial hours to reduce noise
- conduct a noise survey and mark out dedicated areas with signage where there are elevated noise levels
- reduce vibration exposure time, where possible.

**4. Mitigation for impact of project on gridline electricity and vice versa**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- acquire conservation of energy knowledge in the planning and design phase of the assembling plant.
- plan and manage for the conservation of electricity energy
- design the building to take advantage of sunlight and air flow
- ensure that the consumption of electricity be in the work frame as stated earlier
- monitor electricity consumption weekly
- use electrical equipment, devices that are energy efficient, particularly use energy efficient equipment associated with heating, ventilation, air conditioning and cooling (HVAC)
- use day light as much as possible
- ensure that the backup generator is operational immediately after power outage or use automatic backup system
- liaise with electricity authority from time to time

## **5. Mitigation for impact of wastes (solid & liquid)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and implement the management of wastes

### **For liquid wastes**

- if necessary, treat all the waste water before discharge into the sewage system (the readily available chemical water treatment is chlorine at 5 mg/l or Monochloramine at 3 mg/l which are effective and cheap). This is not necessary at all as the assembling plant will produce no effluent; no water is required for assembling works; small quantity will be necessary for car shower test.
- monitor waste water drainage from time to time, especially for domestic waste water and storm water.
- The domestic waste water from a few employees reside in the housing (only 4 family members and 7 bachelor workers) will also simply flows down the drain and dry up (no need for special treatment)
- The domestic black water (from toilet) will end up in septic tank and soak pit (no need for vacuum truck to remove the sewage)
- comply with the NEQEG guideline values (for effluent) prescribed by ECD
- ensure that waste water is not discharge into watercourse, that is into Sar Ta Linn stream.

### **For solid waste in general:**

- dispose the solid wastes outside the factory at an approved landfill or dumping site
- avoid open burning of debris or trash in the compound

**For solid waste inside the plant** and at the office and messing room, at housing, etc. (domestic waste).

- implement organic-waste composting of some wastes from the kitchen for organic fertilizer to apply in lawn, and green
- dispose waste only after all waste prevention and possible recycling strategies have been explored (adhere to the principles of 4 Rs, reduce, reuse, recover and recycle as far as possible)
- dispose wastes only at approved landfill
- return packaging materials such as plastic, paper and drums etc. to supplier for reuse; recycle packaging materials whenever possible
- give priority to reduction of solid waste, recovery and reuse

## **6. Mitigation for Occupational Health and Safety issue (Potential Accidents at workplace)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- draw up a comprehensive plan and manage for the safety working conditions for workers; create a safety working conditions at the work place.
- educate, train and supervise workers for good working practice, good engineering practice, good safety practice and good housekeeping practice so that all these good practices are ingrained in their minds and become good habits; especially train them for correct use of machinery and safety devices; correct lifting technique; where possible install mechanical lifting aids. eg. forklift,
- educate, train and supervise them for skills; for handling and operation of equipment; handling and application of chemicals; especially harmful one
- educate them for good health practice, hygiene, environmental awareness and occupational health hazards, and other hazards awareness.
- all workers must pass a medical examination prior to employment
- conduct yearly medical checkup for workers
- provide free Medicare for workers
- compensation, rehabilitation and curative services shall be made available to workers who suffer occupational injuries, accidents and work related diseases
- toxic and hazardous chemical, if any, shall be stored in a safe place (enclosed and secured room with roofing and concrete floor) and labeled with pictograms; keep MSDS file (only thinner and paints)
- maintain and inspect storage unit regularly
- keep all machinery, equipment and vehicles well-maintained, well-operated and well-lubricated; and also well-lubricated for sophisticated equipment.
- check on automatic safeguards on machines to prevent accidental injuries
- beware of all the common accidents and common injuries mentioned earlier that used to happen (as well as potential accidents and injuries) and implement a prevention, protection and mitigation measures for each
- provide adequate PPEs – outfits, boots, helmet, gloves, face mask, goggles, ear muff, ear plug, etc. also tools such as sit – stand tools for workers who have to stand for long hours
- also provide adequate First Aid Kits well-stocked with medicines & drugs
- provide adequate sanitation facility eg. toilets, clean water, baths room etc. for workers
- minimize manual labour; maximize mechanical labour

## **7. Mitigation for potential social impact**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- try to build and maintain good relative with the locals; avoid friction between the locals and the company as far as possible.
- conduct public consultation from time to time so that the locals will have a positive perception of the project
- educate workers for appropriate behaviours when dealing with locals; to respect their culture and tradition
- discipline workers for work place regulation and code of conducts including social conduct
- take disciplinary action/punitive action for wrong doer eg. suspension, discharge
- prevent and manage disputes, quarrels, brawls among workers and also between workers and locals.
- strictly prohibit the drinking of alcohol during working hours; totally ban the use of narcotics
- deal with workers on a fair and square basis – (not overworked, underpaid)

## **8. Mitigation for potential security issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for site security
- ensure that the fence/wall is secure
- do not let the assembling plant become a soft target for terrorists
- implement strict security as far as possible
- deploy adequate security staffs; security guards at gate; inside the plant and at office
- perform security check on each and every one entering and leaving the plant and compound.
- in addition to worker suits issue Identity Cards for all employees for easy identification
- campaign against social evil to ensure security and order

## **Mitigation/corrective measures to be taken during the Decommissioning/Rehabilitation Phase**

### **1. Mitigation measures for potential accident at workplace (OHS issue)**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- plan and manage for safe and effective decommissioning work
- hire a decommissioning contractor and party for the demolition of buildings/structures and dismantling of equipment; and also for tidying up the site
- dispose those that are no longer usable at the approved landfill
- obsolete machinery and equipment shall be made into scrap and sent to smelting mill
- put up for sale materials and machinery that are still usable and saleable
- remove soil contaminated by fuel and/or chemical spills, if any, and dispose at the city landfill

### **2. Mitigation for potential residual issue**

Aung Gabar Motor Services Co., Ltd will take the following measures:

- clear and remove all residual eg- chemicals, if any
- remove all soil contaminated by the fuel oil, if any
- test the soil for the last time to ensure that no contaminants remain
- test the water and air for the last time for contamination
- restore the plot and soil to its original condition
- vegetate or rehabilitate the plot

## **8.4 Overall budget for implementation of the EMP**

Since EMP involves the management of all environmental issues during the three phases of the project there has to be adequate budget of the implementation of EMP. This is particularly true for the long operation phase, the most important phase of the project life.

This budget will be only for the implementation of EMP but it will cover the procurement of certain equipment and devices for uses in monitoring, and certain materials for uses in emergency eg. PPEs, fire fighting and first aid facilities etc.

In order to effectively execute EMP and MP the company has set a side 5% of the budget (Ks 208,896,965) for the EMP fund which will cover the initial cost and recurring expense for the implementation of the EMP and MP.

## **Allotment of EMP fund**

The sub-budget allotted for each programme under EMP and MP are as follows: -

- Cost of organizing EMP 2% of EMP fund (Ks 4,107,939)
- Cost for actual execution and dissemination of EMP in the forms of:
  - (a) Taking mitigation measure 25% of EMP fund(Ks 52,224,241)
  - (b) Monitoring actions 25% of EMP fund (Ks 52,224,241)
- Cost for partial procurement of equipment and materials 20% of EMP fund (Ks 41,779,393)
- Cost for capacity building and training 7% of EMP fund (Ks 14,622,787)
- Cost for emergency/contingency (for protoable emergency cases) 10% of EMP fund(Ks 20,887,696)
- Cost for reporting, documentation work 8% of EMP fund (Ks 16,711,757)
- Miscellaneous (including casual fees for two villagers, who are EMP cell members) 3% of EMP fund (Ks 6,266,908)

The EMP fund cannot cover the whole life of the project of 30 plus years. The fund is simply seed money; as time goes on no more will have to be added to the fund. Labour cost will be kept at a minimum. Only staff will be involved in the implementation of EMP and MP. Staff will be first trained for the purpose.(there are no EMP contractors in Myanmar yet)

Procurement for equipment and materials that are essential for the execution EMP such as fire fighting equipment and accessories, Personal Protection Equipment (PPEs), First Aid Kit and medicine and drugs etc will be from the main projects budget, not the EMP budget.

Most of the EMP fund will be used for the implementation of mitigation measures (which are integral part of EMP) and implementation of MP (which is also integral part of EMP).

The above-mentioned cost estimation for EMP fund is based on the current unit price. Because the project will be implemented over many years (even decades) price fluctuation and inflation will be unavoidable. A contingency amount shall be prepared for any unavoidable event in the future. Unfortunately, if a major accident happen the EMP fund has to be greatly increased.



## 8.5 Management and monitoring subplan by project phases

### Objective

- to effectively carry out EMP and MP in a pragmatic and meaningful way
- the sub-plan to be focused on impact/potential impacts
- to summarized mitigation, management or control measures for issue/components prescribed in EIA procedure by ECD (mentioned above).

MMSP for Construction, Operation and Decommissioning/Rehabilitation and drawn for effective implementation of EMP. The plan is based from "Environment Impact Assessment Procedure"; Notification No.616, 2015 as prescribed by ECD, covering:

- noise and vibration, waste, hazardous waste, waste water and storm water, air quality, odour, chemicals, water quality, erosion and sedimentation, biodiversity, occupational health and safety, community health and safety, cultural heritage, employment and training and emergency response.

### Responsible people:

EMP cell leader, EMP cell members (4) and specially trained staff (20) are responsible for execution of all management and monitoring sub-plans.

**Table-23: During the Construction Phase**

Sr. No.	Potential issue	Sub-plans (mainly for taking mitigation measures)
1.	Noise and vibration	<ul style="list-style-type: none"> <li>- Plan in the Preconstruction Phase for procurement of equipment, and vehicles that emit lower noise level.</li> <li>- Comply with ECD's NEQEG guidelines for noise level.</li> <li>- Install silencers and mufflers, where necessary</li> <li>- Avoid construction work at night.</li> <li>- Provide PPE to workers exposed to prolonged high noise level.</li> <li>- Manage vibration of machine, equipment and vehicle.</li> <li>- Limit the speed of vehicles.</li> <li>- Monitor noise level, hired technicians</li> </ul>
2.	Waste	<ul style="list-style-type: none"> <li>- Regularly collect waste in waste bins and dispose at approved landfill (or dumping) site.</li> </ul>
3.	Hazardous waste	<ul style="list-style-type: none"> <li>- Not generated.</li> </ul>
4.	Waste water and storm water	<ul style="list-style-type: none"> <li>- Create systematic drainage at the site to manage waste water; ensure that it does not enter the stream; also to manage storm water.</li> <li>- Create sustable drainage at site to manage storm water.</li> <li>- Keep natural drainage of the slope intact; do not block or alter as far as possible.</li> <li>- Monitor the situation; hired technicians.</li> </ul>

5.	Air quality	<ul style="list-style-type: none"> <li>- Comply with ECD's NEQEG emission guidelines.</li> <li>- Plan in the Pre-Construction Phase for the procurement of equipment, vehicles that emit less smoke (to be certified for emission compliance).</li> <li>- Keep equipment and vehicles well-maintained, well-operated and well-lubricated to reduce smoke emission.</li> <li>- Used machinery and vehicle with low emission rate; use fuel with low sulphur content.</li> <li>- Avoid open burning of debris.</li> <li>- Spray water for suppression of dust.</li> <li>- Restrict vehicular movement; maintain road clear of mud and dirt.</li> <li>- Limit open stockpile of earth, sand etc.</li> <li>- Test, monitor air quality regularly</li> </ul>
6.	Odour	<ul style="list-style-type: none"> <li>- Not generated.</li> </ul>
7.	Chemicals	<ul style="list-style-type: none"> <li>- Not used during Construction Phase</li> </ul>
8.	Water quality	<ul style="list-style-type: none"> <li>- Avoid water bodies as far as possible when constructing or building roads</li> <li>- Storage of fuel oil as well as used fuel oil should be done in a designated bunded side until removal</li> <li>- Maintain vehicles and machinery adequately to prevent spillages resulting in surface water or underground water contamination</li> <li>- When handling fuel oil avoid accidental spillages into the surface water; should spillages occur implement appropriate clean up immediately.</li> <li>- Avoid disposing of waste (both liquid and solid) into water bodies.</li> <li>- Educate at workers for conservation of water</li> <li>- Top soil should be allowed to naturally vegetate in order to stabilize soil particles and thus preventing erosion and limiting siltation to avoid pollution of water by all means.</li> </ul>
9.	Erosion and sedimentation	<ul style="list-style-type: none"> <li>- Implement erosion control/management</li> <li>- Minimize the area of bare soil exposed as practical as possible (do not clear the vegetation more than necessary leaving large area of bare land).</li> <li>- Prevent erosion and sedimentation especially during monsoon season.</li> <li>- Run-off from areas adjacent to the site will be diverted around disturbed areas (construction of small diversion canal/drainage).</li> <li>- Create systematic drainage system.</li> <li>- Monitor erosion and sedimentation, regularly.</li> </ul>
10.	Biodiversity	<ul style="list-style-type: none"> <li>- Do not clear vegetation more than necessary for the construction of access road and site.</li> <li>- Prevent the spillages of hydrocarbons which has negative impact on plants especially on the root system</li> </ul>

		<ul style="list-style-type: none"> <li>- Avoid open burning of debris.</li> <li>- Educate workers for fire awareness and protection.</li> <li>- Promote environment awareness to workers.</li> <li>- Implement rehabilitation to promote natural vegetation establishment after completion at site.</li> <li>- Prevent the potential injury or death of wildlife due to vehicular movements especially during night time.</li> <li>- Avoid the use of excessive bright light for long hours at night to prevent the aggregation and eventual death of large number of insects</li> <li>- Monitor biodiversity situation, regularly</li> </ul>
11.	Occupational Health and Safety	<ul style="list-style-type: none"> <li>- Creation of a safe working place and working condition.</li> <li>- Facilities will have adequate space for all kinds of activities,</li> <li>- Provision of adequate lavatory facility, bath and washing area; provision of adequate potable drinking; provision of health living spaces and clear eating areas, provision of first aid at all times for workers (the company has its own clinic).</li> <li>- For practical purpose provide First Aid Training for some workers with the assistance of Township Red Cross society; will provide adequate first aid facility including first aid kits, medicines and drugs.</li> <li>- Provide training for Occupational Health and Safety; training for good safety practice, for personal safety (preventing accidents, injuries), basic hazards awareness, and site specific hazards.</li> <li>- Provide training on safety handling and operation of machinery equipment, safety storage and handling of fuel oils and coal.</li> <li>- Will provide adequate PPEs to workers where and when necessary to ensure the basic health protection and safety of workers.</li> <li>- Safe work procedure for all electrical works covering construction, operation and decommissioning and demolition works.</li> <li>- Ensure that workers are not subject to excessive repetitive motions, over exertion and excessive manual handling; if possible will use mechanical labour rather than manual labour as practical as possible to reduce fatigue, strain and injury on workers.</li> <li>- Monitor OHS situation, regularly.</li> </ul>
12.	Community Health and Safety	<ul style="list-style-type: none"> <li>- Will control smoke and dust as practical as possible; will avoid open burning of debris and trash so that smoke will not reach the village; educate the driver to lower speed when passing through the village (the reduction of speed from 40 km to 35 km can reduce dust to 50%, it is learnt).</li> <li>- Local should be able to file complaints regarding dust, noise and vibration.</li> <li>- Ensure that domestic solid wastes, liquid waste water and drainage do not become breeding ground for flies, mosquitoes and insect for prevention of vector borne diseases and water borne or water related disease.</li> </ul>

		<ul style="list-style-type: none"> <li>- Will prevent the occurrence and spread of infectious and communicable diseases by all means; will undertake health awareness and educations initiative (health education campaign) in local community as far as possible.</li> <li>- Avoid/minimize by all means, vector borne, water borne (water based, water related disease and communicable diseases that would result from project activities. Liaise with Township Health Authority regularly.</li> <li>- Avoid/minimize by all mean spread of diseases from workers. Educate long distance truck driver regarding sex education example for use of prophylactic condom; prevent spread of STD, HIV/AIDS.</li> <li>- Educate drivers for safe driving and defensive driving and to comply with rules and regulation regarding traffic; also conduct road safety education campaign for the local community, if possible; local should be able to file complaint regarding traffic.</li> <li>- Comply with law and regulation relevant to transportation of hazardous materials such as fuel oils; also plan for measures for preventing and/or mitigation the consequence of accidental release/spill; avoid/minimize community exposure to hazardous materials.</li> <li>- Develop emergency preparedness and emergency response plan and contingency plan (action plan) for effective implementation when necessary;</li> </ul>
13.	Cultural heritage	<ul style="list-style-type: none"> <li>- Ensure that the project has no impact on the Buddhist monastery.</li> <li>- Monitor the situation.</li> <li>- Pay courtesy visit (obeisance visit) occasionally to the abbot monk and offer cash and kinds and build good cordial relation.</li> <li>- Get involve in religious festivals; provide donations.</li> </ul>
14.	Employment and training	<ul style="list-style-type: none"> <li>- Plan for human resource development.</li> <li>- Prioritize employing locals as far as possible.</li> <li>- Organize new task employees for job training.</li> <li>- Also provide systematic induction training for new workers to enable them to do their jobs efficiently.</li> <li>- Induction training will cover: general training; skill training for efficiency and mandatory training relating to health and safety (e.g. safety operation of machinery and handling of hazardous materials).</li> <li>- Educate and train them for good working practice, good safety practice, good health and hygiene practice and good environmental awareness practice until all these practices are ingrained in their mind sets and become good habits.</li> <li>- Educate and train them for familiarization with negative impacts and subsequent taking of mitigation measures.</li> </ul>
15.	Emergency response	<ul style="list-style-type: none"> <li>- Prepare Emergency Response Plan (ERP) and team to prevent fatalities and injuries, to reduce damage and to protect environment and community.</li> </ul>

		<ul style="list-style-type: none"> <li>- Prepare emergency preparedness plan and execute the plan.</li> <li>- For practical purpose provide training for firefighting, training for First Aid and Rescue.</li> <li>- Provide facilities (e.g. firefighting equipment, suit, first aid kits, and emergency vehicle.</li> <li>- Display phone numbers of Firefighting Department, Ambulance Services, Red Cross Society, Hospital and Police Station.</li> <li>- Monitor the execution of emergency response.</li> </ul>
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**Table – 24: During the Operation Phase**

Sr.	Potential issue	Sub-plans (mainly for taking mitigation measures)
1.	Noise and vibration	<ul style="list-style-type: none"> <li>- Comply with ECD's NEQEG noise level guidelines.</li> <li>- Restrict or limit vehicular and heavy machinery movements.</li> <li>- Plan for appropriate choice of machinery and vehicles (that emit low noise level); method of working, efficient material handling.</li> <li>- Ensure that the foundations of machinery and equipment are stable.</li> <li>- If possible installation of noise abating devices e.g. silencers, mufflers at air inlet and outlet of fans and compressor; place noisier sources far away in overall design.</li> <li>- Well-operated and well-maintained vehicles and machinery generate lower noise level and prevent undesirable noise level.</li> <li>- Restrict or limit vehicular movement.</li> <li>- Conduct regular noise monitoring to ensure that the levels are within noise exposure standard (not higher than 70 dBA); hire technicians where necessary.</li> <li>- Implement GRM; local can file complaints regarding noise.</li> </ul>
2.	Waste	<ul style="list-style-type: none"> <li>- Instruct workers for proper handling and disposal of wastes, especially domestic waste, at landfill.</li> <li>- Follow the 4 Rs principle: reduce, reuse, recover, recycle and redesign, wherever possible, e.g. reuse old packing materials.</li> <li>- Separate domestic solid waste into categories, use separate bins, disposed at approved landfill.</li> <li>- Dispose waste only after all waste preventive and recycling strategies have been undertaken.</li> <li>- No disposal of waste water outside (on land or into water body).</li> <li>- Educate and train workers for good house keeping practices.</li> </ul>
3.	Hazardous waste	<ul style="list-style-type: none"> <li>- No hazardous waste envisaged; (paint generally not use in auto-assembly).</li> <li>- Used fuel oil, engine oil will be collected in drums and give away to recyclers.</li> </ul>

4.	Waste water and storm water	<ul style="list-style-type: none"> <li>- Create systematic drainage at the site to manage waste water; ensure that it does not enter the stream; also to manage rain influx</li> <li>- Create suitable drainage at site to manage storm water.</li> <li>- Apply conventional treatment (physical treatment such as screening, filtering, sedimentation and removal of sediment or sludge).</li> <li>- Brown waste water (kitchen, baths) will end up in waste water collection tank and dry up; no special treatment.</li> <li>- Black waste water (toilet) will end up in septic tanks and sock pits.</li> <li>- Avoid disposal of waste water either onto open ground or into the stream; educate workers for this.</li> <li>- Monitor waste water regularly – monitor effectiveness of mitigation measures taken.</li> </ul>
5.	Air quality	<ul style="list-style-type: none"> <li>- Comply with ECD's NEQ emission guideline.</li> <li>- Consolidate and compact all areas to prevent generation of dust due to wind.</li> <li>- Installed emission management system when necessary</li> <li>- Spray water adequately to suppress fugitive dust.(dry months)</li> <li>- Reduce and restrict the speed of vehicle to reduce dust generation.</li> <li>- Avoid open burning of debris or solid waste.</li> <li>- Keep equipment and vehicles well- maintained to reduce smoke.</li> <li>- Implement GRM (locals can file complaint regarding emission).</li> <li>- Provide PPE (eg. face masks, mouth and nose covers, gas masks) to workers exposed to long hours of dust and smoke;</li> <li>- Monitor air quality (hired technicians).</li> <li>- Monitor the effectiveness of mitigation taken.</li> </ul>
6.	Odour	<ul style="list-style-type: none"> <li>- Not envisage.</li> </ul>
7.	Chemicals	<ul style="list-style-type: none"> <li>- No chemicals are used in auto-parts assembling works.</li> </ul>
8.	Water quality	<ul style="list-style-type: none"> <li>- Plan and manage for preventing pollution on the water environment.</li> <li>- Manage so that factory's activities will not impact the water of Sar Ta Linn Chaung.</li> <li>- Manage for the stability of top soil to prevent erosion and siltation; (the company has constructed the revetment)</li> <li>- Fuel storage area should be bunded to protect surface water from oil spill.</li> <li>- Avoid disposing of waste (liquid and solid) into the stream by all means.</li> <li>- Manage water conservation; reduce water consumption;</li> <li>- Adhere to the principle of conservation of water; educate workers for this.</li> <li>- Apply a monitoring plan for water quantity and quality based on simple parameter e.g. temperature, pH and total alkalinity. (hired technicians).</li> </ul>

		<ul style="list-style-type: none"> <li>- Adequately maintain vehicle and machinery to prevent spillages resulting in groundwater contamination.</li> <li>- Avoid spillage during the handling of fuel oil.</li> <li>- Monitor water quality; hired technicians.</li> <li>- Monitor the effectiveness of mitigation taken.</li> </ul>
9.	Erosion and sedimentation	<ul style="list-style-type: none"> <li>- Ensure that activities do not impact soil structures.</li> <li>- Minimize the area of bare soil exposed as practical as possible (do not clear the vegetation more than necessary leaving large area of bare land).</li> <li>- Create sound drainage system.</li> <li>- Run-off from areas adjacent to the site will be diverted (construction of small diversion canal/drainage).</li> <li>- Control sediment.</li> <li>- Ensure that soil profile of the site is stable and not easily eroded.</li> <li>- Regularly monitor erosion (rainy season).</li> <li>- Monitor the effectiveness of mitigation measures taken.</li> </ul>
10.	Biodiversity	<ul style="list-style-type: none"> <li>- Plan for minimum disturbance to the flora and fauna.</li> <li>- Do not clear vegetation more than necessary.</li> <li>- Avoid open burning of debris.</li> <li>- Educate workers for fire awareness and protection; get rid of all debris that can cause fire.</li> <li>- Identify, if any, and try to avoid such spots as far as possible.</li> <li>- Implement rehabilitation to promote natural vegetation establishment after completion of work.</li> <li>- Avoid the use of excessive bright light for long hours at night to prevent the aggregation and eventual death of large number of insects.</li> <li>- Plant trees, create green belt around the factory.</li> <li>- Monitor the situation concerning biodiversity conservation; monitor the greening of the area.</li> <li>- Monitor the effectiveness of mitigation measures taken.</li> </ul>
11.	Occupational Health and Safety	<ul style="list-style-type: none"> <li>- Plan and manage for safe working environment.</li> <li>- Try to achieve zero accidents at work place.</li> <li>- Educate and train workers for good working practice, good safety practice and good health and hygiene practices.</li> <li>- Provide adequate PPEs for workers who are exposed to heat, dust, smoke, loud noise etc.</li> <li>- All workers must pass a medical examination in the first place before being employed.</li> <li>- Implement safe and effective procedures for storage, transportation and handling of hazardous materials (fuel) and chemicals.</li> <li>- Have detail plan for prevention of fire and emergency.</li> <li>- Organize basic First Aid Training and Fire Fighting Training.</li> </ul>

		<ul style="list-style-type: none"> <li>- Provision of firefighting equipment such as fire extinguishers as well as traditional fire fighting devices eg.bamboo poles, water buckets, sand buckets.</li> <li>- Provision of First Aid Kits, medicines and drugs.</li> <li>- Organize mock drills for firefighting and first aid training.</li> <li>- Display addresses and phone numbers of Fire Bridge, Ambulance Service, Red Cross Society, Hospital and Police Station so that every can see easily.</li> <li>- Take out insurance for the factory and also fire insurance.</li> <li>- Provide adequate proper sanitation facility e.g. bath rooms, toilets etc.</li> <li>- Safe work procedure for all electrical works covering construction, operation and decommissioning and demolition works.</li> <li>- Educate and train drivers, particularly heavy truck drivers for safety driving and defensive driving; ensure that the access road is not bumpy and safe for driving.</li> <li>- Ensure that workers are not subject to excessive repetitive motions, over exertion and excessive manual handling; if possible will use mechanical labour rather than manual labour as practical as possible to reduce fatigue, strain and injury on workers.</li> </ul>
12.	Community Health and Safety	<ul style="list-style-type: none"> <li>- Will control smoke and dust as practical as possible; will avoid open burning of debris and trash so that smoke will not reach the village; educate the driver to lower speed when passing near or through the village (the reduction of speed from 40 km to 35 km can reduce dust to 50%, it is learnt).</li> <li>- Locals should be able to file complaints regarding dust, noise and vibration, (through GRM system).</li> <li>- Ensure that domestic solid wastes, liquid waste water and drainage do not become breeding ground for flies, mosquitoes and insect for prevention of vector borne diseases and water borne or water related disease.</li> <li>- Will prevent the occurrence and spread of infectious and communicable diseases by all means; will undertake health awareness and educations initiative (health education campaign) in local community as far as possible.</li> <li>- Avoid/minimize by all means, vector borne, water borne (water based, water related disease and communicable diseases that would result from project activities. Liaise with Township Health Authority regularly.</li> <li>- Avoid/minimize by all mean spread of diseases from workers. Educate long distance truck driver regarding sex education example for use of prophylactic condom.</li> <li>- Educate workers regarding code of conducts, social conducts, etiquette and local culture and tradition.</li> <li>- Educate drivers for safe driving and defensive driving and to comply with rules and regulation regarding traffic; also conduct road safety education campaign for the local community, if possible; locals should be able to file complaint regarding traffic,(through GRM system).</li> </ul>



		<ul style="list-style-type: none"> <li>- Comply with law and regulation relevant to transportation of hazardous materials such as fuel oils; also plan for measures for preventing and/or mitigation the consequence of accidental release/spill of hazardous materials (fuel oil and chemicals); avoid/minimize community exposure to hazardous materials.</li> <li>- Develop emergency preparedness and emergency response plan and contingency plan (action plan) for effective implementation when necessary;</li> </ul>
13.	Cultural heritage	<ul style="list-style-type: none"> <li>- Ensure that factory's activities have no impact on the Village Buddhist monastery of the nearby village.</li> <li>- Educate the staff for the awareness and protection of cultural heritage.</li> <li>- Monitor the situation.</li> <li>- Pay courtesy visit (obeisance visit) occasionally to the abbot monk and offer cash and kinds and build good cordial relation.</li> <li>- Get involve in religious festivals; provide donations.</li> </ul>
14.	Employment and training	<ul style="list-style-type: none"> <li>- Plan for human resource development.</li> <li>- Prioritize employing locals as far as possible.</li> <li>- Organize new task employees for job training.</li> <li>- Also provide systematic induction training for new workers to enable them to do their jobs efficiently.</li> <li>- Induction training will cover: general training; skill training for efficiency and mandatory training relating to health and safety (e.g. safety operation of machinery and handling of hazardous materials, such as fuel.</li> <li>- Educate and train them for good working practice, good safety practice, good health and hygiene practice and good environmental awareness practice until all these practices are ingrained in their mind sets and become good habits.</li> <li>- Educate and train them for familiarization with negative impacts and subsequent taking of mitigation measures.</li> <li>- Educate and train them for basic eco-friendly behaviours e.g. good house-keeping practice, do not litter, do not dirty your place, minimize the use of water, fuel.</li> <li>- More specific training for operation of specific machinery and equipment and heavy trucks will be organized.</li> <li>- Review on the effectiveness of training will be done for improvement.</li> <li>- Overall regular monitoring of activities at the site will be conducted.</li> </ul>
15.	Emergency response	<ul style="list-style-type: none"> <li>- Prepare Emergency Response Plan (ERP) and team to prevent fatalities and injuries, to reduce damage and to protect environment and community.</li> <li>- Prepare emergency preparedness plan; execute the plan.</li> <li>- (Emergency Response Plan will cover emergency resources, emergency preparedness and training, emergency response procedures, administration of the plan, communication and procedures, and debriefing and post-traumatic stress procedures.)</li> </ul>

		<ul style="list-style-type: none"> <li>- For practical purpose provide training for firefighting, training for First Aid and Rescue operation.</li> <li>- Provide facilities (e.g. firefighting equipment, suits, first aid kits, emergency vehicle.</li> <li>- Display phone members of Firefighting Department, Ambulance Services, Red Cross Society, Hospital and Police Station.</li> <li>- Review on the effectiveness of training will be done for improvement.</li> </ul>
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**Table – 25: During the Decommissioning/Rehabilitation Phase**

Sr. No.	Potential issue	Sub-plans (mainly for taking mitigation measures)
1.	Air quality and water quality	- After rehabilitation test air quality and water quality each for the last time to ensure that it is within guideline values and that air and water do not remain polluted.
2.	Soil quality	- After rehabilitation test soil quality for the last time to ensure that the soil is not polluted or contaminated with fuel oil; ensure that the site is ecologically restored.
3.	Erosion and sedimentation	- Ensure that no erosion and sedimentation take place during the decommissioning Phase.
4.	Community health and safety	- Manage to ensure that community health and safety are not compromise during Decommissioning Phase; ensure that the site is safe for local community after rehabilitation phase.
5.	Biodiversity	<ul style="list-style-type: none"> <li>- Ensure for effective rehabilitation (reforestation)</li> <li>- Ensure that replanted trees are all well-reestablished.</li> <li>- Continue regular tending (weeding, application of fertilizer, if necessary) of the replanted trees for at least 2 years.</li> </ul>

### **8.5.1 Summary of overall EMP**

The theoretical aspects as well as pragmatic aspects for implementation of EMP is summarized. EMP shall cover the following 11 main aspects or main principles of environmental management for doing environmentally sound business.

#### **1) EMP for application of environmentally sound idea and technology**

The SKD system auto parts assembling and installation is an environmentally sound technology. The SKD parts (auto parts and components) to be imported are all finished product part and there is no need for any processing works. There is no need for welding and painting, just merely assembling and installation eg. the car body parts are already welded, polished and painted abroad.

Three Chinese engineers and technicians will supervise the assembling and installation work through out the operation phase. Myanmar technicians will acquire skill and technology transfer from these foreigner experts.

## **2) EMP for procurement of ecologically friendly equipment and machinery**

In this context priority will be given on procuring ecologically friendly machinery and equipment that emit less smoke; generate lower noise level; use less water; and fuel and energy efficient (comply with environmental statutory requirements). If necessary also implement the installation of silencers, noise abators, vibration absorbers, smoke filters etc.

All the major equipment and machinery of quality will be imported from China and they will be all brand new.

## **3) EMP for air pollution management**

First of all Aung Gabar Motor Services Co., Ltd will follow the National Environmental Quality Guideline, 2015, prescribed by ECD. The company will also refer to the guidelines by IFC: EHS general guidelines.

In addition to deploying eco-friendly machinery and equipment that emit less smoke and generate lower noise level and vibration good working practice shall be conducted for the reduction of dust. (The mitigation measures for dust, smoke, noise and vibration are already addressed in detail earlier covering the Construction Phase, Operation Phase and Decommissioning Phase.) PPE for smoke and dust, eg-- face masks, noise and mouth covers; and PPE for noise and vibration, eg-- ear muffs, ear protectors etc. will be provided to workers exposed for long hours of such impacts.

## **4) EMP for water pollution management**

Auto parts assembling and installation need virtually no water; there will be no industrial waste water pollution. There are two natural ponds and Sar Ta Linn Chaung in west and there is no likelihood of negative impact on these water bodies.

Domestic waste water will be negligible (out of 135 workers only 11 are camped inside the site).

Anyway the company will follow the NEQEG guideline 2015 concerning effluent prescribed by ECD.

The company will also refer to IFC's EHS guideline (2007) as practical as possible.

## **5) EMP for land pollution management**

As already mentioned in the earlier part of this report there will be no discharge of waste (solid & liquid) on land, inside and outside the premise, but only at the landfill north of the assembly plant (selected by the company).

Care will be taken to prevent the destruction of soil profile, soil erosion and siltation and contamination of soil by fuel or chemical spills.

Training for good house-keeping will be provided for workers; not to litter, not to dirty the work place, the messing room and toilet etc.

#### **6) EMP for good working practices and good safety practices**

Aung Gabar Motor Services Co., Ltd will follow or refer to, as practical as possible, "CEPI: good manufacturing practice for the car manufacturing"; EHS 2000: "Guide to managing health safety in car manufacturing"; BSEN 2000: "safety requirement for the design and construction of car manufacturing"; and IFC: "EHS guidelines for car manufacturing, 2007."

Aung Gabar Motor Services Co., Ltd will have its programme for capacity building and traing including good working practice and good safety practice. Aung Gabar Motor Services Co., Ltd will try its best to effectively train them until good working practice and good safety practice are ingrained in the mind of each worker. The practical training shall cover all aspects and steps of car manufacturing with emphasis on safe machinery operation, safety awareness in routine work, first aid, and above all safe working practice and habits.

#### **7) EMP for conservation of water, fuel and energy**

The auto parts assembling need no water but the company will minimize the use of water where possible in its domestic uses. Employees/workers will be educated for conservation of water and minimization of water uses. Only 11 staff will reside inside the compound; domestic water use is minimal.

Fuel efficient machinery, equipment and if possible vehicles will be used for conservation of fuel as far as possible. If possible fuel of low sulphur content will be used. The use of fuel will be also minimized where possible. In the same way electricity will be conserved as practical as possible.

As stated earlier the consumption of water, fuel and electricity will be within the stated work frame:

- water requirement : 300,000 gallons/year
- fuel requirement : diesel 3600 gallons/year  
: petroleum 5000 gallons/year
- engine oil : 100 gallons/year
- electricity : 1.5 million kw/year

#### **8) EMP for the protection of the socio-economic components and socio-economic life of the local community as well as cultural/religious components**

The project site is in the southwest out skirt of Sar Ta Linn village but there are no socio-economic, cultural and visual components to be impacted due to the activities of this project.

However, the company will always keep in mind for the protection of these above-mentioned components of the environment.

Aung Gabar Motor Services Co., Ltd will ensure that there will be no impact on the building and structure and amenities of the locals, if any. Will also ensure that there will be no impact on their fields, farms and cultivated lands and their sources of drinking water and the natural resources they rely upon, if any.

The company will also ensure there will be no impact on the Buddhist monastery and other religious and/or cultural monument, if any. The company will compensate for any loss or damage to the local property due to the project activities, if any.

#### **9) EMP for biodiversity protection and conservation**

EMP actually not necessary as there is no biodiversity (eg. forest) to be impacted in the area. However, the company will bear in mind that it is obliged to protect and conserve the biodiversity, if any.

#### **10) EMP for rehabilitation after completion of project**

This will be duly implemented after the completion of the project life. But Aung Gabar Motor Services Co., Ltd will not wait for 30 years or more until the completion of the project. As soon as the Construction Phase of 3 years has finished green lawn and green zone will be created; fast growing and shady trees will be planted in available space. Aesthetic landscaping will be conducted. Trees will be also planted around the factory so that the whole place will be green and harmony with its surrounding.

After the end of Operation Phase (30 plus years from now) decommissioning will be duly implemented first and that will be followed by effective rehabilitation works.

#### **11) EMP for maintenance of high Environmental Performance Standard (EPS)**

Aung Gabar Motor Services Co., Ltd will do its utmost to maintain high Environmental Performance Standard. As already mentioned earlier 3 Chinese qualified experts, engineers and senior technicians will train, supervise and participate in the whole life, of the project.

NEQEG guidelines for emission, effluent, noise etc will be complied with as far as possible. ISO, IFC and other guidelines mentioned earlier will be followed or referred to as practical as possible.

Negative impacts not only on the proximity but also on the physical, biological, socio-economic, cultural and visual components of the environment will be avoided or prevented as far as possible. If avoidance and prevention are not possible effective mitigation/correction/remediation measures will be duly undertaken.

Finally it should be borne in mind that EMP will serve no purpose if it is not implemented with true spirits. Only working with true spirits can achieve effective and meaningful EMP implementation. The project proponent is very aware of this and will do its best to achieve effective EMP implementation.

## **8.5.2 EMP for safety and health aspects (Adopted from IFC guidelines and summarized)**

EMP will also cover OHS and CHS plans

### **I. Occupational Health and Safety (OHS) Plan**

First of all Aung Gabar Motor Services Co., Ltd will plan and execute for the creation of a safe working environment and, particularly safety working place, following the guideline prescribed by IFC.

The company will educate, train and supervise its workers for good working practice, good practice and good house-keeping practice until all these good practices are ingrained in their mind sets and become good habits. The company will conduct special induction course for newly employed workers.

The company will also educate and train them for good health practice, good hygiene practice and educate them for environmental awareness.

Workers will be specially educated, trained and supervised in the safety handling and operation of machinery and equipment. Safety manual hand books will be issued to all workers who are involved in the operation of machinery.

Workers will be specially trained in the handling and application of chemical (even if not toxic) and fuel and other substance.

Medical screening will be conducted for all workers prior to employment (pre-employment medical screening) and periodic medical examination (annually) will be undertaken for all workers.

Adequate sanitation will be provided for workers and workers will be trained for good house-keeping practice and good health and hygiene practices. The company will liaise with Township Health Department on a regular basis.

Standard operating procedures for health and safety measures will be drawn encompassing; identification of risks, prevention, keeping a log book/record for accident; submitting the record book to Factories Inspection Department regularly, and plan for first aid procedures and subsequently admission to the nearest hospital at Hlegu Town.

Special Induction Course/New Task employees training; installment of covers or rail guards for risky machinery; area signage; labelling of equipment and chemicals both risky and non-risky ones (in the forms of pictogram) will be undertaken.

Moreover the following subheadings concerning OHS guideline prescribed by IFC will be followed or at least referred to as far as possible. (These are summarized as follow.)

(a) General facility design and operation

Work places will be designed and equipped to protect OHS-; and prioritize structural integrity.

Severe weather and facility shut down

Work place structure will be designed and constructed to withstand severe weather (eg. violent storm, excessive rainfall) and also for an evacuation plan.

Work place and exit

Space at work place will be adequate for all kinds of activities, emergency exits (eg. fire exits) shall be constructed/installed.

Fire precaution

The workplace will be designed in the first place for preventing the start of fire; provision of firefighting equipment and also fire detector and alarm systems, if possible (Firefighting equipment, that is easily accessible and simple to use eg. portable fire extinguisher). 10 workers will be trained firefighting with the aid of Hlegu Town Fire Brigade.

Lavatory and showers

Provision of adequate lavatory facility (toilets and washing area) with essential tissues papers and soaps etc.

Potable water supply

Provision of adequate potable drinking water that meets drinking water quality standards.

Clean eating area

Arrangement for provision of clean eating area for workers (not exposed to hazardous or noxious substances). There is a common messing room.

Lighting

Sufficient natural light or artificial illumination for workers safety and health.

Safe access

Provision of easy, safe and appropriate access or exit in case of emergency. Rehearsal/mock drill will be organized and this will include safety access.

First aid

Ensure that first aid can be provided at all times for workers. Provision of first aid with adequate medicine and drugs.

The company will have a small apartment for First Aid Service. The Company has no plan, yet, for setting up a clinic. Of the 135 employees only 11 will reside inside the plant compound housing. There will be 135 employees only during day time working hours. Sick or injured worker will be promptly given first aid treatment and immediately admitted to the nearest Township Hospital at Hlegu Town (one vehicle will be kept ready for emergency use).

#### Air supply

Sufficient fresh air shall be supplied and good ventilation system will be implemented (eg. mechanical ventilation system such as fans and blowers). Ventilation and air cooling system shall be equipped, maintained and operated to prevent the spread of pathogenic microorganisms.

#### (b) Communication and training

##### OHS training

OHS training for all workers. In addition good working practice and good safety practice workers will be also trained for personal safety (preventing injury), basic hazards awareness, site specific hazards and emergency procedure for fire evacuation and natural disaster.

##### New task employee training

Ensure that all workers will receive adequate training and information prior to employment. The training will cover: knowledge of materials, equipment and tools; known hazards in the operation and their control; potential risk to health; precaution to prevent exposure; hygiene requirement, wearing of PPEs and appropriate response to accidents.

##### First Aid and firefighting training

First Aid training and Firefighting training will be provided for 5 staff respectively.

##### Area signage

Appropriately mark hazardous areas (eg. electrical room, compressor rooms etc) fuel drums etc as well as emergency exit.

Signage will be in accordance with international standards (eg. pictogram-easily understood by all).

##### Labelling of equipment

Label all bottles, containers for chemicals (thinner and paint), both hazardous and non-hazardous. MSDS files for thinner and paints, if possible.



### (c) Physical hazards

#### Rotating and moving equipment

Design and install machine to eliminate trap hazards and ensure that extremities (eg. hands, fingers) are kept out of harm way during operation. Equipment shall be protected by a guard/device that prevent access to the moving part.

Design and install equipment so that regular servicing can be undertaken without removing the guarding devices.

#### Noise

Ensure that no workers will be exposed to a noise level greater than 85 dBA for a duration of more than 8 hours per day.

No unprotected ear shall be exposed to a peak sound pressure level (instantaneous) of more than 140 dBC.

Provision of PPEs eg. ear plugs, ear muffs.

Apply acoustic insulating material (noise abator, silencer); isolate noisier equipment (install sound barrier); conduct periodic medical hearing check for workers exposed to long hours of high noise level.

#### Vibration

Avoid, prevent hand-arm vibration (eg. use of hand tools) and whole-body vibration (standing/sitting on vibrating surface) by all means. Reduce or limit working hours for vibrating work.

Install vibration dampening pads or device.

#### Electrical

Only experienced electricians will be employed.

Check all electrical cords, cables and hand power tools for faults or leaks and immediately fix the faults.

Mark all electrical devices and lines with warning sign.

Label service rooms housing high voltage equipment.

Establish "No Approach" zone around or under high voltage power line.

#### Eye hazards

Use machine guards or splash shields or/and face and eye protection (PPE) such as goggle and face mask where necessary. Provision of eye wash sinks.

### Welding/hot work, if any to do

Provide welder goggles or full-face eye shield.

Provide protective suit if there is hot work to do.

### Industrial vehicle driving and site traffic

Train operators in the safe operation of specialized vehicles and forklifts; to strictly follow operating rules and procedures.

Ensure the operators undergo medical surveillance.

### Ergonomics, repetitive motions and manual handling

Ensure that workers are not subject to excessive repetitive motions, over exertion and excessive manual handling. Use mechanical labour rather than manual labour as practical as possible to reduce injury and strain on workers eg. use mechanical assists to reduce or eliminate exertions requirement to lift materials.

Implement programme that reduce unnecessary forces and exertions.

### Working at height

Implement protection measures whenever a worker has to work at a height of more than 2 meters eg. installation of guard rails; proper use of ladders and scaffolds; the wearing of safety belt and body harness.

### Illumination

Work area light intensity will be adequate for the general purpose of working inside a plant. If natural light is not sufficient energy efficient light sources (lamps, bulbs) with minimum heating emission will be used.

### (d) chemical hazards

The project does not need any chemical. But there can be certain occasions when paints, varnish, thinner, chlorine (for water purification) etc may have to be used. The company will educate and train its workers for the handling and application of chemicals. The company will:

- Minimize the release of chemical into the work environment.
- Keep the number of workers exposed to chemical to a minimum.
- Label all chemicals (use pictogram).
- Wear PPEs where necessary.

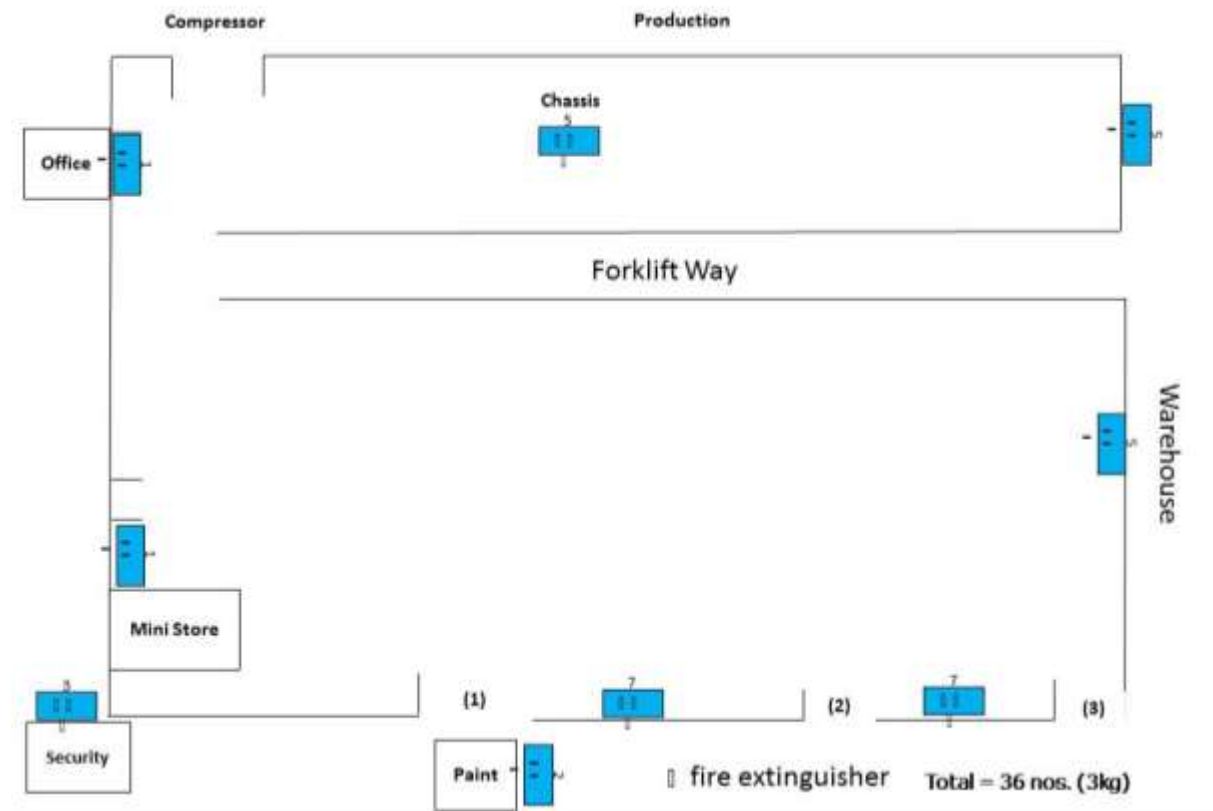
### Air quality

- Maintain the level of PM, emission at concentration below those recommended by ECD (Described in **Chapter-3**).

- Conduct work practices to minimize release of air contaminant eg. direct piping of liquid and gaseous materials; minimize handling of dry powdered materials; enclosed operation; local exhaust ventilation at emission point.

### Fire and explosions

- Store flammable away from ignition sources and oxidizing materials.
- Fuel and flammable storage shall be at a remote spot.
- Storage unit with concrete floor and roofing at appropriate height (for ventilation and explosions venting).
- Keep adequate fire extinguishing equipment.
- Define and label warning sign for fire hazard area.
- Provide specific training for handling of flammable materials.



**Figure – 70: Schematic diagram showing fire fighting system**

### Corrosive, oxidizing and reactive chemicals

None of these are used at the factory.

### Asbestos containing materials (ACM)

These materials are not used.

(e) Biological hazards

The company does not use any biological agents (eg. bacteria, blue green algae, yeasts etc) in the operation of the assembly plant or the treatment of water.

As mentioned earlier workers will be educated and trained for health and hygiene and also environmental awareness to prevent the spread of air-borne, water-borne and vector borne disease. The company will regularly liaise with the Township Health Department.

(f) Radiological hazards

These are not anticipated; the company does not apply ultraviolet radiation for purification of water.

(g) Personal Protective Equipments (PPEs)

The company will provide adequate PPEs for all workers exposed to dust, emission, heat, high level noise, and those who have to handle chemicals and fuel and any one where and when PPEs are necessary.

**Note:** In case of occupational diseases or any diseases workers will be promptly admitted to the Hlegu Township Hospital and, if necessary, to Yangon General Hospital.

In case of accident the injured workers will be given First Aid Treatment and subsequently admitted to Hlegu Township Hospital and, if necessary, to Yangon General Hospital.

## **II. Community Health and Safety (CHS) Plan (sources: IFC)**

### Evaluation of risk and impact

First of all evaluate potential risk and impact on the community and subsequent mitigation measures. Avoid/minimize the risk as far as possible.

Operate the project in accordance with Good International Industry Practice (GIIP).

### Water quality and availability

Avoid/prevent adverse impact to the quality and availability of ground water and surface water resources, especially protect public drinking water sources at all times. Avoid the adverse impact on ground water (and soil) as far as possible.

### Structural safety of project facility

Strictly follow the principle of good engineering practice and structural integrity during the designing and construction of the facility.

Avoid or reduce potential hazards posed to the public while accessing project facilities. Undertake hazard analysis to identify opportunities to reduce the consequence of a failure or accident.

### Life and Fire Safety (L & F)

Design, construct and operate all new buildings accessible to the public in accordance with building, regulation and requirement and internationally accepted Life and Fire Safety (L & F) standards. Public access inside the factory is prohibited or restricted, since this is not a show room.

Provide fire prevention, means of egress (fire exit), detection and alarm system and emergency response plan. Train some staffs for firefighting and first aid training. Provide adequate firefighting equipment eg. fire extinguishers.

### Traffic safety

Also conduct road safety education campaign for the local community.

### Transport of hazardous materials

Comply with law and regulation relevant to transportation of hazardous materials. Also plan for measures for preventing and/or mitigating the consequence of accidental release of hazardous materials (chemicals, substances).

Avoid/minimize potential for community exposure to hazardous materials.

Note: Since no hazardous materials will be used during the whole project life transportation and handling of hazardous materials are not anticipated.

### Disease prevention

Prevent the occurrence and spread of communicable disease by all means. Undertake health awareness and education initiative (health education campaign) in local community as practical as possible.

Avoid/minimize water-borne, water-based, water-related and vector borne disease and communicable diseases that would result from project activities.

Avoid/minimize by all means spread of diseases from workers. Provide adequate medical treatment. Regularly liaise with Township Health Authority.

### Emergency preparedness and response

Develop Emergency Preparedness and Response Plan and Contingency Plan (action plan) for effective implementation when necessary.

Provide operation manuals for External Emergency Plan and Internal Emergency Plan for all staffs, local community and government inspector. Conduct rehearsal or drills for such plans. Cooperate with local community and authority in preparation of emergency plan and review and update the plan occasionally.

Notify competent authority in the event of emergency that has occurred on the site, if any.

Implement safety audits for the facility and promote the execution of the overall environmental management system.

## **Reporting requirement**

Reporting is necessary for the effective and successful implementation of EMP and the project proponent has set aside 8% of its EMP fund for reporting and documentation works.

### **(a) Internal monitoring and inspection reporting**

The physical and social parameters to be monitored are already mentioned earlier. Each and every monitoring/inspection work carried out by members of EMP cell must be catalogued in relevant log books. The internal monitoring and inspection will also have to involve in checking the performance of machinery, equipment and vehicles or at least the regular monitoring/checking of the log books of machinery, equipment and vehicle. All these findings or observations have to be reported.

There will be a monthly reporting session for effective communication with the EMP leader or authority.

### **(b) Incident, accident and emergency reporting**

In cases of incident and accident (including near miss) prompt reporting has to be carried out. This must be in the form of verbal reporting followed by written statement, after emergency and contingency procedures have been undertaken.

The written statement will be more comprehensive and should include the location and cause of accident, the time, extent and intensity and how actions for emergency and contingency procedures were taken. Estimate of loss will have to be followed later. A good reporting will help the EMP leader and authority to take future action, to learn lesson from the incident or accident and enable them to draw future plan for health, safety risks and emergency management.

### **(c) Reporting on training programmes**

As mentioned earlier there will be regular monitoring and inspection of all training programmes provided, namely, capacity building training, training provided for safety such as firefighting training and training provided for health such as First Aid Training; also training for quick response and preparedness such as drills and mock drills.

It is not necessary to monitor every session of a training programme and its process. But it is necessary to monitor, inspect and watch every drill, mock drill or rehearsal.

EMP cell members conducting monitoring and inspection works shall be able to interpret and assess the overall condition of the training processes especially assessment of the effectiveness and applicability of each training.

A report on the training including assessment on its effectiveness shall be submitted at the end of each and every training programme.

Finally annual review shall be prepared and an Annual Environmental Management Report should be submitted.

## **Emergency plan**

The chance for major accident to occur in a well-managed auto-assembling plant is very remote.

The area is not prone to natural disasters such as violent storms, cyclones, major flood, severe draught, earthquake and wild fire etc.

The area was effected to some extent by the Super Cyclone Nargis in 2008 but since then it is normally free from natural disasters.

Although the area is not far from (10 miles) the southern tip of the Sagaing Fault line it is not prone to earthquake but only small tremors happened rarely.

In this EIA report emergency plan would mainly focus on emergency and contingency plan for outbreak of fire.

### **(a) Emergency procedures (generalized)**

- first draw up a plan for prevention/mitigation measures for fire accident (the company has already drawn up plans for fire prevention and fire fighting)
- carefully plan for emergency response and procedures ( the company has already done this)
- provide firefighting training for some workers
- provide adequate firefighting facility, water ponds, hydrants, water jet pumps, and fire extinguishers; provide adequate PPEs such as firefighting suits, if possible.
- regularly check the firefighting facility, its readiness; ponds to be always filled with water
- organize mock drills regularly and assess the effectiveness of drills and training; assess the readiness, quick response and quick evacuation processes
- provide First Aid Training to some workers
- provide adequate first aid facility-such as stretchers, equipment, first aid kits including medicines; regularly check the condition of first aid facility
- display addresses and phone numbers of Fire Fighting Brigade, Ambulance Service, Hospital's emergency department, police station etc so that everyone can see easily
- set up effective alarm system and control system
- take out insurance for the company; also insurance for fire and flood disaster
- effectively install lightning arrestors, lightning strips and rods, down lead and grounding electrodes
- deploy tight security all the time (arson and sabotage could not be totally ruled out due to anti-big business, anti-tycoon and anti-crony mindset of certain people)

## **(b) Emergency response and contingency procedures (in brief)**

The objectives of Emergency response are:

- to minimize confusion through effective delegation of responsibilities
- to minimize danger or safety risks by providing first aids
- to minimize damage to property and the environment by isolating the incident
- to minimize operation and business assest as far as practical

Aung Gabar Motor Services Co., Ltd will draw up emergency response and contingency procedures for:

- fire accident
- storm
- flood
- earth quake
- accidents at work places
- sudden illness such as epidemics that effect many workers

### **Capacity building and traning**

Training is essential for effective and efficient implementation of EMP and MP. However it is not yet practical to plan for capacity building of the EMP cell members up to standard of developed countries. Training needs will be identified based on the existing and available capacity of the company and project personnel.

EMP cell leader or EMP officer will be trained to be able to recommend measures to improve environmental condition. He/she will be trained to implement control and protective measures for effective implementation of EMP and also able to ensure suitability, edequacy and effectiveness of the MP implemented.

The two pragmatic training programmes, Fire Fighting and First Aid Training are already addressed. One capacity building and training of importance for EMP cell members will be practical training for conducting monitoring and inspection and for assessment of the finding or observation. The parameters to be monitored and inspected are already mentioned earlier.

The training programme for monitoring and inspection work involves the selection or location of the spot/place and the parameter to be monitored. As already mentioned earlier the parameters include physical ones---air, noise level, water, waste as well as social aspects already mentioned, and inspecting the performance of workers and workers compliance with environmental requirements.

The capacity building and training programme will also cover other basic aspects such as:

- conduct environmental awareness to the staffs/workers
- conduct safety programme to create safety awareness among staffs/workers



- train staffs/workers on general safety measures and, if necessary, conduct safety rehearsal or safety drill to educate them

As regards the actual monitoring and inspection this will be carried out in the form of visual inspection only. It is not practical at the moment yet for the members of EMP and MP cell to monitor (test) the physical parameters that involves the use of equipment and chemicals for this purpose, for instance, air test kit, water test kit, noise level detecting kit etc.

Therefore specially trained technicians or experts, for instance, from the Health Department or from YCDC have to be hired for air quality analysis and water samples have to be sent to registered laboratory in Yangon for analysis.

## **8.6 Content of each subplan**

### **8.6.1 Objective**

The overall objective for all each such plan are:

- To ensure that EMP is thoroughly planned and effectively and meaningfully implemented
- To ensure that all the negative impacts (both significant and insignificant) on the environmental and social components envisaged and anticipated are thoroughly studied and identified.
- Most of all, to ensure that different options of mitigation measures to be taken for each and every impact/potential impact are duly and effectively implemented, and
- To ensure that the EIA report is not a formality but an effective and meaningful tool for operating the auto-parts assembling plant in an ecologically sound manner.

### **8.6.2 Legal requirement**

The legal requirements for the implementation of this proposed project are already described earlier in **Chapter-3** (Policy, legal and institutional framework). The existing laws, rules, regulation related to this project are listed and excerpts of relevant sections and sub-sections from each law and rules are reproduced.

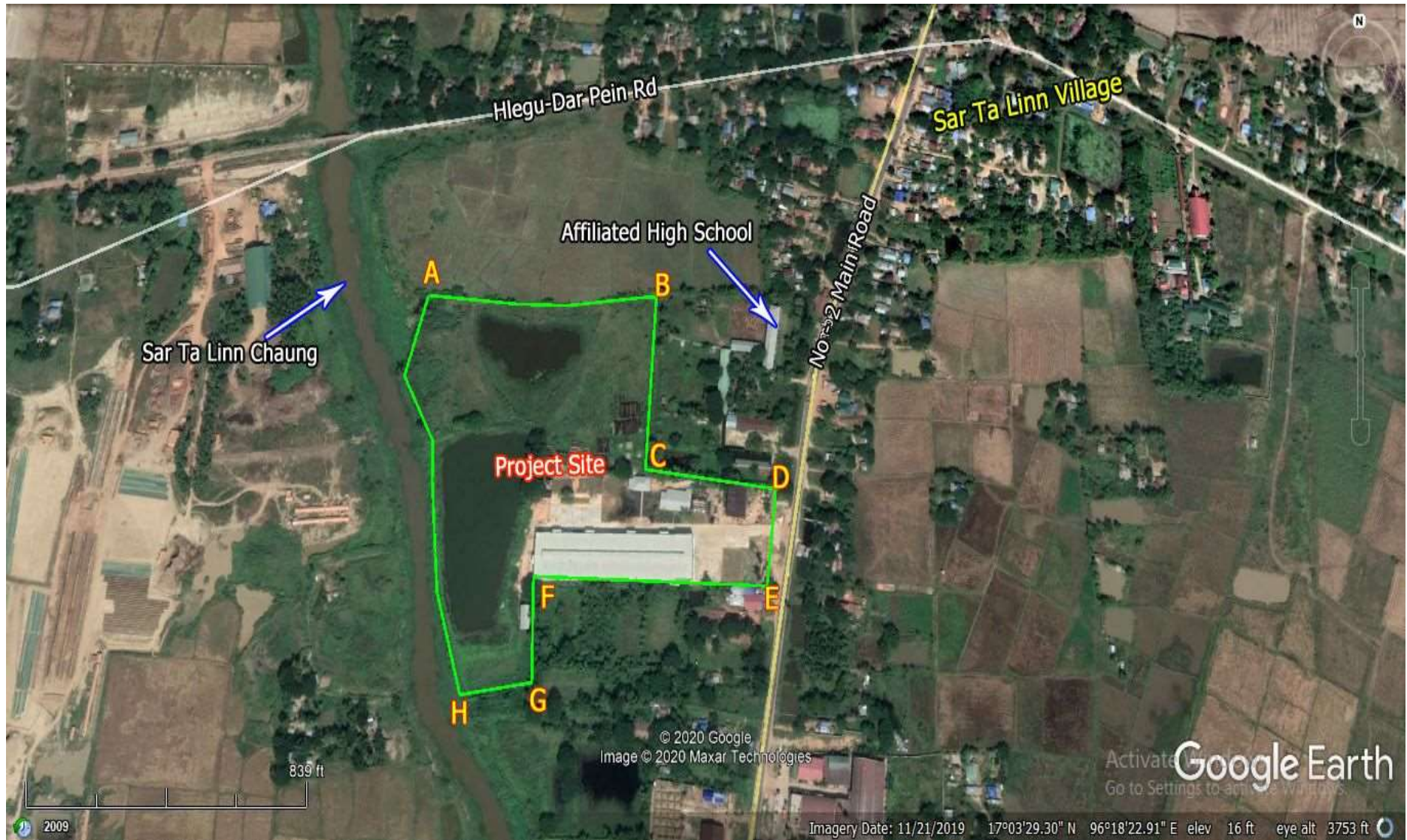
The corporate environmental and social policy of the project proponent is briefly mentioned. The NEQEG (emission) guidelines as prescribed by ECD are reproduced in the report.

The institutional framework of NECCCCC, ECD, OEHD as well as Aung Gabar is shown in chart.

The environmental and social standards (as prescribed by ECD) are briefly mentioned. (These are already described earlier in Chapter 3).

### **8.6.3 Overview maps and layout maps, images, aerial photos, satellite images**

These are already depicted earlier in Chapter 4, and Chapter 5. However, some are reproduced here again.



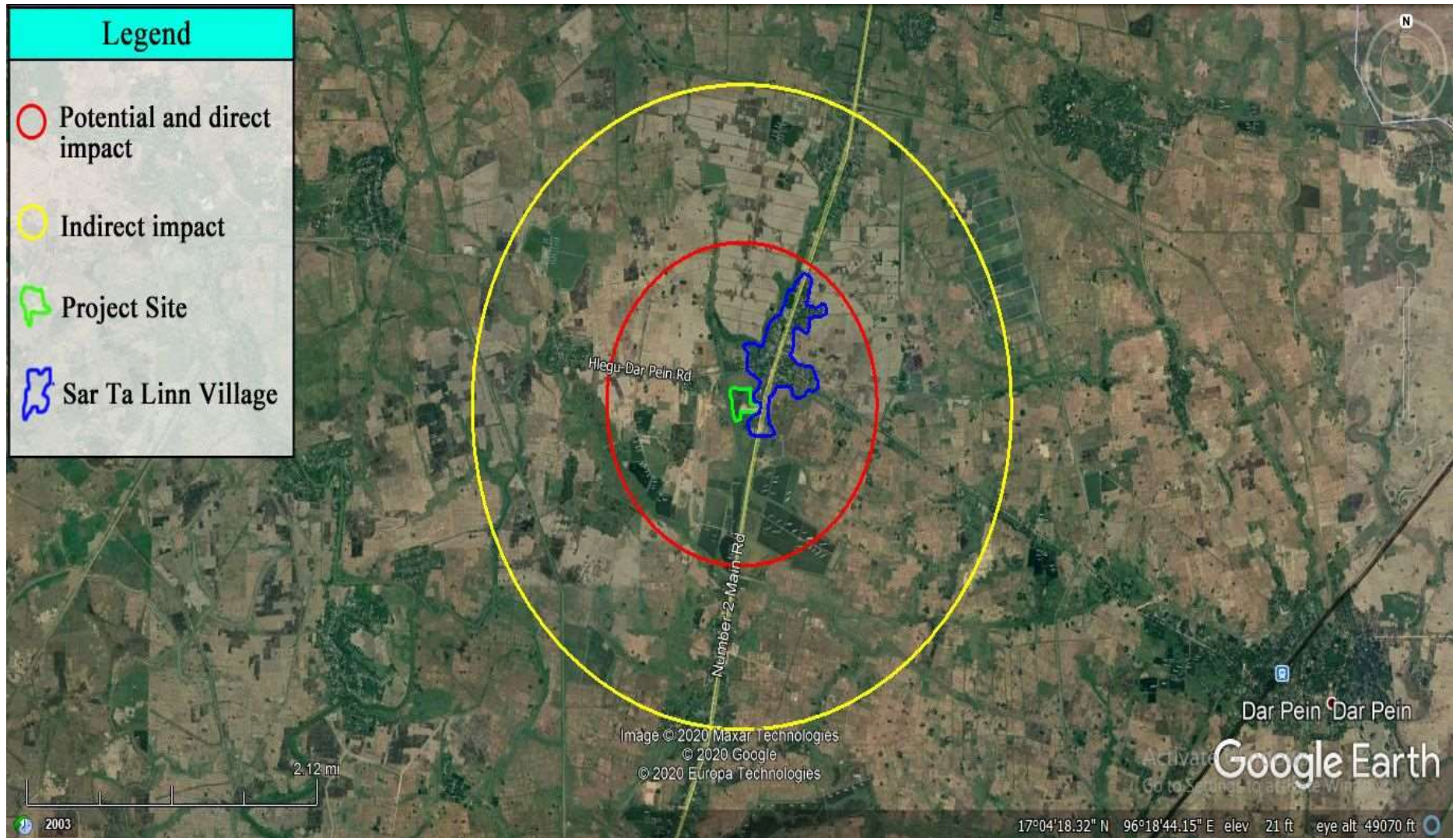
**Figure – 71: Satellite image showing project plot and corners (inflection points)**





Figure – 72: Layout map of project site





**Figure – 73: Satellite image showing study area, in the south western outskirts of Sar Ta Linn village (the area of the irregularly shaped village is shown in blue line)**

#### **8.6.4 Implementation schedule**

The management and monitoring sub-plan (MMSP) will cover all the four phases of the project.

##### During the Preconstruction (Planning) Phase

First of all the authority of the company will plan and manage for the application of environmentally sound idea and technology.

The authority of the company will plan and manage for the procurement of eco-friendly machinery, equipment, vehicles and materials etc (that generate less smoke, lower noise level, that consume less fuel oil, use fewer energy etc).

The authority will plan for prevention/mitigation of air, water and land pollution in implementing the project.

##### During the Construction Phase

The project proponent will plan and manage for the construction of the assembly plant in an eco-friendly manner. The use of eco-friendly building materials and the application of ecologically sound methodology in construction activities will be applied. All the impact/potential impacts anticipated for this construction will be taken into consideration and subsequent mitigation measures duly taken during the construction of the assembly plant. The construction works will be undertaken with environmental awareness always in mind. The anticipated impacts during this phase will be always kept in mind and the mitigation measures to be taken will be duly taken.

##### During the Operation Phase

During this long Operation Phase the main task will be sustainable operation of assembly plant, maintenance and repair works. These works will be undertaken with environmental awareness always in mind. The predicted or anticipated impacts during this long phase will be kept in mind and the subsequent mitigation measures to be taken will be duly put in place.

##### During the Decommissioning Phase/Rehabilitation Phase

After the end of the Operation Phase affective and meaningful decommissioning task will be carried out. The project proponent will ensure that there is no residual impact left and there is no contaminated soil or substance left. After that effect revegetation of the site will be undertaken. In the aftermath of the project the site will be restored to it original condition.

The generalized implementation schedule is depicted follow.

Pre-consturction Phase	Construction Phase	Operation Phase	Decommission-ing and Rehabilita-tion Phase
6 months	3 years	30 plus years	1 year
	EMP		
		MP	

**Figure – 74: Generalized time frame for planning and implementation of EMP and MP during the four phases of project life**

### 8.6.5 Management actions

#### Management actions for each sub-plan

Overall environmental and social management sub-plans and implementation of sub-plans are already described earlier in 8.5 (in tabulated form), in accordance with EIA Procedures, 2015, prescribed by ECD.

For practical purpose management actions plans for:

- air quality and emission
- noise and vibration
- water quality and waste water
- solid wastes
- soil (erosion and sedimentation) and
- Occupational health and safety,

During the Construction Phase and Operation Phase are described below:

#### During the Construction Phase

##### 1. Air quality and emission management action plan

**Objective** : The main objective is to mitigation/reduce emission (smoke or gaseous emission) and control air quality as practical as possible.

**Legal requirement** : will comply with NEQEG emission guideline (2015), Code No.1.1.1, prescribed by ECD in EIA procedure (2015)

**Management actions** : The following will be implemented for all emission (fugitive emission of smoke and dust), during the Construction Phase. These have been extracted from

mitigation measures described earlier in Chapter 6, 6.2 and Chapter 8, 8.5 (tabulated form) and are summarized as below:

- Comply with NEQEG emission guideline.
- Do not clear vegetation more than necessary.
- Procure equipment that are environmentally friendly, that emit less smoke.
- Keep equipment and vehicle well-operated, well-maintained, and well-lubricated to reduce emission, if possible.
- Use fuel oil low in sulphur, if possible.
- Avoid open burning of debris.
- Spray water for suppression of dust.
- Restrict vehicular movements.
- Limit open stockpile of earth, sand, etc.
- Provide PPE, face mask, nose and mouth covers to workers where necessary.
- Conduct regular monitoring (semiannually); hire technicians for this.

## **2. Noise and vibration management action plan**

Objective : To mitigate/reduce noise and vibration level, generated from the construction activities.

Legal requirement : Will comply with NEQEG emission guideline, 2015, prescribed by ECD, Code No.1.3.

Management actions : The following will be implemented for the control/mitigation of noise level and vibration generated from the construction activities.

These have been extracted from mitigation measures described earlier in Chapter 6, 6.2 and overall Chapter 8, 8.5 in tabulated form, and summarized as below:

- Will comply with NEQEG emission guideline (2015) prescribed by ECD, Code No.1.3
- Procure eco-friendly machinery that emits lower noise level in the first place.
- Noisy machine to be fitted with noise muffler or silencer, if possible.
- Keep machinery and vehicle well-operated, well-maintained and well-lubricated to reduce noise level.
- Ensure that foundations for equipment are stable to mitigate vibration.

- Restrike/limit truck movement.
- Keep the road surface smooth and flat (to mitigate vibration)
- Construction activities must be during day time (no construction at night).
- Keep big trees, if any, intact to absorb noise.
- Provide PPE, ear muffs, to workers necessary.
- Conduct regular monitoring (semi-annually); hire technicians.

### **3. Water quality and waste water management action plan**

Objective : Not to impact any surface water surface or underground quality and to manage the waste water (effluent).

Legal requirement : Will comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2.

Management action : The followings will be implemented to control water quality and manage effluent.

These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2 and Chapter 8, 8.5 (tabulated form) and summarized as below:

- Comply with NEQEG emission/effluent guideline
- Plan and manage for prevention on the water emission; manage so that construction activities do not impact surface or ground water.
- Create systematic drainage system at construction site to manage waste/used water; also drainage system to manage storm water.
- Keep natural drainage of the area intact; ensure that construction of access road, and assembly plant do not damage natural damage.
- Store fuel oil as well as used oils a designated banded side.
- Avoid contamination of surface or underground water:
- Avoid accidental spillage; should spillage occur of not waste down with water (to prevent percolation), but immediately remove with absorbents or saw dust.
- Avoid disposing of waste to any water body.
- Educate workers for conservation of water.
- No specific waste water treatment during Construction Phase.
- Test water quality and effluent every six months; hire technicians.



#### **4. Waste management action plan**

Objectives : To mitigate/reduce construction waste and domestic waste.

Legal requirement : Will comply with Environmental Conservation Law, 2012 and Environmental Conservation Rules, 2014, (to discharge the wastes in accord with environmentally sound methods and not to pollute the environment).

Management actions : The following will be implemented for the management of wastes. These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2 and from EMP sub-plan, Chapter 8, 8.5 (in tabulated form) and summarized below:

- Will comply with Environmental Conservation Law, 2012. Articles 14, 15, 32; Environmental Conservation Rules, 2014; Rule 69.
- As regards domestic waste educate and train workers for the proper handling of wastes, and minimize waste.
- Separate waste into recyclable and non-recyclable ones; use separate waste bin.
- As regard construction waste – ensure large quantity of construction waste and left over are temporarily dumped inside the construction site in a systematic way.
- Surplus or left over material to be put up for sale later.
- After completion of construction works hire a contractor and party for tidying up the site.
- Materials that should be disposed off will be disposed at the approved landfill.
- Avoid open burning of debris by all means.

#### **5. Soil management action plan (erosion and sedimentation)**

Objectives : To avoid and prevent soil erosion and prevent the destruction of soil structure and profile due to construction activities.

Legal requirement : To comply with Environmental Conservation Law, 2012.

Management action : The following will be implemented for the management of soil. These have been extracted from mitigation measure described in Chapter 6, 6.2 and EMP sub-plan, Chapter 8, 8.5 and summarized below:

- Ensure that when doing construction works soil structure and profile are not destructed more than necessary
- Keep top soil and subsoil separately (backfill subsoil first and then top soil on top facilitate revegetation).

- Avoid contamination of soil as much as possible; no fuel spill or leak; should there is a spill do not wash down with water (to prevent percolation into soil); remove spill immediately with absorbents (rags, saw dust); prevent spreading of spill.
- Schedule the construction work so that large area of soil is not laid bare during monsoon month.
- Resurface and stabilize exposed ground surface after earth work.
- Soil compacted by heavy trucks/machinery to be raked and restored.
- Prevent soil erosion and sedimentation, especially during monsoon season.
- Run off from area adjacent the site will be diverted.

## **6. Occupational Health and Safety management action**

Objectives : Try to achieve zero accident at work place as practical as possible.

Legal requirement : To comply with Occupational Health and Safety Law, 2019 (depicted in Chapter 3)

Management actions : The following will be implemented. These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2. and in EMP sub plan, Chapter 8, 8.5 and summarized below:

- Plan and manage for zero accident.
- Create a safe working place and working condition.
- Educate train and supervize workers for good working practice, good safety practice and good housekeeping practice so that these good practices will be in grained in each and every worker's mind.
- Provide adequate lavatory facility, bath and washing area; potable water.
- Provide adequate PPE, where necessary.
- Provide First Aid training for some staff; keep First Aid Kit well-stocked with medicines and drugs.
- Develop emergency response plan for any unexpected accidents and injuries.
- Display phone numbers of Ambulance service, Red Cross Society, Hospital, Fire brigade etc.
- Maximize mechanical labour and minimize manual laobur as far as possible to prevent workers for over exertion, excessive repetitive motions, and to reduce fatigue, strain and injury on workers.
- Cover the whole structure during Construction Phase with lace or netting to prevent accidental falling of objects (a common civil engineering practice).

## **During the Operation Phase**

### **1. Air quality and emission management action plan**

Objective : The main objective is to mitigation/reduce emission and control air quality as practical as possible.

Legal requirement : will comply with NEQEG emission standards guideline (2015), Code No.1.1 prescribed by ECD in EIA procedure (2015)

Management actions : The following will be implemented for all emission (point source emission or stationary emission and fugitive emission of smoke and dust), generated from the operation of the project. These have been extracted from mitigation measures described earlier in Chapter 6, 6.2, and environmental management sub-plans in Chapter 8, 8.5 (tabulated form) and are summarized as below:

- All air emission will comply with NEQEG emission standards values guideline mentioned above.
- Procure eco-friendly machinery that emits less smoke in the first place.
- Spray water for fugitive emission of dust; daily or as required (during dry months).
- Restrict/reduce vehicular movement (speed limit 20 mph).
- Always avoid open burning of debris and trash.
- Develop green belt (plant fast growing trees) for trapping dust.
- Keep equipment and vehicles well-operated, well-maintained and well-lubricated to reduce smoke.
- Provide PPE (e.g. face mask, mouth and noise cover where necessary).
- Implement GRM, so that locals can file complaint regarding smoke and dust.
- Conduct regular monitoring (Preferable every 6 months; hire technicians for this).
- Conduct daily overall visual inspection of smoke and dust condition.
- Monitor effectiveness of mitigation measures taken, weekly or monthly.

### **2. Noise and vibration management action plan**

Objective : The main objective is to mitigate/reduce noise and vibration level, generated from the operation of the assembly plant.

Legal requirement : Will comply with NEQEG emission guideline, 2015, prescribed by ECD, Code No.1.3.

Management actions : The following will be implemented for the control/mitigation of noise level and vibration generated from the operation of the factory.

These have been extracted from mitigation measures described earlier in Chapter 6, 6.2 and overall environmental management sub-plans described earlier in Chapter 8, 8.5 in tabulated form, and summarized as below:

- Will comply with NEQEG emission guideline (2015) prescribed by ECD, Code No.1.3
- Procure eco-friendly machinery that emits lower noise level in the first place.
- Install noise abating device e.g. silencer, muffler, where possible.
- Ensure that foundations for machinery/equipment are stable to mitigate vibration.
- Keep machinery and vehicle well-operated, well-maintained and well-lubricated to mitigate noise and vibration.
- No auto-parts assembling work at night
- Restrict/limit vehicular movement to mitigate vibration.
- Create smooth road surface to mitigate vibration.
- Develop green belt (plant fast growing grees) around the compound to abate noise.
- Provide PPE e.g. ear muffs, ear protectors where necessary.
- Conduct regular monitoring, preferably every 6 months; hire technicians for this.
- Conduct regular daily inspection of noise condition.
- Implement GRM (the locals can file complaints regarding noise).
- Regularly monitor the effectiveness of mitigation measures taken weekly or monthly.

### **3. Water quality and waste water management action plan**

Objective : The main objective is not to impact any surface or underground water quality and to manage the waste water (effluent).

Legal requirement : Will comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2 (generally application).

Management action : The followings will be implemented to avoid the impact of waste water and to control/mitigate and manage waste water.

These have be excerpted from mitigation measures described earlier in Chapter 6, 6.2 and overall environmental management sub-plans edscribed earlier in 8.5 (tabulated form) and summarized as below:

- Comply with NEQEG emission guideline values (2015) prescribed by ECD, Code No.1.2.
- Provide potable drinking water for staff (the water from the pond is potable).
- Ensure that all activities do not impact the river water.
- Prevent erosion (especially along Sar Ta Linn Chaung bank during rainy season).
- Avoid disposing of all waste, (solid and liquid) into any water body by all means.
- Prevent oil spills or oil spread into any water body.
- Adhere to the principle of water conservation; educate staffs for this.
- In auto-parts assembling no industrial waste water is produced; only used water.
- Set up network of drainage system for domestic waste water and storm water.
- Domestic waste water (brown water) from office, dormitory, kitchen, baths etc. will end up in waste water pond and dry up (no special treatment required).
- Black water for toilets will end up in septic tanks and soak pits.
- Monitor water quality regularly (preferably every 6 months, hire technicians for this).
- Conduct weekly visual inspection of water condition.
- Monitor effectiveness of mitigation measures taken, weekly or monthly.

#### **4. Waste (solid waste) management action plan**

Objectives : The main objective is to mitigate/reduce industrial waste and domestic waste.

Legal requirement : Will comply with Environmental Conservation Law, 2012 and Environmental Conservation Rules, 2014. That is to discharge the wastes in accord with environmentally sound methods and not to pollute the environment.

Management actions : The following will be implemented for the management of wastes generated. These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2 and EMP sub-plans Chapter 8, 8.5 (tabulated form) and summarized as below:

- Will comply with Environmental Conservation Law, 2012. Articles 14, 15, 32; Environmental Conservation Rules, 2014; Rule 69.
- Educate and train staffs for the proper handling of wastes, educate them for good housekeeping, and minimization of waste as practical as possible.
- In auto-parts assembling the only main industrial waste is old packing materials e.g. wood, plastic, foam.

- As for domestic wastes collect them daily in small waste baskets or big garbage bins (waste baskets in office and dormitory; big bins placed in kitchen and elsewhere inside the compound) daily; disposed them at the landfill.
- Separate waste into recyclable and non-recyclable ones; dispose only those that are non-recyclable.
- Avoid open burning of solid wastes.
- Monitor waste management weekly or monthly.
- Monitor the effectiveness of mitigation measures taken.
- Implement GRM (locals can file complaint regarding waste).

### **5. Soil management action plan (erosion and sedimentation)**

Objectives : The main objective is to avoid and prevent soil erosion and prevent the destruction of soil structure and profile due to activities of the project.

Legal requirement : To comply with Environmental Conservation Law, 2012.

Management action : The following will be implemented for the prevention of soil erosion and destruction of soil structure. These have been excerpted from Chapter 8, 8.5 EMP sub-plan (tabulated form) and summarized as below:

- Ensure that there is no contamination of soil; avoid spillage of fuel on soil, remove the spill immediately.
- Ensure that project activities do not impact soil structure (during the rainy season).
- Ensure that soil is stable and not easily eroded; compact soil where possible).
- Minimize the area of bare soil exposed (plant, grass and trees where possible to prevent erosion).
- Control run off and storm water (create reliable drainage system; divert storm water so that it can flow freely into the Sar Ta Linn Chaung).
- Ensure that no erosion and sedimentation taking place along the bank of Sar Ta Linn Chaung
- Prevent dirt and debris getting into the drainage causing siltation.
- Monitor the soil condition weekly or monthly.
- Monitor the effectiveness of mitigation measures taken (weekly or monthly during rainy season).

## **6. Occupational Health and Safety management action**

Objectives : to avoid/prevent health impact on workers and try to achieve zero accident at work places as far as possible.

Legal requirement : To comply with Occupational Health and Safety Law, 2019

Management actions : The following will be implemented. These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2 and in EMP sub plan, Chapter 8, 8.5 and summarized below:

- Create safe working place and working condition.
- Educate, train and supervise workers for good working practice, good engineering practice, good safety practice, and good health and hygiene practice so that these good practices will be ingrained in their mind sets.
- Apply mechanical rather than manual works at the assembly plant and also apply automation system as far as possible (the company is exactly doing this).
- Train them for safety handling of fuels and also train them for safety and efficient operation of all machinery and equipment.
- Organize induction effective induction training; provide work manuals and safety manual.
- Organize OHS training for all workers.
- Avoid accidental fire and explosion by all means.
- Set up alarm systems.
- Provide basic First Aid training and Firefighting training for some workers; provide adequate equipment facility.
- Develop plan for emergency response.
- Take out insurance for the assembly plant and consider for life insurance for workers.

### **During the Decommissioning Phase**

Objectives : To undertake systematic decommissioning and rehabilitation of the site.

Legal requirement : To comply with Environmental Conservation Law, 2012 and Occupational Health and Safety Law, 2019 (depicted earlier in Chapter 3).

Management actions : The following will be implemented. These have been excerpted from mitigation measures described earlier in Chapter 6, 6.2 and EMP sub plan, Chapter 8, 8.5 and summarized below:

- Plan and manage for safe and effective decommissioning work;
- Hire a decommissioning contractor and party for demolition of buildings and structures and dismantling of equipment and tidying up the site.
- Put up for sale those that are still useable and saleable; dispose those that are not.
- Soil, if contaminated will be removed and disposed.
- Test air, water and soil quality for the last time to ensure that they are within guideline values (that air, water and soil are not polluted, no erosion of soil).
- Plant trees and commence rehabilitation work and ensure that the site is ecologically restored.
- Ensure for affective restoration/reforestation; ensure that replanted trees are well-established.
- Monitor the effectiveness of decommissioning and rehabilitation works.
- Ensure that the site is safe for local communities after decommissioning and rehabilitation



### 8.6.6 Monitoring plan

In accordance with EIA report format prescribed by ECD comprehensive monitoring plan has been described earlier in Chapter 6, 6.2.5.

The pragmatic approaches for monitoring to be undertaken during the Construction, Operation and Decommissioning Phase are shown in tabulated forms.

The generalized monitoring plan for other parameter as practiced in some countries, and described in EIA report, is also shown in tabulated form. These are reproduced here.

**Table – 26: Summary of monitoring programme for Construction Phase in tabulated form (the pragmatic approach)**

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Cost (once off cost)
1.	Air environment/ air emission	- monitor ambient air - monitor all the parameter for emission shown in the NEQ emission guideline values prescribed by ECD, Code no.1.1 (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 1,700,000
2.	Noise and vibration	- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD, Code no.1.3 (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	Once during construction phase	Hired technicians	Ks 70,000
3.	Water environment/ effluent	- monitor all the parameters for the effluent shown in the NEQ effluent level values prescribed by ECD for construction phase, Code no.1.2 (Already depicted in <b>Chapter-3</b> )	17° 3'25.31"N 96°18'17.30"E	Once during construction phase	Hired technicians	Ks 80,000
4.	Contamination of soil and ground water	- monitor spillage of fuel oil, grease, chemical, etc, if any	17° 3'26.09"N 96°18'21.80"E	Weekly	EMP cell members	Free of charges

5.	Erosion and siltation	- monitor earth work and drainage system	17° 3'24.98"N 96°18'22.57"E	Weekly (especially during rainy season)	EMP cell members	Free of charges
6.	Solid waste (construction failing, debris)	- monitor type, amount generated reused, recycled, and disposed of	17° 3'26.96"N 96°18'21.46"E	Weekly	EMP cell members	Free of charges
7.	Biodiversity component	- monitor clearing of grass and small vegetation	17° 3'28.09"N 96°18'20.03"E	Weekly	EMP cell members	Free of charges
8.	Plan for prevention of fire outbreak	- monitor the plan and the readiness for prevention of fire - monitor the stock piling of building materials that can easily catch fire	17° 3'27.20"N 96°18'24.67"E	Weekly	EMP cell members	Free of charges

**Table – 27: Summary of monitoring programme for Operation Phase (tabulated form)**

(a) The pragmatic approach

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Costs (once off cost)
1.	Emission	- monitor all the parameters for emission for comparison with NEQEG emission guideline values prescribed by ECD Code no.1.1 (Already depicted in <b>Chapter-3</b> )	17° 3'25.75"N, 96°18'24.11"E	- Every six months	- Hired technicians	- Ks 1,700,000
2.	Effluent	- monitor all the parameters for effluent for comparison with NEQEG effluent guideline values prescribed by ECD Code no.1.2 (Already depicted in <b>Chapter-3</b> )	17° 3'25.31"N 96°18'17.30"E	- Every six months	- Hired technicians	- Ks 80,000
3.	Noise and vibration	- monitor the noise level for comparison with the NEQEG noise level values prescribed by ECD Code no.13 (Already depicted in <b>Chapter-3</b> ) - monitor the wearing of PPE	17° 3'25.75"N, 96°18'24.11"E  At work place near noisy machine	- Every six months  - From time to time	- Hired technicians  - EMP cell members	- Ks 70,000  - Free of charge
4.	Soil	- monitor contamination of soil (if any)  - monitor soil erosion (if any)	17° 3'27.32"N, 96°18' 20.09"E  Inside the compound	- From time to time  - Rainy season	- Hired technicians members  - EMP cell members	- Ks 140,000  Free of harge

5.	Solid waste	- monitor the packing materials collection and disposal	17° 3'27.83"N 96°18'19.46"E	- Daily	- EMP cell members	- Free of charge
		- monitor trash/garbage generated, collection and disposal	Inside the compound	- Weekly	- EMP cell members	- Free of charge
6.	Waste water	- monitor the management of domestic waste water	17° 3'27.51"N 96°18'21.51"E	- Daily	- EMP cell members	- Free of charge

(b) The generalized monitoring of other parameters (practiced in many countries)

Sr. No.	Components	Parameters to be monitored	Monitoring place/spot	Frequency	Responsible persons	Remarks
1.	Weather	- monitor weather	- At the site	- Daily	- EMP cell members	- Free of charge
		- listen to weather news, fore cast	- At the site	- Daily	- EMP cell members	- Free of charge
2.	Daily activities at work places	- monitor daily activities of workers at work places	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
3.	Water consumption	- monitor water consumption	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
4.	Fuel consumption	- monitor fuel oil purchased, used, used oil generated, oil waste	- Inside the assembling plant	- Monthly	- EMP cell members	- Free of charge
5.	Monitor electricity consumption	- monitor electricity consumption	- Inside the assembling plant	- Weekly	- EMP cell members	- Free of charge
6.	Routine operation of machinery equipment, etc	- monitor operation hours of machinery and equipment	- Inside the assembling plant	- Daily	- EMP cell members	- Free of charge
		- monitor distance travel of vehicles	- Every car	- Weekly	- EMP cell members	- Free of charge
		- monitor log books	- Every log book	- Weekly	- EMP cell members	- Free of charge

7.	Occupational health and safety measures and emergency measures	<ul style="list-style-type: none"> <li>- monitor OHS measures taken</li> <li>- inspect facilities for emergency preparedness</li> <li>- monitor training (fire fighting and first aid) and drill</li> </ul>	<ul style="list-style-type: none"> <li>- At the work place</li> <li>- At the work place</li> <li>- At the f work place</li> </ul>	<ul style="list-style-type: none"> <li>- Weekly</li> <li>- Monthly</li> <li>- From time to time</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> <li>- EMP cell members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> <li>- Free of charge</li> <li>- Free of charge</li> </ul>
8.	Social illness, ill social behavior	<ul style="list-style-type: none"> <li>- check disciplinary action taken</li> <li>- monitor conducts of workers</li> </ul>	<ul style="list-style-type: none"> <li>- At the work place</li> <li>- At the work place</li> </ul>	<ul style="list-style-type: none"> <li>- Occasionally</li> <li>- Occasionally</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> <li>- Free of charge</li> </ul>
9.	Security	<ul style="list-style-type: none"> <li>- monitor performance of security staffs</li> </ul>	<ul style="list-style-type: none"> <li>- At the site</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> </ul>
10.	Capacity building	<ul style="list-style-type: none"> <li>- monitor effectiveness of capacity building programme and other trainings</li> </ul>	<ul style="list-style-type: none"> <li>- At the site</li> </ul>	<ul style="list-style-type: none"> <li>- From time to time</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> </ul>
11.	Compliance with regulation	<ul style="list-style-type: none"> <li>- monitor all main activities to ensure compliance with legal requirements and corporate commitment</li> </ul>	<ul style="list-style-type: none"> <li>- At the site</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> </ul>
12.	Effectiveness of mitigation measures	<ul style="list-style-type: none"> <li>- monitor mitigation measures taken and check their effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>- At the site</li> </ul>	<ul style="list-style-type: none"> <li>- Weekly or monthly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> </ul>
13.	Green belt creation and landscaping	<ul style="list-style-type: none"> <li>- monitor the creation of green belt and landscaping</li> <li>- monitor the nursery of sapling and on-growing</li> </ul>	<ul style="list-style-type: none"> <li>- Inside the compound</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly</li> <li>- Monthly</li> </ul>	<ul style="list-style-type: none"> <li>- EMP cell members</li> <li>- EMP cell members</li> </ul>	<ul style="list-style-type: none"> <li>- Free of charge</li> <li>- Free of charge</li> </ul>

**Note:** EMP cell member are full time staff and well-paid. Honourarium fees for two villagers.

In addition there will be specific and regular monitoring on the physical components (air, water, soil quality) on a semi-annual basis throughout the whole long Operation Phase (as instructed by the environmental authority, ECD). The semi-annual monitoring report will be submitted to the authority in a timely manner.

### **8.6.7 Projected budgets and responsibilities**

#### (a) Budget

In order to effectively execute EMP and MP the company has set aside 5% of the budget (Ks 208,896,965) for the EMP fund.

The sub-budget allotted for each programme under EMP and MP are as follows: -

- Cost of organizing EMP 2% of EMP fund (Ks 4,107,939)
- Cost for actual execution and dissemination of EMP in the forms of:
  - (a) Taking mitigation measure 25% of EMP fund (Ks 52,224,241)
  - (b) Monitoring actions 25% of EMP fund (Ks 52,224,241)
- Cost for partial procurement of equipment and materials 20% of EMP fund (Ks 41,779,393)
- Cost for capacity building and training 7% of EMP fund (Ks 14,622,787)
- Cost for emergency/contingency (for protoable emergency cases) 10% of EMP fund (Ks 20,887,696)
- Cost for reporting, documentation work 8% of EMP fund (Ks 16,711,757)
- Miscellaneous (including casual fees for two villagers, who are EMP cell members) 3% of EMP fund (Ks 6,266,908)

#### (b) Responsibility

To effectively carry out EMP programme and actions a small nucleus organization, the EMP cell is organized and formed. (The company is not in a position yet to form an EHS unit yet).

#### **EMP cell**

An EMP cell (a small nucleus organization) is formed for the effective implementation of EMP and MP. The cell members include the manager, who is the EMP cell leader, two technicians and two staff members. This EMP cell is also the monitoring committee. Two local villagers are added to this monitoring committee.

Aung Gabar Motor Services Co., Ltd has formed the EMP cell as follow:

<b>Sr no.</b>	<b>Name</b>	<b>Designation</b>	<b>Responsibility</b>
1.	U Aye Min Than	Manager	EMP cell leader
2.	U Myo Zaw Tun	Engineer	Cell member
3.	U Thura Tun	Engineer	Cell member
4.	U Hlaing Min Tun	Technician	Cell member
5.	U Myo Ko Ko Tun	Technician	Cell member
6.	U Aung Zaw	Village administrator	Cell member
7.	U Kyi Ngwe	Villager	Cell member

The main task of EMP will be monitoring works, e.g. compliance monitoring, monitoring mitigation activities, monitoring the effectiveness of EMP and mitigation measures etc.

The monitoring works will cover the Operation Phase and Decommissioning Phase of the project life as the project is already in operation. The EMP cell leader (monitoring committee leader) and members are responsible for the holistic execution of the EMP and monitoring programme.

20 employees will be specially trained for implementation of EMP.

They will be specially trained for doing this. As for monitoring specific parameters e.g. air quality, water quality and soil, technicians or experts from Yangon will be hired to do the analysis works.

It is not pragmatic for the EMP members, especially the five employees, of the company to get involve solely in EMP and MP activities because their main task is the operation of factory (production works) while EMP and MP activities are actually supplementary works. The company will not be in a position to set aside 25 well-paid employees just to engage in EMP or MP work alone; it will other wise result in under-staffed situation for the project. Therefore the EMP cell leader, members and assistants have also to get involve in the routine management and operation work (production works) as far as possible. An additional 4- 5 employees will be deployed as assistant EMP cell members.

The duties and responsibilities of EMP cell members are as follow: -

**1. U Aye Min Than (Manager)**

- (i) He will double as EMP cell leader.
- (ii) Overall environmental officer; responsible for all social and environmental issues arising from the activities at the assembly plant.
- (iii) Monthly meeting with all EMP cell members and 30 specially trained workers.
- (iv) Gather monthly information/data from 4 full time EMP cell members (2 villagers excluded).
- (v) Writing monthly report and submit the report to the company's authority.
- (vi) Submit a special quarterly report to the company's authority.

**2. U Myo Zaw Tun (Engineer) and EMP cell member**

- (i) Designated as environmental security officer.
- (ii) Responsible for all environmental issues arising from the activities at the assembly plant.
- (iii) Supervision of EMP activities including monitoring works and execution of mitigation measures.
- (iv) Also participate (personally involve) regularly in EMP, MP and mitigation works.
- (v) Provide monthly data/information to EMP leader (Myanmar).

**3. U Thura Tun (Engineer) and EMP cell member**

- (i) Designated as work place security officer.
- (ii) Responsible for all social issues arising from the activities at the assembly plant.
- (iii) Co-supervision of EMP activities including monitoring works and execution of mitigation measures.
- (iv) Regularly supervise activities at work places.
- (v) Also participate regularly in EMP, MP and mitigation works.
- (vi) Provide monthly data/information to EMP cell leader.

**4. U Hlaing Min Tun (Technician)/EMP cell member**

- (i) Designated as liaison officer for dealing with locals
- (ii) Responsible for social issues, if any, coming from the local community.
- (iii) Co-supervision of EMP, monitoring works undertaken by 10 trained workers.
- (iv) Also participate in EMP, and MP works.
- (v) Provide monthly data/information to EMP cell leader.



**5. U Myo Ko Ko Tun (Technician)/EMP cell member**

- (i) Co-supervision of EMP, especially mitigation works undertaken by 10 trained workers.
- (ii) Also participate in EMP especially all mitigation measures taken.
- (iii) Supervize and participate in monitoring of water, fuel and electric energy consumption; regulate consumption.
- (iv) Provide monthly data/information of EMP cell leader.

**6. U Aung Zaw (Village Administrator)/EMP cell member**

- (i) Appoint to monitor the transparency regarding the activities at the assembly plant
- (ii) Work as part-time in environmental monitoring works with U Sein Myint (no fixed working days or hours).
- (iii) Monthly regular visual inspection of activities.
- (iv) Provide information about the assembly plant to fellow villagers on a regular basis every 2 or 3 months.

**7. U Kyi Ngwe (Villager)/EMP cell member, part time**

- (i) Appoint to monitor the transparency regarding the activities at the assembly plant
- (ii) Work as part-time in environmental monitoring works with U Maung Maung Oo (no fixed working days or hours).
- (iii) Monthly regular visual inspection of activities.
- (iv) Provide information about the assembly plant to fellow villagers on a regular basis every 2 or 3 months.

**8. 20 specially trained workers:**

10 to be fully involved in monitoring work

10 to be fully involved in taking mitigation work.

The EMP cell members and 20 specially trained workers will also involve in regular works (production works) as practical as possible.

## **9. PUBLIC CONSULTATION AND DISCLOSURE**

Public consultation is an integral part of EIA, IEE and EMP. Involving the public participation in the EIA work is fundamental to increasing the understanding and acceptance of the project.

Public consultation and participation have to be started as early as possible in the preparation of EIA, IEE and EMP. And it has to be a continuous process, especially during the Operation Phase, carry out from time to time.

### **Purposes of the consultation during the preparation of the EIA report**

- to enlighten the locals/stakeholders about the project
- to increase the understanding and acceptance of the project
- to give the locals/stakeholders the opportunity to present their views, opinions, perception of the project, express their concerns, complaints, grievances etc
- to identify impacts and issues that are not immediately obvious to project proponent and the EIA team
- to access social assistant and community development needs for the locals/stakeholders
- to gain community consent and to interact with the people to further strengthen existing cordial relationship
- to tap local knowledge and to negotiate for mutually beneficial future that is sustainable and locally relevant

### **Requirements for public consultations:**

- public consultation must be conducted in the early phase of project
- must ensure the direct involvement of the locals/stakeholders
- must ensure that all locals/stakeholders who are interested will have the chance to fully participate, especially the vulnerable and marginalized group,
- it must be a continuous process --- throughout the entire phase of the project, especially during the long Operation Phase, and
- there must be an action plan or response programme such as complaints and grievances mechanism (CGM) or Grievances Redress Mechanism (GRM) to tackle any issue.

## 9.1 Methodology and approach

Standard methodology applied here includes:

- (i) **Consensus building:** First of all a pre-sensitizing visits to the local authority (Village Administrator and party, elders) and briefing on the proposed project to be carried out and ask for their approval and assistant for holding the public consultation.
- (ii) **Transect walk:** site visit (visit to the village) and conduct visual inspection.
- (iii) **Actual public consultation meeting:** mainly involves disclosure of the proposed project and giving complete and accurate information; consultation mainly in the form of two-way conversation --- listening and talking; waiting for their response; further discussion.
- (iv) **Interviews and discussions:**
  - in the form of KII/SS, (Key Informant Interview/Secondary Source) for the gathering of secondary baseline socio-economical data and community profile with the aid of questionnaires
  - in the form of FGD (Focal Group Discussion); interview with few selected people (authority, knowledgeable persons) especially for ranking the pressing need of the locals for prioritizing the needs for community assistance and implementation of CSR.
  - Household Interview (HII) not conducted (not a comprehensive social-economic assessment).

### Project Affected People (PAP)

Sar Ta Linn Villlage is within the designated 2 miles radius area for EIA study.

In this project context the PAP are local people from Sar Ta Linn Village and people from the near vicinity, especially within the 2 miles radius area. All heads of the households are invited to attend the public consultation meeting. The locals are very familiar with this and show little interest in such meeting.

### 9.2 Preliminary public consultation meetings during the scoping study

Preliminary public consultation meeting was held at Sar Ta Linn Village Administrator Office.

Date - 16-2-2019

Time - 14:30 hours to 15:45 hours

Venue - Village Administrator Office

Attended - 32 persons including (U Aung Zaw, the Village Administrator and stakeholder, and interested locals)



**Figure – 75: Preliminary public meeting at Village Administrator Office**



**Figure – 76: KII interview**

### **Minutes of Meeting**

U Myint Kyaw Thura, team leader of EIA team: My name is Myint Kyaw Thura and the name of my organization is MESC involving in environmental studies. Our organization in third party and our view is natural. We came here to study the impacts of the project on the environment and also want to know your views and opinions. Our study encompasses the physical environment - eg. air, water and soil; biological environment - eg. plants and animals; and also socio-economic environment of local community. We collect information and data and write EMP report which has to be submitted to the authority. We invite you to express your view and opinions and also give any comment so that we can know the real situation.

Daw Phyu Linn Myint, General Manager of the Company: First I want to explain about the company. Aung Gabar Motor Services Co., Ltd was established in 1990/1991. The car business was started in 2011/2012. We have imported 5000 to 6000 cars from Japan. In 2012/2013 our company became the sole distributor for BAIC Company, China, and so far we have imported over 1000 cars.

If cars can be assembled and produced in the country its will be less expensive and therefore we have selected this plot of land in this village area and planned for the establishment of a motor assembly plant. In this way cars will be cheaper for the people and the quality can be controlled. We have two showrooms in South Okkalapa and one in Mandalay. We provide 1 year warranty and after sale services. The cars produced from this factory will be sold at these showrooms. We have also plan for one more showroom in Nay Pyi Taw.

The main task in the factory is the assembly of motor parts. We have obtained permit from Myanmar Investment Commission (MIC) and we are in the process of building the foundation of our factory. Nine motor parts have to be imported via shipping from China in order to assemble a complete car. No welding and painting are involved; only the assembly of car parts. Therefore there will be no smoke, odour and no waste water to be generated.

Later we have plan for producing car parts. Four model of car will be produced. As there will be no smoke, odour and noise you need not concern for the environment. Only the assembly and washing will be undertaken.

During the Construction Phase we need workers, so we want to employ the locals from this area. We need both blue collar and white collar workers and we inform the local elders for this matter. After Thinn Gyan Water Festival more materials will arrive for construction. We plan to produce the cars before December. So we have plan for employing locals between March and June. The locals who are interested can apply for the jobs. I want to see mutual benefits "Kaing Kyun Hme Kyun Kaing Hme" as a Burmese saying goes, between the company and the village.

I have plan for donating one copier for the nearest school to our site. If the village elders need any help our company in ready to render help. In the same way I hope the village will render help when the company needs one.

You can ask question frankly and we are ready to answer. If you see any undesirable actions of our company workers please speak out frankly.

U Nit Sann, local elder: If you have any plan for building housing for staffs what will be the distance between the school and the housing. The border fence of the factory is too close to the toilets of the school and I am concerned for the inconvenience of the students.

Daw Phyu Linn Myint: At the moment there will be only local workers and we do not need housing for employees yet. If housing/dormitory has to be built for technicians from Yangon we will construct concrete wall or fence for the safety of the students.

U Kyi Ngwe, local elder: Do you need women workers for your car factory?

Daw Phyu Linn Myint: We employ not only men because women can keep abreast with men in some jobs. Therefore, depending on their interest and ability we will also employ women at our factory.

U Aye Han, a local elder: Can the local continue to use water from the two water ponds in the factory premise? The local have to rely mostly on rain water in the pond.

Daw Phyu Linn Myint: Regarding water we have plan not only for our employees but also for the locals. The ponds will be enlarged and up graded and water will be distributed for the local.

U Aung Zaw, the village Administrator: The construction of this car factory is the first for our village and there can be no negative impact. The point I want to make is that our village has both educated and uneducated youths. Therefore, employment opportunities should be provided for both educated and uneducated youths. I also ask for secure border fence between the factory and the school.

Daw Phyu Linn Myint: Rest assured the fence will be renovated and will be a secure one. As regards employment we will prioritize the employment of the local from this Hlegu area as there can be delay and inconvenience when employing people from afar, the construction plan will be drawn in the details and this will be done in discussion with the chairman (the village administrator).

U Aye Kywal, a local elder: Do you have plan for ferrying workers?

Daw Phyu Linn Myint: Depending on the numbers of employees we will have plan for ferry.

U Hla Myint, a local leader: Can anyone apply for a job at this factory.

Daw Phyu Linn Myint: Anyone can apply for a job. We have application form ready. One can fill that form and apply for the job. We will employ anyone, depending on his/her interest and ability at a suitable position. Only sedan cars will be produced and as there will be foreigner experts and technicians working here our employees can acquire new knowledge and skill. The employees will be also educated and trained for compliance with laws and regulation. We will raise a fund for community, assistance and development.

U Aung Zaw, Village Administrator: I have nothing to say against the implementation of this project as it will bring job employment opportunities for our village youths.

Daw Phyu Linn Myint: Thank you all for attending this meeting. The meeting was over at 15:45 hours.

### **Result of public consultation meeting (during scoping study)**

Two issues were raised during the meeting.

- One was by U Nit Sann who voiced concern for the safety of the High School students, because the school toilets are close to the fence of the factory compound.

Daw Phyu Linn Myint, the company general manager has replied that this issue will be tackled soon.

- Another was by U Aye Han who was worried that locals in the neighbourhood can no longer use the water in the two ponds inside the factory premise.

Daw Phyu Linn Myint replied that this will not be an issue and that the company has plan for upgrading the water ponds and also has plan for distribution of water to the local.

- U Aye Kywal, U Kyi Ngwe and U Hla Myint all enquired about employment opportunities for the village youths.

Daw Phyu Linn Myint replied that when employing workers first priority will be given to the people of this village.

### 9.3 Public consultation meetings during the EIA study

A public consultation meeting was held on 11-1-2022 (Tuesday) at the meeting room of auto assembling plant.

Due to prevailing COVID-19 pandemic the number of participants was limited.

#### Public consultation meeting

Date - 11-1-2022

Time - 11:00 hours to 12:00 hours

Venue - At the meeting room of the Auto-parts Assembling Plant.

Attended - 31 persons



**Figure – 77: Public consultation meeting**

The meeting was attended by Sar Ta Linn village Administrator and members, local villagers, stakeholders, U Aye Min Than, manager of the company's assembling plant, U Myint Kyaw Thura, leader of MESC team, and a few interested person. (Number of attended was limited due to COVID-19 pandemic situation).

## **Minutes of Meeting**

First of all U Myint Kyaw Thura addressed the meeting and explained to the participants about the project.

U Myint Kyaw Thura, Mingalarbar to all, I thank the village administrator and members and the locals who have given their precious time for attending this meeting.

My name is Myint Kyaw Thura. The name of our organization is Myanmar Environment Sustainable Conservation (MESCC) Co., Ltd. Our organization is a natural third party, neither on the project proponent side or the government side. Our organization is involved in environmental conservation activities. We study the negative as well as positive impacts resulting from the implementation of a project.

Our workers involved the measurement/testing of air, water and soil quality from the project site. Air quality has to be tested for 24 hours. Water and soil sample have to be collected and brought back to Yangon for detailed analysis. In addition studies are conducted on mammals, amphibians, reptile's birds and plants of the area. The plants and animals found are identified and recorded for writing the EIA report.

We have to conduct such survey before the operation of the project and again another survey when the project has operated.

We compare the positive and negative impacts of the activities of the project and mitigate the negative impacts and maintain or enhance the positive impacts.

In addition to survey works we also meet with the local people of the area. We usually invited a lot of local people and officials from relevant government departments. However, due to health reason (COVID-19) and political situation only a few can be invited to the meeting.

You are invited to the consultation meeting because no other people, but only you, can see and feel the impacts, if any, from the operation of this project. Therefore I invite you to express for view and opinion me and to the company responsible person. You can ask question and give comments in a frank and clear manner. I invite you to speak up openly. Thank you.

U Thet Naing Win, Member of village Administrator (Yar-ein-hmoo)

This project is a good one because our local villagers will have employment opportunities. This project will not generate any high level noise and odour and, therefore it is good for the environment.

U Aye Lwin, local (a vendor)

I have a shop near the project and staff from the project site come and buy things from my shop; I have now a brisk business. Unlike other project this one will not generate any noise and is good for the environment.



U Tin Ko Lin, local

Since the project is simply the assembling of auto-parts it is not a noisy assembling plant. Many villagers from the vicinity, Sar Ta Linn, Dar Pein and Inn Taing villages are now employed. I heard that the newly employed locals are also giving induction training.

Our local employees will have theoretical as well as practical skill and, therefore, there will be progress in their life.

U Myint Kyaw Thura (MESC)

I would like to advice the responsible officer of the company to plant trees in the site and create green zone.

U Aye Min Than, Factory General Manager

Yes, we will do the greening of the site.

The meeting was over at 12:00 hrs.

### **Result of public consultation meeting (during EIA study)**

The meeting has ended in a friendly and cordial manner; no issue was raised. No one has said something against the operation of the project. Many locals are already employed at the project site and they have a favorable perception of the project.

### **Information disclosure**

Responsible persons of the project proponent have already met with the village administrator and village elders for many times and they are already familiar with this project. In this meeting the manager, has given lengthy explanation of the project and by now all villagers are familiar with this project.

Information disclosure in the form of press release will be made after the follow up EIA trip. Finally, when the subsequent EIA report is approved part of the report (eg. Executive Summary) will be launched at the website of the consultant firm [www.myanmarenvironmentsustainableconservation.com](http://www.myanmarenvironmentsustainableconservation.com). Copies of approved EIA report will be kept at the company office for any interested person for perusal.

### **Corporates Social Responsibility (CSR)**

As regards CSR programme the manager has personally pledged to raise a fund (the CSR fund) for community assistance and community development. The official policy of the company is 2% of the net profit will go to the CSR fund. He has pledged to raise the fund ever before the company has realized any profit yet. This is done merely for the benefit of the villagers.

The company has donated Ks 1,860,000 for one unit of Cannon copier for Sar Ta Linn affiliated High School and Ks 235,000 for one unit of water cooler, 30 dozens of exercise book and food for the said school, totalling Ks 2,095,000. (See also ANNEX). CSR programme will be continued as the project progress.

### **Recommendation for future consultations**

As mentioned earlier public consultation must be a continuous process throughout the project period, from the Pre-construction Phase, through the Construction Phase and Operation Phase to the Decommissioning Phase. As regards the long Operation Phase (30 plus years) there should be regular public consultations annually or bi-annually depending on the situation, or from time to time whenever there is a need for public consultation. This is very important for maintaining the long term cordial relationship with the locals and hence the long term benefit for auto-parts assembling business.

When the assembling plant is in full operation Aung Gabar Motor Servies Co., Ltd will hold a public consultation meeting every six months or as required.

The Complaints and Grievances Mechanism (CGM) or Grievance Redress Mechanism (GRM) programme will be implemented throughout the entire Operation Phase period. It will be practical and applicable and effective. The public relation officer and EMP cell leader will always give special attention to CGM.

The complaints handling and response will be effective. A hotline for complaint will be set up. The address and phone numbers of the assembly plant is provided and make available at the Village Administrator Offices of the two villages. A log book for CGM (GRM) is kept at the office. The date and time of complaints, detail of complaint, action taken and if no action is required the reason why will be all recorded and documented in detail. There can be also follow up contact with complainant. The authority of the assembly plant will heed to this CGM (GRM) and prompt action will be taken as far as possible. EMP cell members will be responsible for CGM/GRM.

Future public consultation will involve the continuation of CSR programme (affordable programme) and donation and charity works as far as possible.

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# **ANNEX**



**ဝန်ထမ်းများသက်သာချောင်ချိရေးနှင့် သာယာပျော်ရွှင်ရေး အစီအမံများ**

ကျွန်တော်တို့၏ Aung Gabar Motor Services Co., Ltd မှ ဝန်ထမ်းများ၏ သက်သာချောင်ချိရေးနှင့် သာယာပျော်ရွှင်ရေးအတွက် ရက်မှန်ကြေး၊ အချိန်ပိုကြေးနှင့် နှစ်သစ်ကူးကာလများတွင် ဝန်ထမ်းများ လှူဒါန်းသုံးစွဲနိုင်ရေး နှစ်သစ်ကူးအပိုဆုကြေးများ ထုတ်ပေးသွားမည် ဖြစ်ပါသည်။

ဝန်ထမ်းများ ကျန်းမာရေးအတွက် အရေးပေါ် ဆေးကုသရေးအတွက် လိုအပ်သောဆေးဝါးများလည်း ထားရှိပေးထားပြီး ဖြစ်ပါသည်။ မြို့နယ်လူမှုဖူလုံရေးအသင်း၏ အသင်းဝင်ရောက်စေမည်ဖြစ်ပြီး နာမကျန်းဖြစ်ပါက ရသင့်သည့် ဝန်ထမ်းအခွင့်ရေးများ အပြည့်အဝ ခံစားခွင့်ပေးပြီး ဆေးကုသမှုခံယူစေမည် ဖြစ်ပါသည်။

လေးစားစွာဖြင့်

**DAW EI MYO MYO KHINE**  
DIRECTOR  
AUNG GABAR MOTOR SERVICES CO., LTD.



**ပတ်ဝန်းကျင်ညစ်ညမ်းမှုမရှိစေရေး ဆောင်ရွက်ထားမှု အခြေအနေတင်ပြခြင်း**

ကျွန်တော်တို့၏ မြန်မာနိုင်ငံကုမ္ပဏီများ အက်ဥပဒေအရ ခွဲစည်းတည်ထောင်ထားသော Aung Gabar Motor Services Co., Ltd မှ လုပ်ငန်းဆောင်ရွက်ရာတွင် စက်ရုံနှင့်ပတ်ဝန်းကျင်ညစ်ညမ်းမှု မရှိစေရန် သန့်စင်ခန်းများအား အလုံအလောက်ထားရှိခြင်း၊ အမှိုက်ပုံးများထားရှိခြင်း၊ လုပ်ငန်းခွင်ပတ်ဝန်းကျင်အား သန့်ရှင်းရေး လုပ်ငန်းများဆောင်ရွက်ခြင်းကို အစဉ် ပြုလုပ်မည်ဖြစ်ပါကြောင်း ဝန်ခံကတိပြု အပ်ပါသည်။

လေးစားစွာဖြင့်

  
DAW ENMYO MYO KHINE  
DIRECTOR  
AUNG GABAR MOTOR SERVICES CO., LTD.

**ပီးဘေကြီးတင်ကာကွယ်မှု အစီအစဉ် တင်ပြခြင်း**

လုပ်ငန်းခွင်အတွင်းရှိအဆောက်အအုံများနှင့် သတ်မှတ်နေရာများတွင် ပီးသတ်ဆေးစစ်မှုများ  
 ချိတ်ဆွဲထားရှိမည့်အပြင် ပီးလောင်မှုဖြစ်ပွားပါက အရေးပေါ်အခြေအနေတွင် ပီးငြိမ်းသတ်နိုင်ရန်  
 ဝန်ထမ်းများအား ပီးသတ်သင်တန်း များသို့စေလွှတ်ပြီး သင်တန်းများပေးသွားမည် ဖြစ်ပါသည်။

လေးစားစွာဖြင့်



**DAW EI MYO MYO KHINE**  
 DIRECTOR  
 AUNG GABAR MOTOR SERVICES CO., LTD.





**Corporate Social Responsibility (CSR)**

Aung Gabar Motor Services Co., Ltd မှ CSR နှင့်ပတ်သက်၍ အောက်ပါလုပ်ငန်းများကို ဆောင်ရွက် ပါမည် -

**၁။ ကျန်းမာရေး**

ဝန်ထမ်းများ ကျန်းမာရေးမကောင်းသည့်အခါ လိုအပ်သည့် ငွေကြေးများ ထောက်ပံ့ပေးသည့်အပြင် နာမကျန်းဖြစ်သည့်ရက်များအတွက် လစာအပြည့် ခံစားခွင့် ပြုပါသည်။

ဝန်ထမ်းများ လုပ်ငန်းခွင်တွင် ပျော်ရွှင်စေရေး လုပ်ငန်းခွင်တွင် အလုပ်ကို အာရုံအပြည့် စူးစိုက်စေနိုင်ရေးအလို့ငှာ ဝန်ထမ်းမိသားစုများ နေမကောင်းဖြစ်သည့်အခါ စိတ်ပူပန်မှုမရှိစေရန် ရောဂါအခြေအနေပေါ် မူတည်ကာ ဆေးဖိုးထုတ်ပေးပါမည်။

**၂။ ပညာရေး**

ဝန်ထမ်းများ၏ ပညာရေးနှင့်ပတ်သက်၍ ကဏ္ဍအသီးသီးရှိ ဝန်ထမ်းများ၏ ပညာရေးများကို Advance ဖြစ်အောင် အမြဲတမ်းစီစဉ်ဆောင်ရွက် ပေးပါမည်။

**၃။ လူမှုရေး**

New Year နှင့် သင်္ကြန်ရက်များတွင် ဝန်ထမ်းများအား နှစ်အလိုက်ရပိုင်ခွင့်များ အပြည့်အဝ ခံစားနိုင်စေရန် ဆောင်ရွက်ပေးပါမည်။

အဆိုပြုလုပ်ငန်း၏ နှစ်စဉ်အသားတင်အမြတ်ငွေမှ ၂% အား CSR ခံပုံငွေအဖြစ် ထားရှိသုံးစွဲမည် ဖြစ်ကြောင်း ဝန်ခံကတိပြုပါသည်။

လေးစားစွာဖြင့်  
  
**DAW YI MYO MYO KHINE**  
DIRECTOR  
AUNG GABAR MOTOR SERVICES CO., LTD.

## MSDS for thinner

### 3. Hazards Identification

#### Emergency Overview

Caution! Combustible. Keep away from heat, sparks, flame and all other sources of ignition. Vapors may cause fire. Vapors may travel long distances to other areas and rooms away from work site. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and all other sources of ignition anywhere in the structure, dwelling or building during use and until all vapors are gone from work site and all areas away from work site. Keep away from electrical outlets and switches. Beware of static electricity that may be generated by synthetic clothing and other sources.

#### OSHA Regulatory Status:

This material is classified as hazardous under OSHA regulations.

#### Potential Health Effects (Acute and Chronic)

##### Inhalation Acute Exposure Effects:

May cause dizziness; headache; watering of eyes; eye irritation; weakness; nausea; muscle twitches, and depression of central nervous system. Severe overexposure may cause convulsions; unconsciousness; and death. Intentional misuse of this product by deliberately concentrating and inhaling can be harmful or fatal.

##### Skin Contact Acute Exposure Effects:

May cause irritation; numbness in the fingers and arms; drying of skin; and dermatitis. May cause increased severity of symptoms listed under inhalation.

##### Eye Contact Acute Exposure Effects:

This material is an eye irritant. May cause irritation; burns; conjunctivitis of eyes; and corneal ulcerations of the eye. Vapors may irritate eyes.

**MATERIAL SAFETY DATA SHEET**  
**Paint Thinner**

Page: 2  
Printed: 12/31/2008  
Revision: 11/13/2008  
Supersedes Revision: 09/25/2008

Harmful or fatal if swallowed. May cause nausea; weakness; muscle twitches; gastrointestinal irritation; and diarrhea. Severe overexposure may cause convulsions; unconsciousness; and death.

**Chronic Exposure Effects:**

Reports have associated repeated and prolonged overexposure to solvents with neurological and other physiological damage. Prolonged or repeated contact may cause dermatitis. May cause jaundice; bone marrow damage; liver damage; anemia; and skin irritation.

**Signs and Symptoms Of Exposure**

Inhalation, ingestion, and dermal are possible routes of exposure.

**Medical Conditions Generally Aggravated By Exposure**

Diseases of the skin, eyes, liver, kidneys, central nervous system and respiratory system.

**4. First Aid Measures**

**Emergency and First Aid Procedures**

**Inhalation:**

If user experiences breathing difficulty, move to air free of vapors. Administer oxygen or artificial medical assistance can be rendered.

**Skin Contact:**

Wash with soap and large quantities of water and seek medical attention if irritation from contact persists.

**Eye Contact:**

Flush with large quantities of water for at least 15 minutes and seek immediate medical attention.

**Ingestion:**

Do not induce vomiting. Call your local poison control center, hospital emergency room or physician immediately for instructions to induce vomiting.

If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.

**Note to Physician**

Call your local poison control center for further information.

**Inhalation:** Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Administer supplemental oxygen with assisted ventilation as required.

**Ingestion:** If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.

**5. Fire Fighting Measures**

**Flammability Classification:**

Class II

**Flash Pt:**

>= 101.00 F Method Used: Setaf flash Closed Cup (Rapid Setaf flash)

**Explosive Limits:**

LEL: ~ 0.5 % UEL: ~ 6 %

**Autoignition Pt:**

446.00 F

**MATERIAL SAFETY DATA SHEET**  
**Paint Thinner**

Page: 3  
Printed: 12/31/2008  
Revision: 11/13/2008  
Supersedes Revision: 09/25/2008

**Fire Fighting Instructions**

Self-contained respiratory protection should be provided for fire fighters fighting fires in buildings or confined areas. Storage containers exposed to fire should be kept cool with water spray to prevent pressure build-up. Stay away from heads of containers that have been exposed to intense heat or flame.

**Flammable Properties and Hazards**

Combustible Liquid.

**Hazardous Combustion Products**

Carbon dioxide, carbon monoxide, smoke, fumes, and/or unburned hydrocarbons.

**Extinguishing Media**

Use carbon dioxide, dry powder, or foam.

**Unsuitable Extinguishing Media**

No data available.

## 6. Accidental Release Measures

**Steps To Be Taken In Case Material Is Released Or Spilled**

Clean up:

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind, out of low areas, and ventilate closed spaces before entering. Shut off ignition sources; keep flares, smoking or flames out of hazard area.

Small spills:

Take up with sand, earth or other noncombustible absorbent material and place in a plastic container where applicable.

Large spills:

Dike far ahead of spill for later disposal.

Waste Disposal:

Dispose in accordance with applicable local, state and federal regulations.

## 7. Handling and Storage

**Precautions To Be Taken in Handling**

Read carefully all cautions and directions on product label before use. Since empty container retains residue, follow all label warnings even after container is empty. Dispose of empty container according to all regulations. Do not reuse this container.

A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters, and when it is agitated. A static spark discharge can ignite accumulated vapors particularly during dry weather conditions. Always use proper bonding and grounding procedures.

**Precautions To Be Taken in Storing**

Keep container tightly closed when not in use. Store in a cool, dry place. Do not store near flames or at elevated temperatures.

## MSDS for emulsion paint

### 3. HAZARDS INFORMATION

- |                   |  |
|-------------------|--|
| i) Ingestion:     | May cause gastrointestinal irritation, nausea, vomiting and diarrhea |
| ii) Skin Contact: | May cause moderate skin irritation and reddening.                    |
| iii) Eye Contact: | Slightly irritating to the eyes.                                     |
| iv) Inhalation:   | May irritate nose, throat and lungs.                                 |

### 4. FIRST-AID MEASURES

- |                               |   |
|-------------------------------|---|
| i) In case of ingestion:      | Do not induce vomiting. Give milk or water to drink. Get medical attention immediately.                 |
| ii) In case of skin contact:  | Remove contaminated clothing. Wash affected areas thoroughly with soap and water.                       |
| iii) In case of eyes contact: | Immediately flush eyes with a large amount of water for at least 15 minutes and seek medical attention. |
| iv) In case of inhalation:    | Move subject to fresh air. If breathing is difficult, give oxygen.                                      |

### 5. FIRE FIGHTING MEASURES

- |                                     |   |
|-------------------------------------|---|
| i) Suitable extinguishing media:    | Water, foam, CO <sub>2</sub> , dry chemical and water fog |
| ii) Unsuitable extinguishing media: | Unknown.  |
| iii) Hazardous decomposition:       | Thermal decomposition may yield acrylic monomers.         |

### 6. ACCIDENTAL RELEASE MEASURES

Contain spills with inert material (e.g. sand and earth) and transfer to suitable containers for disposal. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.

### 7. HANDLING AND STORAGE

- |              |   |
|--------------|---|
| i) Handling: | Use in well-ventilated areas. Keep away from excessive heat and open flames. Keep out of reach of children.                         |
| ii) Storage: | Avoid temperature extremes during storage, ambient temperature preferred. Store in well-ventilated area and out of direct sunlight. |

### 8. EXPOSURE CONTROL / PERSONAL PROTECTION

- |  |                             |
|--|-----------------------------|
| i) Ingredients with limited values to be controlled: | Not indicated.              |
| ii) Local exhaust:                                   | Recommended.                |
| iii) General ventilation:                            | Recommended.                |
| iv) Hand protection:                                 | Suitable protective gloves. |
| v) Eye protection:                                   | Safety/ protective glasses. |

### 9. PHYSICAL AND CHEMICAL PROPERTIES

- |                          |                    |
|--------------------------|--------------------|
| i) Form:                 | Liquid             |
| ii) Specific gravity:    | 1.40 - 1.50 g/ml   |
| iii) Colour:             | White              |
| iv) Viscosity:           | Above 110 KU       |
| v) Odour:                | Mild acrylic odour |
| vi) Solubility in water: | Soluble            |
| vii) Boiling point:      | N/A                |
| viii) Flash point:       | N/A                |
| ix) pH                   | 7.5 - 8.5          |

Note: - Above information is not used for preparing specification of the material.

ရန်ကုန်တိုင်းဒေသကြီး  
မြောက်ပိုင်းခရိုင်၊ လှည်းကူးမြို့နယ်  
အခြေစိုက်ပညာအထက်တန်းကျောင်း ဆားတလင်း



**ဂုဏ်ပြုမှတ်တမ်းလွှာ**

၂၀၁၉ - ၂၀၂၀ ပညာသင်နှစ်တွင်၊ ဆားတလင်းကျေးရွာ၊ အခြေစိုက်ပညာ  
အထက်တန်းကျောင်းသို့ တန်ဖိုးငွေ ၁,၈၆၀,၀၀၀ Ks တန်ဖိုးရှိ Canon Copier 1 Unit  
လှူဒါန်းပေးပါသော AUNG GABAR MOTOR SERVICES Co.,Ltd အား  
ဂုဏ်ပြုမှတ်တမ်းလွှာဖြင့် မှတ်တမ်းတင်ဂုဏ်ပြုအပ်ပါသည်။

*(Signature)*  
ဒေါ်လှမြတ်စု  
ကျောင်းအုပ်ကြီး  
အ.ထ.က ဆားတလင်း

ရက်စွဲ၊ ၂၀၁၉ခုနှစ်၊ စက်တင်ဘာလ(၂၀)ရက်။



ရန်ကုန်တိုင်းဒေသကြီး  
မြောက်ပိုင်းခရိုင်၊ လှည်းကူးမြို့နယ်  
အခြေခံပညာအထက်တန်းကျောင်း၊ ဆားတလင်း

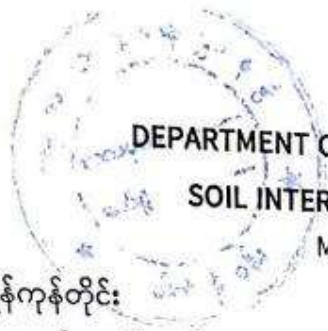


### ဂုဏ်ပြုမှတ်တမ်းလွှာ

၂၀၁၉ - ၂၀၂၀ ပညာသင်နှစ်တွင်၊ ဆားတလင်းကျေးရွာအခြေခံ  
ပညာအထက်တန်းကျောင်းသို့ Water Cooler - 1 unit ဖလာစာအုပ် (၃၀ ဒါဇင်)၊  
အာလူးကြော် (၁၀၀ ထုပ်) (တန်ဘိုးဇွေ ၂၃၅,၀၀၀ကျပ်) လှူဒါန်းပေးပါသော  
ရဲမှူးကြီးနိုင်ဝင်း (ငြိမ်း)ဒေါ်ဖြူလင်းမြင့် (ဒါရိုက်တာ AUNG GABAR MOTOR  
SERVICES Co.,Ltd သား မောင်ညွှန်လင်းနိုင် မိသားစုအား ဤဂုဏ်ပြုမှတ်တမ်း  
လွှာဖြင့် မှတ်တမ်းတင်ဂုဏ်ပြုအပ်ပါသည်။

  
ဒေါ်လှမြတ်စု  
ကျောင်းအုပ်ကြီး  
အ.ထ.က ဆားတလင်း

ရက်စွဲ၊ ၂၀၁၉ခုနှစ်၊ စက်တင်ဘာလ(၂၀)ရက်။



DEPARTMENT OF AGRICULTURE ( LAND USE )

SOIL INTERPRETATION OF RESULTS

MESC (30.12.2021)

Division - ရန်ကုန်တိုင်း

Sheet No. 1

Township - လှည်းကူးမြို့နယ်

Sr No. S 1 /2022

Sr No.	Sample	pH Soil:Water 1:2.5	Texture	Total N	Available Nutrients
					P
1	Project Site	Moderately Acid	Loamy Sand	Low	Low

( ဒေါက်တာသန္တာညီ )  
 ဒုတိယညွှန်ကြားရေးမှူး  
 ဓာတ်ခွဲခန်းတာဝန်ခံ  
 မြေအသုံးချရေးဌာနခွဲ





DEPARTMENT OF AGRICULTURE ( LAND USE )

SOIL ANALYTICAL DATA SHEET

MESC (30.12.2021)

Division - ရန်ကုန်တိုင်း

Sheet No. 1

Township - လှည်းကူးမြို့နယ်

Sr No. S 1 /2022

Sr No.	Sample	Moisture %	pH Soil:Water 1:2.5	Texture				Total N %	Available Nutrients
				Sand %	Silt %	Clay %	Total %		P (ppm) (B)
1	Project Site	0.36	5.83	86.94	0.68	12.38	100	0.11	0.20

B = Bray & Kurtz Method

*Handwritten signature*  
 ( ဒေါက်တာသန္တာညီ )  
 ဒုတိယညွှန်ကြားရေးမှူး  
 ဓာတ်ခွဲခန်းတာဝန်ခံ  
 မြေအသုံးချရေးဌာနခွဲ

**W1221 728**

**WATER QUALITY TEST RESULTS FORM**

Client MESC Co., Ltd.  
 Nature of Water Lake Water  
 Location Hlegu Township (Project Site)  
 Date and Time of collection 30.12.2021  
 Date and Time of arrival at Laboratory 30.12.2021  
 Date and Time of commencing examination 31.12.2021  
 Date and Time of completing 2.1.2022

**Results of Water Analysis**

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

pH	7.3		6.5 - 8.5
Colour (True)		TCU	15 TCU
Turbidity	38	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	20	mg/l as CaCO <sub>3</sub>	500 mg/l as CaCO <sub>3</sub>
Calcium Hardness		mg/l as CaCO <sub>3</sub>	
Magnesium Hardness		mg/l as CaCO <sub>3</sub>	
Total Alkalinity	34	mg/l as CaCO <sub>3</sub>	
Phenolphthalein Alkalinity		mg/l as CaCO <sub>3</sub>	
Carbonate (CaCO <sub>3</sub> )		mg/l as CaCO <sub>3</sub>	
Bicarbonate (HCO <sub>3</sub> )		mg/l as CaCO <sub>3</sub>	
Iron	2.70	mg/l	0.3 mg/l
Chloride (as CL)	14	mg/l	250 mg/l
Sodium Chloride (as NaCL)		mg/l	
Sulphate (as SO <sub>4</sub> )	10	mg/l	500 mg/l
Total Solids	112	mg/l	1500 mg/l
Total Suspended Solids		mg/l	
Total Dissolved Solids		mg/l	1000 mg/l
Manganese		mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity	0.1	ppt	

Remark: This certificate is issued only for the receipt of the test sample.

**Tested by**

Signature: Zaw Hein Oo

Name: B.Sc (Chemistry)

Sr.Chemist

**Approved by**

Signature: Thinzar Theint Theint

Name: B.E (Civil)

Assistant Technical Officer  
ISO Tech Laboratory

(a division of WEG Co.,Ltd.) ISO Tech Laboratory

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.

Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

W1221 728

**WATER QUALITY TEST RESULTS FORM**

Client MESC Co.,Ltd.  
 Nature of Water Lake Water  
 Location Hlegu Township (Project Site)  
 Date and Time of collection 30.12.2021  
 Date and Time of arrival at Laboratory 30.12.2021  
 Date and Time of commencing examination 31.12.2021  
 Date and Time of completing 2.1.2022


**Results of Water Analysis**

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

Temperature (°C)	°C	
Fluoride (F)	mg/l	1.5 mg/l
Lead (as Pb)	mg/l	0.01 mg/l
Arsenic (As)	mg/l	0.01 mg/l
Nitrate (N.NO <sub>3</sub> )	0.7 mg/l	50 mg/l
Chlorine (Residual)	mg/l	
Ammonia Nitrogen (NH <sub>3</sub> )	mg/l	
Ammonium Nitrogen (NH <sub>4</sub> )	mg/l	
Dissolved Oxygen (DO)	mg/l	
Chemical Oxygen Demand (COD)	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	mg/l	
Cyanide (CN)	mg/l	0.07 mg/l
Zinc (Zn)	mg/l	3 mg/l
Copper (Cu)	mg/l	2 mg/l
Silica (SiO <sub>2</sub> )	mg/l	

Remark: This certificate is issued only for the receipt of the test sample.


**Tested by**

Signature: 

Name:

Zaw Hein Oo  
 B.Sc (Chemistry)  
 Sr.Chemist  
 ISO Tech Laboratory

**Approved by**

Signature: 

Name:

Thinzar Theint Theint  
 B.E (Civil)  
 Assistant Technical Officer  
 ISO Tech Laboratory







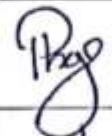

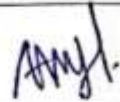

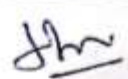
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No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.  
 Ph: 01-640955, 09-880100172, 09-880100173, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

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ကျေးရွာအမည် ဆားလင်းကျေးရွာ

နေ့စွဲ 11.11.2022

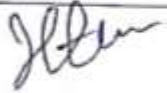











စဉ်	အမည်	လက်မှတ်	မှတ်ချက်
၁	သက်ရှိငှက်ငှက်	သက်	အုပ်ချုပ်ရေးမှူး
၂	ဦးအုန်း		
၃	ကျော်စွာဝင်း		
၄	သန်းသန်းဆွေး		
၅	အောင်လင်းစွန်း		
၆	တင့်ဆွေဦး		
၇	အောင်ကိုမင်း		
၈	ဖွဲ့ငြိမ်းမာစား		
၉	ဒိတ်		
၁၀	အေးအေးမာ		
၁၁	အေးအေးမာ		
၁၂	မပအောင်		



Aung Kabar Motor Services CO., LTD မှ လုပ်ဆောင်သည့် မော်တော်ယာဉ် တပ်ဆင်၊ ထုတ်လုပ်၊ ဖြန့်ဖြူးရောင်းချခြင်း လုပ်ငန်းအတွက် EIA အစီရင်ခံစာရေးသားခြင်းဆိုင်ရာ လူထုတွေ့ဆုံဆွေးနွေးပွဲ အစည်းအဝေး တက်ရောက်သူများစာရင်း

ကျေးရွာအမည် စားသောက်ဆေးကုရေး

နေ့စွဲ 11.1.2022

စဉ်	အမည်	လက်မှတ်	မှတ်ချက်
၁၃	ဦးဦးလှိုင်ဦးထွေး		
၁၄	ဦးဝေလွင်		
၁၅	ဦးအောင်ဝင်း		
၁၆	ဦးအိုဦး		
၁၇	စာအိမ်ကယ်ထူး		
၁၈	ဦးတင်နိုင်အောင်		
၁၉	ဦးတိုးမင်းထွန်း		
၂၀	စာအိမ်ဦးလွင်		
၂၁	ဦးစန်းမြင့်နိုင်		
၂၂	ဦးလှိုင်ဝင်းထွန်း		
၂၃	ဦးကျော်မင်းထွန်း		
၂၄	ဦးအောင်နိုင်စင်		

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ကျေးရွာအမည် အားသာလင်းကျေးရွာ

နေ့စွဲ 11.1.2022

စဉ်	အမည်	လက်မှတ်	မှတ်ချက်
၂၅	ဒုဝေအောင်		
၂၆	ဦးလင်းမင်းဝင်း		
၂၇	ဦးမြေသက်အောင်		
၂၈	တင်လှိုင်		
၂၉	ဒွိစောမောင်		
၃၀	ဦးစိုစိုခင်		
၃၁	ဒေါ်ကျည်ဆွေ		



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