

**Environmental Impact Assessment for the
Limestone Mining in Paung Ni Kyauk
Taung Area, Tanintharyi Township,
Myeik District,
Tanintharyi Region, Myanmar**

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
FINAL REPORT**



**24 HOUR MINING AND
INDUSTRY CO., LTD**

November, 2023

Table of Contents

CHAPTER 1:	3
EXECUTIVE SUMMARY	3
CHAPTER 2:	2
INTRODUCTION	2
2.1 Project Context.....	3
2.2 Project Background.....	3
2.3 Project Investment.....	4
2.4 Type of Project and EMP/IEE/EIA Requirement	4
2.5 Project Proponent / Project Implementation Organization	5
2.6 Consultant Firm / EIA Team.....	5
2.6.1 Details of EIA Study Team	6
2.6.2 Declaration of EIA Experts	7
2.6.3 Statement of Commitment.....	7
CHAPTER 3:	8
OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWO.....	8
3.1 Government Institutional Framework	9
3.2 Overview of National Policy and Legal Framework	9
3.3 Corporate Environmental and Social Policies.....	9
3.4 Fundamental Laws and Regulations Related to Environmental and Social Considerations.....	10
3.4.1 Key Laws and Regulations for Environmental Impact Assessment in Myanmar	12
3.5 International Guidelines on Health and Safety	17
3.6 Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: Construction and Decommissioning, World Bank Group, 2007	18
3.7 International Conventions, Treaties and Agreements.....	18
3.8 National Guidelines and Standards	19
3.8.1 Air Quality	19
3.8.2 Air Emission Levels (for lime manufacturing).....	20
3.8.3 Effluent Levels	20
3.8.4 Noise and Vibration Level.....	22
3.9 Environment, Health and Safety (EHS) Policy Statement	22
3.10 Commitment to the National and International Legal Background	23
CHAPTER 4:	25
PROJECT DESCRIPTION.....	25
4.1 Project Location.....	26
4.2 Project components, mine life and mine boundary	27
4.3 Detail geological exploration and ore reserve estimation.....	28
4.4 Ore reserve estimation for Block 1, 2 and 3	30
4.5 Project facilities and layout of limestone quarry	33
4.6 Machines and machinery requirement.....	37
4.7 Project staffs and workers.....	37
4.8 Working days.....	38
4.9 Quarry Development and Mining Plan.....	39

4.10 Limestone mining method and process	39
4.11 Water use	42
4.12 Energy and fuel consumption	42
4.13 Explosive materials storage	43
4.14 Waste soil and waste dumping site	43
4.15 Access Road to the project site	46
4.16 Road construction for transport of materials	46
4.17 Project development and implementation schedule	46
4.18 Proposed Engineering Design	48
 CHAPTER 5:	 56
PROJECT ALTERNATIVES	56
5.1 Project Alternatives	57
5.2 Comparison and Selection of the Project Alternatives	57
 CHAPTER 6:	 60
DESCRIPTION OF NATURAL AND SOCIAL ENVIRONMENT	60
6.1 Identification of the study limits	61
6.2 Environmental baseline data and social condition for EIA study	62
6.3 Physical Components	63
6.3.1 General Geology in Tanintharyi Region	63
6.3.2 Geological description of the project area/ deposit (ore) geology	64
6.3.3 Topography and Drainage	65
6.3.4 Climate and Meteorology	66
6.3.5 Climate in Tanintharyi Region	67
6.3.6 Limestone mining under climate change	67
6.3.7 Natural hazards	68
6.3.8 Surface and Groundwater Quality	69
6.3.9 Air Quality	72
6.3.10 Noise and Vibration	79
6.3.10.1 Noise Level Analysis	79
6.3.10.2 Vibration	82
6.4 Biological Components	82
6.4. 1 Forest and vegetation cover	82
6.4.2 Wildlife resources	96
6.4.3 Occurrence of recorded animals in the study area	106
6.4.4 Conservation status of recorded animals in the study area	107
6.4.5 Summary of Biodiversity	108
6.5 Socio-economic Components	108
6.5.1 Description of Administrative Components	108
6.5.2 Taninthayi Township Profile	109
6.5.3 Demography of Project Area	110
6.5.4 Transportation	112
6.5.5 Health sector in Tanintharyi Township	112
6.5.6 Most common disease in Tanintharyi Township	113

6.5.7 Land use and agriculture.....	113
6.5.8 Cultural Components.....	114
6.5.9 Visual Components.....	114
6.5.10 Socioeconomic baseline survey for the villages in the proposed project	114
6.5.11 Summary and key findings of the socio-economic survey of the Project Area.....	124
 CHAPTER 7:	 127
IMPACT ASSESSMENT AND MITIGATION MEASURES	127
7.1 Method and Approach to Impact Assessment.....	128
7.1.1. Assessment of Potential Future Impacts (Identification and Evaluation of Possible Impacts in Proposed Limestone Mining)	129
7.2. Assessment of Impacts on Key Environmental Components	130
7.2.1 Results of Assessment of Impacts.....	137
7.3 Method and Approach to Designing Mitigation Measures	142
7.3.1. Design of Measures to Mitigation Future Impacts	142
7.3.2 Mine Site Environmental Good Practices	146
7.4 Community Health and Safety	146
7.5 Occupational Health and Safety.....	148
7.5.1 Occupational Health and Safety Monitoring.....	149
7.5.2 Environmental, Health and Safety Management System (EHS-MS).....	149
7.5.3 EHS-MS Team	150
7.5.4 HSE Capacity Building and Trainings	150
 CHAPTER 8:	 152
RISK ASSESSMENT	152
8.1 Natural Hazards and Disaster Risk in the Proposed Limestone Mines.....	153
8.2 Disaster Management Plan	153
8.3 Assessments of Hazards and Associated Risks in Limestone Mining Activities	154
8.4 Risk Analysis	155
8.5 Risk Management of the Proposed Limestone Mine	155
8.6 Natural Hazards and Disaster Risk	158
8.7 Mining Industrial Hazards	158
8.8 Erosion and Sedimentation	161
8.9 Soil Erosion and Sedimentation Protection Plan	162
 CHAPTER 9:	 163
CUMULATIVE IMPACT ASSESSMENT.....	163
9.1 Assessment of Cumulative Impacts.....	164
9.2 Identifying Cumulative Impacts	164
9.2.1 Identifying resources that have potential for cumulative impacts	164
9.3 Existing and future private and public projects and developments	164
 CHAPTER 10:	 166
COMMUNITY ENGAGEMENT AND COMMUNITY DEVELOPMENT.....	166
10.1 Community Engagement.....	167

10.1.1 Results of Consultation and Activities.....	168
10.1.2 Community Engagement Plan	181
10.2 Community Development	181
10.2.1 Community Development Plan.....	182
CHAPTER 11:	183
MINE CLOSURE PLAN.....	183
11. 1 Activities for Rehabilitation and Mine Closure Stage	184
11.2 Mine Reclamation and Closure Plan (MRCP)	184
11.3 Reclamation Strategies.....	185
11.4 Financial Guarantee	186
CHAPTER 12:	188
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN.....	188
12.1 Institutional Arrangements for Implementation of the ESMP	189
12.1.1 Environmental and Social Management Systems (ESMS).....	189
12.1.2 Roles and Responsibilities for ESMS	190
12.1.3 Staffing and Reporting Requirement	191
12.2 Summary of Environmental and Social Impacts.....	192
12.3. Mitigation Measures	192
12.4 Measures to Mitigate Future Impacts.....	194
12.5 Emergency Response Plans	197
12.6 Environmental Quality Standards for the Proposed Limestone Mine.....	198
12.7 Environmental Monitoring Requirements	199
12.8 Cost estimate for EMP and EMoP	200
12.9 Capacity Development and Trainings.....	200
12.10 Grievance Redress Mechanism (GRM)	202
12.11 Corporate Social Responsibility (CSR)	203
CHAPTER 13:	204
CONCLUSION.....	204

List of Figures

Figure 4-1 Locations of Limestone Quarry Sites in Tanintharyi Township	26
Figure 4-2 Limestone Quarry sites and transport road from Project office at Khae Chaung village (Ma Noe Yone Village Tract), Bokpyin Township	27
Figure 4. 3 Map showing location of surface samples.....	29
Figure 4. 4 Detailed Topographic and Drill Hole Plan Map of Block-3A.....	30
Figure 4. 5 Design Cross section lines and Pit Boundary of Block-3A.....	31
Figure 4. 6 Cross section and Longitudinal section of Block-3A.....	32
Figure 4. 7 Site Map for Crusher site and Crushed rock stock pile.	33
Figure 4. 8 Site Layout Plan of Project Facilities in Quarry Site.....	34
Figure 4. 9 Site Map for accommodation for Project staffs and workers	35
Figure 4. 10 Site Layout Plan for accommodation for Project staffs and workers	36
Figure 4. 11 Flow diagram for Limestone mining process	39
Figure 4. 12 Detailed flow diagram for Limestone mining process	40
Figure 4. 13 Drilling Pattern for 10 M Bench Height.....	40
Figure 4. 14 Layout plan map of Quarry area, Prevention ditch line, Sedimentation Ponds and	44
Figure 4. 15 Layout plan map of Quarry area, Prevention ditch line, Sedimentation Ponds,	45
Figure 4. 16 Process Flow Diagram of 1300 Tph Crushing and Screening Plant.....	52
Figure 4. 17 Isometric View Process Flow Diagram of 1300 Tph Crushing and Screening Plant.....	52
Figure 6. 1 EIA Study Area	61
Figure 6. 2 Geology of Tanintharyi Township, (Source: Geology, University of Yangon)	64
Figure 6. 3 Relief and Drainage of Tanintharyi Township; (Source: SRTM (DEM)).....	64
Figure 6. 4 Geological map of Paung-Ni Kyauk Taung Area.....	65
Figure 6. 5 The Great Tanintharyi River and its drainage (Source: Greattenasserimrivermap.png) ...	65
Figure 6. 6 Location map of water quality survey	70
Figure 6. 7 Map showing all air sampling points (A1, A2 and A3) in the project site	74
Figure 6. 8 Map of ambient air monitoring (A 1) near the project site.....	75
Figure 6. 9 Map of ambient air monitoring at Point 2 Khae Chaung Office	76
Figure 6. 10 Ambient air monitoring Near Nga Wun Stream.....	77
Figure 6. 11 Map for the noise monitoring Point 1.....	81
Figure 6. 12 Map for the noise monitoring Point 2.....	81
Figure 6. 13 Map for the noise monitoring Point 3.....	82
Figure 6. 14 Land cover classification for Myanmar Tanintharyi Region.....	84
Figure 6. 15 Important Value Index (IVI) of top ten species in the study area.....	85
Figure 6. 16 Species distribution by frequency classes ≥ 10 cm	90
Figure 6. 17 Relative basal area by species in the study area	91
Figure 6. 18 Occurrence of recorded animals in the stud area.....	107
Fig. 6.19 Tanintharyi Region in Myanmar Agriculture Atlas: 2002.....	109
Fig. 6.20 Tanintharyi Township in Tanintharyi Region; Source: Based on UTM toposheets (1: 50000)	109
Figure 6. 21 Types of occupation status of households	118
Figure 6. 22 Educational level of households	120
Figure 12. 1 Structure of EHS Management System	190

List of Tables

Table 2.1 Project Investment	4
Table 2.2 Screening Results of IEE/EIA Requirement	4
Table 2.3 Executive and administrative body of 24-Hour Mining and Industry Co., Ltd	5
Table 2.4: Executive and administrative body of GGG Co., Ltd.....	6
Table 2.5: Key member list of EIA Team of the project	6
Table 3.1 IEE/EIA Project List for Mining Project	14
Table 3.2 International Agreements and Treaties	18
Table 3.3 Ambient Air Quality Standards of Myanmar.....	19
Table 3.4 Air Emission Levels (for lime manufacturing).....	20
Table 3.5 Effluent Levels for Construction Materials Extraction	20
Table 3.6: Effluent Limit Values for Exploration and Mining Sites.....	21
Table 3.7 Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges	21
Table 3.8 Tentative Target Noise Level during Operation Phase	22
Table 4.1 Facts and Data for proposed Limestone Quarry Project	27
Table 4.2 Machines list and respective costs fr the proposed limestone project.....	37
Table 4.3 Staff and employees and their respective montly salaries.....	38
Table 4.4 Blast Geometry.....	41
Table 4.5 Project's mplementation Schedule	47
Table 4.6 Information included in the Proposed Engineering Design.....	48
Table 4.7 Office and Camp Buildings	54
Table 5.1 Comparison of mining methods considered for the proposed project	58
Table 6.1 Baseline data collection and approaches for the surrounding environment.....	61
Table 6.2 Data collection of environmental baseline data and social condition for EIA study	62
Table 6.3 Sampling and survey points of surface water quality analysis	70
Table 6.4 Results of water quality analysis.....	71
Table 6.5 Air sampling locations for baseline survey in Paung Ni Kyauk Taung Area of proposed project	74
Table 6.6 Ambient Air Quality Results from the sampling Points in the proposed project area	78
Table 6.7 Results of baseline noise sampling in project areas	80
Table 6.8 Ranking of Important Value Index (IVI) in the study area	86
Table 6.9 Species distribution by frequency classes $\geq 10\text{cm}$	90
Table 6.10 Consolidated detail of species inventory in the study area	91
Table 6.11 Ranking of relative basal area by species in the study area	92
Table 6.12 Tree species under IUCN red list.....	96
Table 6.13 List of recorded butterfly species in the study are	98
Table 6.14 List of recorded aquatic species in the study area.....	99
Table 6.15 List of recorded reptile species in the study area	101
Table 6.16 List of recorded amphibian species in the study area	101
Table 6.17 List of recorded bird species in the study area.....	103
Table 6.18 List of recorded mammal species in the study area	105
Table 6.19 Occurrence of recorded animals in the study area	106
Table 6.20 Conservation status of recorded animals in the study area	107
Table 6.21 Demography of Tanintharyi Township.....	109
Table 6.22 Ethnicity of Tanintharyi Township	110
Table 6.23 Basic information of Village Tracts in surrounding areas of project site	111
Table 6.24 Population by Village Tracts and study villages.....	112

Table 6.25 Ethnicity and Religion by Village Tract	112
Table 6.26 Health facilities in Tanintharyi Township	113
Table 6.27 Most common disease in Tanintharyi Township in 2019	113
Table 6.28 Land use in Tanintharyi Township, Tanintharyi Region	114
Table 6.30 Gender respondents.....	116
Table 6.31 Age groups of family Members.....	117
Table 6.32 Types of occupational status.....	117
Table 6.33 Housing condition of Respondents.....	118
Table 6.34 Type of Farmland ownership	119
Table 6.35 Income distribution of Respondents	120
Table 6.36 Educational Status of Households	120
Table 6.37 Education and health status of the study area	121
Table 6.38 Energy consumption of respondents.....	122
Table 6.39 Water sources in sample villages of project area	122
Table 7.1 "Responsibility" in the EIA Process	128
Table 7.2 Mining cycle / project scope for limestone mining operation project	129
Table 7.3 Conceptual model of sources, pathways, mitigation, and receptors for a mining operation	130
Table 7.4 Summary table of evaluation of impact assessment caused by the proposed project	132
Table 7.5 Training Programs for Occupational Health and Safety	151
Table 8.1 Assessments of hazards and associated risks in proposed limestone mining activities	154
Table 8.2 Risk Assessment Process in Proposed Limestone Mining.....	156
Table 8.3 Risk Mitigation Measures for Proposed Limestone Mining.....	157
Table 8.4 Potential hazards identified for the proposed limestone project and control measures.....	159
Table 10.1 Lists of Participant on PCM at Grand Jade Hotel, Myeik on 5 th September, 2023.....	175
Table 10.2 List of Participants of On-line PCM organized at Ye Hpyu village (Thein Khun Village Tract, Tanintharyi Township	176
Table 10.3 List of Participants of On-line PCM organized at Chaung Nauk Pyan village (Thein Khun Village Tract, Tanintharyi Township)	177
Table 10.4 List of Participants of On-line PCM organized at Khae Chaung, Byokepyin Township	178
Table 11.1 Plantation Plan for mine closure and rehabiliataion	186
Table 11.2 Tentative costs for Mine closure and Reclamation Plan	187
Table 12.1 Implementation Team for ESMP	189
Table 12.2 Mitigation measures for the potential negative impacts of proposed limestone project for all stages.....	192
Table 12.3 Management Plan to mitigate for future impacts.....	195
Table 12.4 Indicative Environmental Quality Monitoring Programs	199
Table 12.5 Estimated Environmental Management Plan and Monitoring Cost per year.....	200
Table 12.6 Tentative ESMP-related Training Program	201

List of Attachments and Annexes

- Attachment 1.2 Mining Enterprise -). The grant 24-Hour
Attachment 2.1 EIA team members responsible for the overall project was presented in.
Attachment 3.1 24-Hour – Rules and regulations of business licenses obtained
Attachment 4.1 Detailed map reference of each concession described in the Mine Production Permit (MONREC)
Attachment 6.1. Monthly rainy days in Tanintharyi Township
Attachment 6.2 Water sample results from ISOTECH laboratories
Attachment 6.3. Air quality sampling methodology (by the EQM)
Attachment 6.4 List of recorded plant species along the tracking in the study area
Annex 10.1. The attendants’ signatures of Myeik PCM
Annex 10.2 list of participants and their comments forms of Village PCM

CD On-line Video -presentation by the EIA Team members

Powerpoint Presentation of EIA Team at Myeik PCM and Village PCM

ACRONYMS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CSO	Central Statistical Organization
CSR	Corporate Social Responsibility
COVID-19	Coronavirus Disease in 2019
CSC	Construction Supervision Consultant
DOM	Department of Mines
DOA	Department of Agriculture
DMH	Department of Meteorology and Hydrology
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Plan
ESMS	Environmental and Social Management System
FD	Forest Department
FDI	Foreign Direct Investment
GAD	General Administrative Department
GDP	Gross Domestic Product
GGG	Green Growth Generation Co., Ltd.
GoM	Government of Myanmar
GRM	Grievance Redress Mechanism:
IEE	Initial Environmental Examination
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution (INDC)
M-C	Mine Closure
M-D	Mine Development
ME-3	Mining Enterprise No. 3
MIC	Myanmar Investment Commission
MONREC	Ministry of Natural Resources and Environmental Conservation
M-O	Mine operation
NDC	Nationally Determined Contribution (NDC)
NEQG	National Environmental Quality (Emission) Guidelines
OSH	Occupational and Safety and Health
PAP	Project Affected Persons
PCM	Public Consultation Meeting
PD	Public Disclosure

PPE	Personal Protective Equipment
RHC	Rural Health Center
SDG	Sustainable Development Goals
SME	Small and Medium Enterprise
SOE	State-owned Enterprises
UNFCCC	United Nations Framework Convention on Climate Change
UTM	Universal Transverse Mercator
VER	Valued Environmental Receptor
24-Hour	24-Hour Mining and Industry Co., Ltd.

CHAPTER 1
EXECUTIVE SUMMARY

1.1 Introduction

Myanmar is endowed with world-class mineral resources including copper, gold, lead, zinc, silver, tin and nickel. Although minerals have long been exploited in Myanmar, the sector is characterized by limited access to technical capacity, human resources and financial investment. The significance of extractive sector is not much appreciable to the Myanmar economy. According to the Central Statistical Organization (CSO), the Gross Domestic Product (GDP) contribution from the extractive sector for 2017-2018 amounted to approximately MMK 4,324,810 million or 4.78% of the Country's GDP. It can be a huge potential sector to uplift the Myanmar economy provided the constraints are properly addressed. The State-Owned No. 3 Mining Enterprise (ME 3) is responsible for the production and supply of industrial raw minerals such as bauxite, bentonite, gypsum, limestone, dolomite, clay, manganese and coals.

1.2 Project Context

The 24-Hour Mining and Industry Company Limited (24-Hour) has identified the good quality limestone resources in the *Paung Ni Kyauk Taung* Region, Thein-Khunn Village Tract, Tanintharyi Township, Myeik District, Tanintharyi Region in the South East of Myanmar. The 24 Hour was awarded a grant (No.0008/ 2013) from the Department of Mines (DOM), under the Ministry of Mine (presently MONREC) on 1st October 2013. The grant included three mining concessions, totaling 2,880 acres (11.6552 km²) and the grant and figures of all concessions were described in Attachment 1. The Project mining areas are located at approximately 115 km SW of Myeik and 70 km SW of Tanintharyi. Regarding the Environmental Impact Assessment (EIA) of the proposed project, the Scoping Report was approved in Sept., 2022 by the Environmental Consultation Department (MONREC). As a second step of the EIA study, the 24-Hour has contracted with the consultant firm, Green Growth Generation Co., Ltd (GGG) to prepare the final (draft) EIA report.

i) Project Proponent / Project Implementation Organization

24 Hour Mining and Industry Co., Ltd.

Address : No.88, Pyi Road, 6.5 Mile, Hlaing Township,
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Tel : +95- 9 424224245 / 9 457155789

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Address : No. 116, Yeikthar (3) Street, Waizayanta Garden Housing, Michaungkan
(1), Thingankyun Township, Yangon

Project Manager : U Khin Zaw Hein, Project Manager

Address : Limestone Project Office, Khe Chaung Village, Mandaing Sub-Township,
Bokpyin Township, Tanintharyi Region

ii) Consultant Firm / EIA Team

The details of the key members of EIA Team working for the EIA study for the 24-Hour limestone production were explained in Chapter 2 of this EIA Report.

Contact person: Dr. Khin Lay Swe (Director)

Company Name: Green Growth Generation Co., Ltd.

Company Address: No.129, Corner of 19 – 87 Street, Zatila Quarter, Aungmyaytharzan Township, Mandalay

1.3 Overview of the Policy, Legal and Institutional Framework

The leading department responsible for environmental and social considerations is the Environmental Conservation Department (ECD) under the Ministry of Natural Resources and Environmental Conservation (MONREC). Concerning with mining sector, the MONREC also includes the Department of Mines, Department of Geological Survey and Mineral Exploration, No.1, No. 2 and No.3 Mining Enterprises. Department of Mines is responsible for administration of mineral policy and planning mineral legislation, mine inspection and safety, mineral conservation and environmental conservation.

The several new laws and regulations related to the environmental and social considerations and health issues have been enacted in Myanmar over the last decade. The overview of policy, legal and institutional frameworks cover, but not limited to, the “Government Institutional Framework, Corporate Environmental and Social Policies”, International Guidelines on Environmental Health and Safety, International Conventions, Treaties and Agreements and etc. The Project Proponent has to be committed to strictly follow the existing policy and legal instruments directly and indirectly related with the proposed project. The following are the brief items and all were described in detail in Chapter 3 of EIA Report.

1. The Environmental Conservation Law (2012),
2. The Environmental Conservation Rule (2014),
3. EIA Procedures (2015),
4. National Environmental Quality (Emission) Guidelines (2015),
5. Environmental Impact Assessment Guidelines for the Mining Sector, Mining Exploration, 2018,
6. Myanmar Mining Law 2015,
7. Myanmar Mining Rules 2018,
8. Myanmar Investment Law (2016),
9. Myanmar Investment Rule (2018),
10. Ethnic Rights Protection Law (2015),
11. The Prevention of Hazard from Chemicals and Related Substances Law (2013),
12. The Labor Organization Law (2011); The Labor Organization Rule (2012),
13. The Labor Dispute Settlement Law (2019),
14. The Employment and Skill Development Law (2013),
15. The Occupational Health and Safety Law (2019),
16. The Protection of Preservation of Cultural Heritage Region Law (2019),
17. Protection and Preservation of Antique Object Law (2015),
18. The Forest Law (2018),
19. The Conservation of Biodiversity and Protected Areas Law (2018).

In addition to the above mentioned national legal instruments, the MONREC has issued the environmental quality standards for quarry projects under Manufacture of Construction Materials and Cement and Lime Manufacturing of National Environmental Quality (Emission) Guidelines (NEQG) (2015). As the environmental quality standards, NEQG has set the ambient air quality, noise and vibration level, and surface water quality and groundwater quality. It also issued the standards of “Air Emission Levels (for lime manufacturing)” and “Effluent Levels for Construction Materials Extraction”. The detailed limit values National Guidelines and Standards were presented in Chapter 3.

Moreover, the project is required to adhere to international Environmental and Health and Safety (EHS) standards which are generally considered in the EIA, such as IFC/World Bank Group, 2007: General Guidelines and EHS Guidelines, Industry Sector Guidelines, Infrastructure (Water and Sanitation). Moreover, the project proponent will follow the relevant international environmental conventions and agreements, since Myanmar is a party to several international environmental conventions, treaties and agreements on the principles and actions necessary for sustainable development and environmental protection.

1.4 Project Description

1.4.1 Project location

The 24 Hour was granted a license to mine the concessions of 2,880 acres (11.6552 km²) in Tanintharyi Township, Tanintharyi Region in South East of Myanmar. The general coordinates of the field areas are N.1278000, E.0526000 of the U.T.M map sheet No. 1199-02 & 06. The mining concessions include Block – 1 for 2200 acres; Block – 2 for 200 acres; and Block – 3 for 480 acres. The UTM map of these locations of three quarry sites was shown in Fig. 1.4.1. The detailed UTM maps of each concession will be described in the EIA Report. The quarry sites lie in the *Nga Wun Chaung* valley, the eastern side of the upstream of *Nga Wun Chaung*, also known as the Little Tanintharyi River. The transport road to the quarry sites is 27 km away from Khe Chaung village (Manoe Yone Village Tract). The location of three concessions and the transport road to project office at Khe Chaung village were described in the Fig. 1.4.2. The Project mining areas are located at approximately 115 km from Myeik and 70 km from Tanintharyi.



Fig. 1.4.1 Locations of Limestone Quarry Sites in Tanintharyi Township

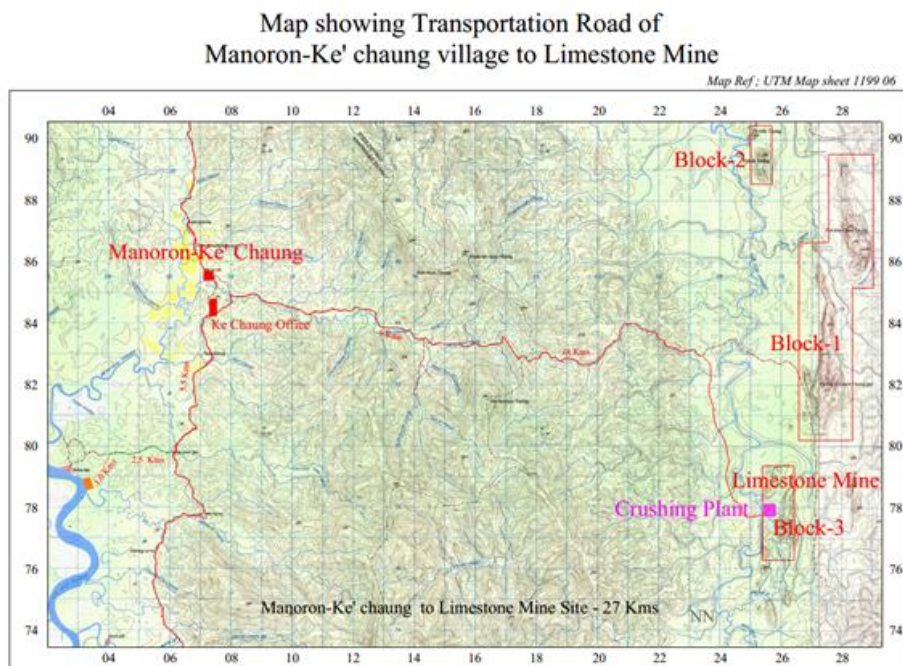


Fig. 1.4.2 Limestone quarry sites and transport road to project office at Khae Chaung village (Manoe Yone Village Tract, Bokpyin Township)

1.4.2 Project investment, production and schedule

The main objectives of limestone mining project are to become a country with self-sufficient limestone as industrial raw materials, and to contribute to poverty reduction through rural industrial development in the project area.

Total initial investment for capital is estimated as USD 5.8 Million which includes the machinery investment (4.99 million USD), mobilization cost for crusher (0.11 million) and initial project development (0.7 million).

The drawing of mine design, inviting tenders, procurement of machinery and vehicles will be completed in April, 2024. The mine development for the limestone production will begin in October, 2025 and test run for blasting and crushing will start in November, 2025. The commercial limestone production is expected to start in December, 2025. The production capacity was estimated to be 2,250,000 metric tons per year of limestone crushed rock. The estimated total limestone production of during 30 years will be about 73.5 million tons.

1.4.3 Project components, mine life and mine boundary

In *Nga Wun Chaung* valley, the isolated limestone hills are orderly and widespread trending approximately from south to north. The 24 Hour will start mining from the Block – 3 (A). According to the mining design of *Nga Wun Chuang* limestone extraction, the “Open Cut mining system” will be applied. The project facts and data were shown in the following *Table 1.4.1*.

Table. 1.4.1 Facts and Data for Limestone Quarry Project

Construction Phase duration	2 years
Operation Phase	Over 50 years
Land lease duration	10 years and extendable
Production capacity	2,250,000 metric tons per year
Products	Limestone crushed rock (CaCO ₃)
Size	0 - 5 mm, 5 - 50 mm
Monthly fuel requirement	Diesel 70,000 gallons
Monthly electricity consumption (for Year 1 and Year 2 - only)	1,958,400 units (Electricity will be generated from own generators)
Ground water	Ground water will not be used in limestone mining. The water from the <i>Nga Wun Chaung</i> /Stream will be applied for domestic uses and dust suppression, and washing machines, vehicles and etc.
Daily water consumption (maximum)	2000 gal/day; 630,000 gal/year
Staffs/ employees	Manpower – 173 employees (monthly salaries range from Ks.122,640,000 (1226.4 Lakh MMK per month) The annual total salary amount is estimated 1,471,680,000 Kyat/ Year.
Number of Staffs (full strength)	There will be 173 staff within Year 1 to over 30 years, Local workers (depending on their skills) will be given priority when employing the staff for quarry production. In addition, the locals will be hired on piece work -contract basis from time to time
Working hours	8 Hours x 2 shifts /day; 6 days in a week

1.4.4 Project facilities and layout of limestone quarry

There will be two crusher plants with the crushing capacity of 1300 tons/ hour and constructed near the quarry site. The limestone production will be 10,321 tons per day. The land for the crusher plants and limestone temporary storage site will be allocated and cleared. The overall mining plot area will be 212 acres and 10 acres for crushers and storage for limestone of 50,000 tons, making the total area of 222 acres in the quarry site. The layout plan of crushing and screening plant (1300 tons/hour) and other buildings in the quarry site includes crushers, limestone piling area/ “Limestone Storage Yard”, “workshop”, “Car Parking site” and etc. (*Fig. 1.4.3*).

The buildings of staff quarters and administration will be constructed in 24 Hour project office compound, about 2 acres of land, in 24-Hr. office compound in Khae Chung village, Ma Noe Yone Village Tract, Bokpyin Township, situated on the Tanintharyi-Kawthaung Highway. The layout plan for housing accommodation for Project staffs and workers in Khae Chaung branch office was presented in Fig. 1.4.4. There are eight (8) types of the project buildings, including a Project Office, Meeting room, Store, Dining room, Officer's House, Staff's House, Barrack and Car parking. The total units are 19 numbers and no chemicals are used in this area.

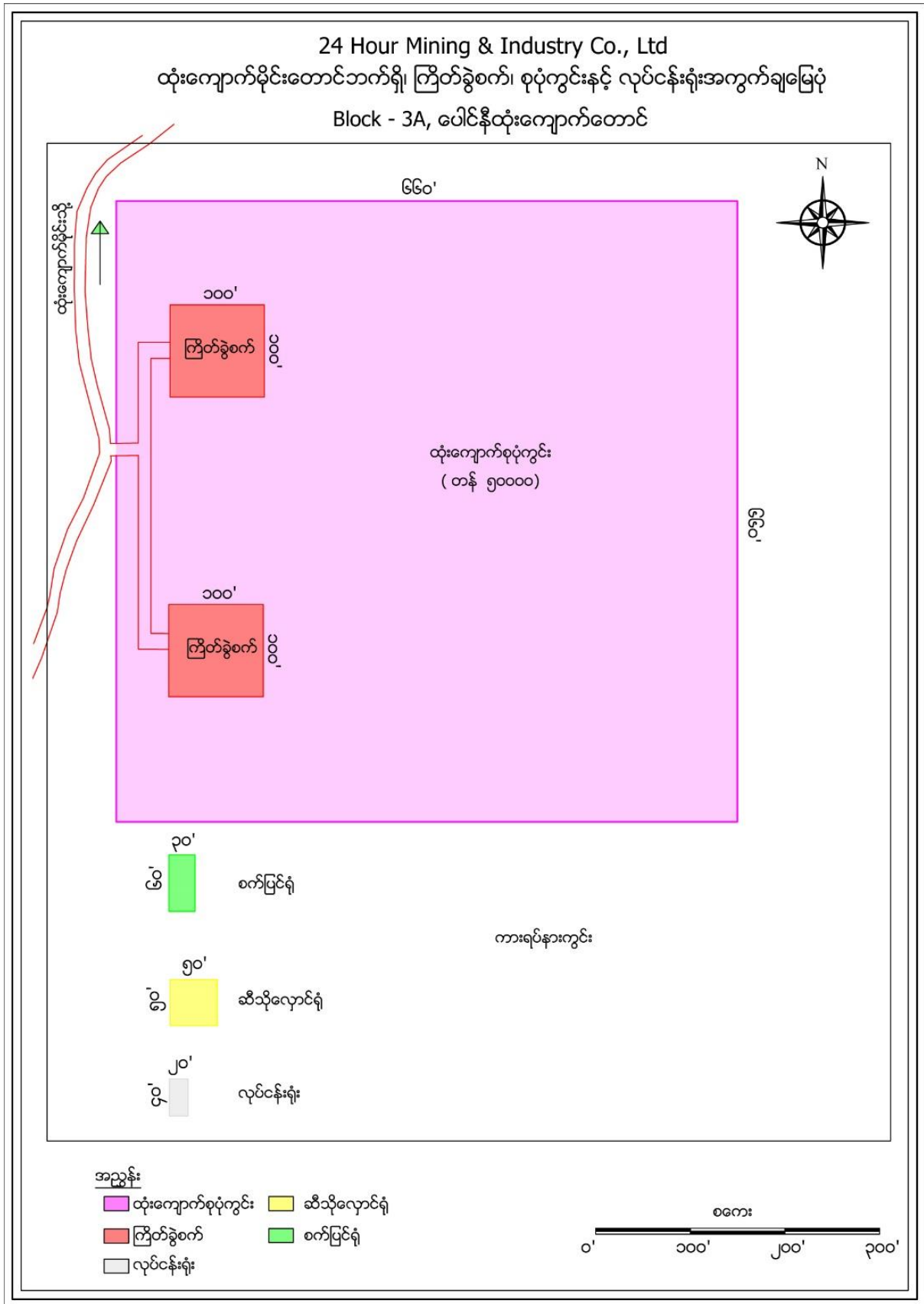


Fig. 1.4.3: Site Layout Plan of Project Facilities at Quarry Site

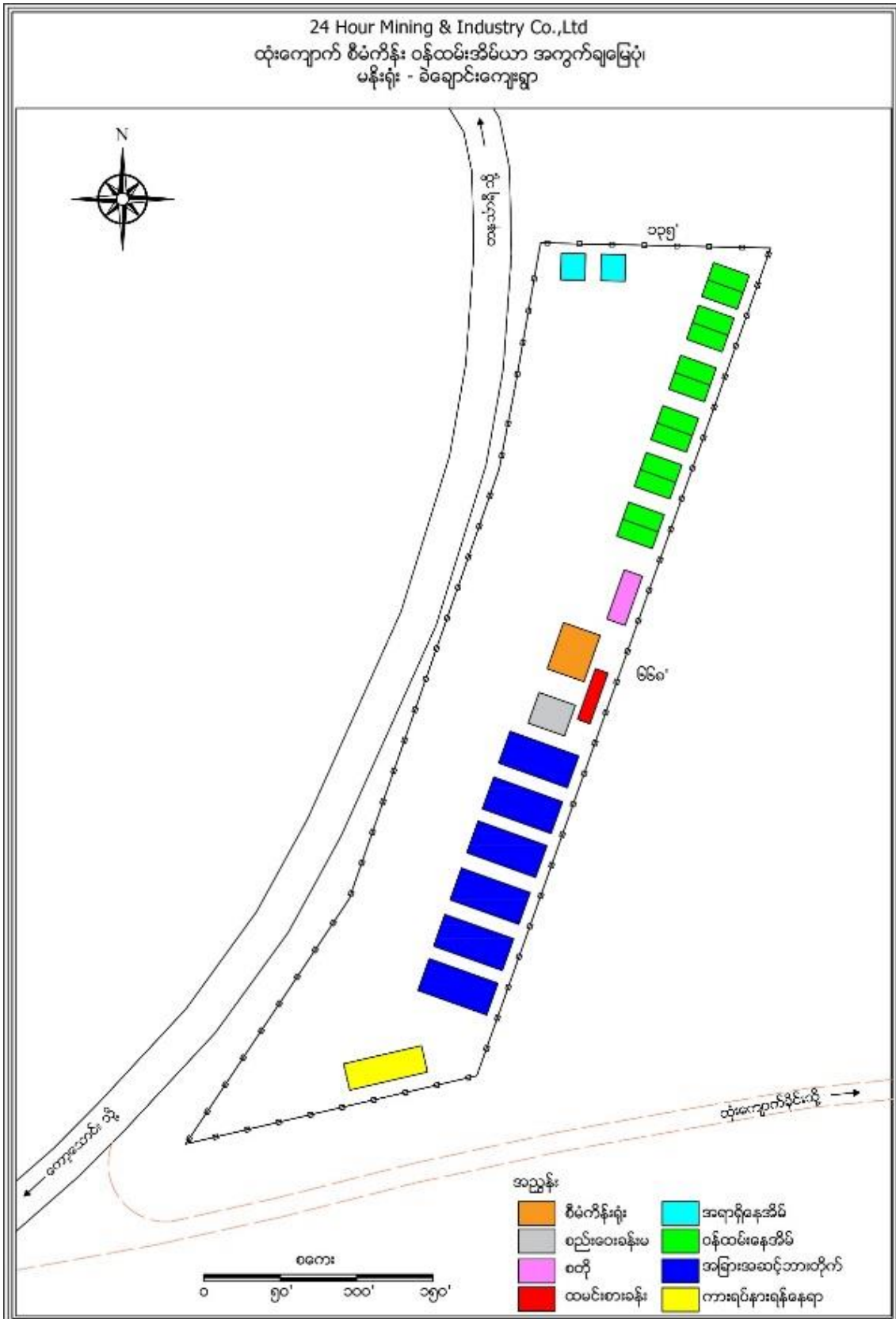


Fig. 1.4.4 Site Layout Plan for accommodation for Project staffs and workers

1.4.5 Machines and machinery requirement

The various machines, machinery and vehicles are required for the operation processes such as “Quarry development”, “Drilling and blasting”, “Loading at working face of quarry and unloading to crusher plant”, “Crushing” and “Piling up at stock pile”. To accomplish these operation processes, about 18 items of machines and vehicles are estimated to be employed. It includes Hydraulic Excavator 5 units, Dump Truck (20 Tons) 25 units, Hydraulic Crawler Drill 3 units, Hydraulic Breaker, Bulldozer and so on.

The estimated total costs of these items are USD 4.99 Million. For the limestone quarrying and crushing process, the lists of all machinery necessary for the limestone mining and their respective costs was described in detail Chapter 4: *Table 1.4.2* in the EIA Report.

1.4.6 Project staffs and workers

The full-strength number of employees in the project site is estimated to be 173 in total. There are 7 staff officers (Level-1) for administration and other levels of 166 persons. The mining and crushing operations will be employed with 123 workers while the Project Management Section will be recruited with 50 staffs.

The project employees include Project manager, Mining engineer, Assistant Mining engineer, Quarry supervisor, Crusher engineer, Operators of crusher, excavator and bulldozer, Drivers, Mechanics and etc. Monthly salary amount was estimated as USD 58,400 and the annual salary amount was USD 700,800 (1,471,680,000 Kyat/Year). The total staff and workers are 173 numbers with the monthly salary ranging from USD 300 to 1500. The detailed members of staff and employees and their respective monthly salaries were presented in Table 4.3 in Chapter 4 of EIA Report.

In general, there are 218 working days in a year. To meet the target of the limestone production of 2,250,000 tons per year, it needs to produce 10,321 ton per day for 218 days per year. The service life of the mine (Block-3A only) is about 30 years. The workers will work an eight-hour two shifts in a day. There will be 218 working days in a year and 6 working days in a week. The limestone production capacity is calculated as follows.

- Daily Production: 10,321 Metric tons
- Monthly Production: 105,000 ~ 260,000 Metric tons
- Annual Production: 2,250,000 Metric tons

1.4.7 Quarry development and mining plan

According to the limestone mine occurrence status and the mining area topography condition, the method of limestone extraction is open cut mining (quarrying), using the top-down level of stratification. The target production plans for three stages are estimated as follows for three phases.

Stages	Duration (years)	Above from the sea level	Production amount (ton)
1 st Stage	1 – 10 years	Up to 156 meters	24 million
2 nd Stage	11– 20 years	Up to 102 meters	25 million
3 rd Stage	21 – 30 years	Up to 40-48 meters	24.5 million

The estimated total limestone production of three stages during 30 years will be about 73.5 million tons.

1.4.8 Limestone mining method and process

For the “Open Cut Mine system”, the sequence of the operation includes the following steps.

- (a) Opening up the deposit,
- (b) Overburden/Waste rock Removing,
- (c) Limestone Extraction – (1) Primary Drilling and Blasting, and (2) Secondary Breaking,
- (d) Loading,
- (e) Transportation,
- (f) Crushing and
- (g) Storage of Limestone.

The flow diagram for Limestone mining process was described in the following *Fig. 1.4.5* and the detailed drilling patterns was shown in *Fig. 1.4.6*.

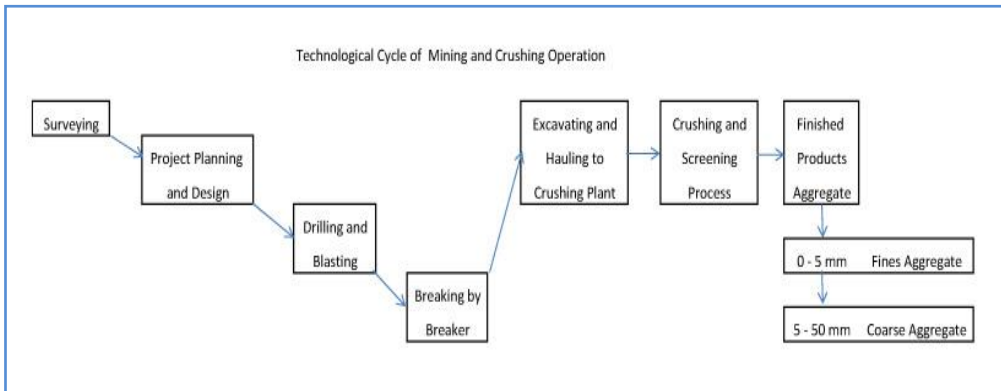


Fig. 1.4.5 Flow diagram for Limestone mining process

(a) Drilling and Blasting

There will be one time of blasting frequency in 5 day (a week) and the blasting period will be fixed to be 11:00 am to 12:00. It was noted that the blasting activities will not be carried out in special religious days. Total blasting will be 44 times in a year. Blast geometry was shown in *Table 1.4.4* of Chapter 4. Mining Engineer will use control blasting method. Most of the small particles and dust are get down in this place. But some can be blown 100 meters away.

High noise levels are inherent to blasting operations (100-120 dB (A) near the source). Machinery and equipment generally employed for mining activity generate noise levels typically of about 90 to 95 dB (A) (measured at 1-2 meters from source). The process of raw material crushing also generates high levels of noise (95 - 100 dB(A)).

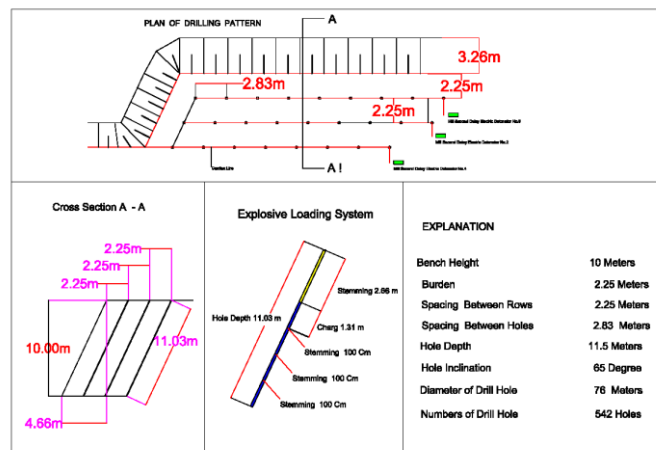


Fig. 1.4.6 Drilling Pattern for 10 M Bench Height

(b) Crushing

For the crushing system, 2 units of Crushing and Screening Plants capable of 1300 ton per hour production capacity will be set up near quarry base (about 2000 m away from the quarry site). The truck transportation system will be applied, and 25 units of 20 Ton-Dump Trucks will be accommodated. During the operation time, the truck number will be increased to meet the production requirement, and it will also depend on the vehicle's functioning condition. It is planned to operate the crushers in two shifts, and six days a week. Major sources of pollution from the crusher area include dust and noise. After crushing, the limestone will be transported to the storage area through a conveyor belt system of about 200-meter length.

The design of the pattern for the quarry development was shown as follows:

- Production work: 2.25 million ton/year
- Drill hole diameter: 76 mm; Hole depth: 11.03 m (Bench height = 10 m)
- Burden distance: 2.85 m; Spacing: 3.03 m; Stemming: 2.65 m
- Blast hole: Approx. 11000 holes/year; Design blasting: Approx. 250 holes (1.69 ton/blast)
- Use of Explosive per Round (5 Minor Blocks): 0.48 kg. of ANFO per ton
- Use of Explosive per Round (5 Minor Blocks): 0.16 kg. of Emulsion per ton
- Specific Charge (Blasting Ratio) for Major Blasting: 0.37 Kg per Bank Cubic Meter.

(C) Limestone Quarry (Operation Phase)

The blasted limestones are transported by trucks from quarry to crusher. There are 3 Excavators, 2 Breakers, 2 Bulldozers in the limestone quarry. The crushed limestones are transported by 100m length conveyor belt from crushing plant to Limestone stock pile. There are 2 Wheel Loaders with a capacity of 3m³, in the crushing plant site and stock pile. There are 25 Dump trucks for limestone transportation from quarry to crusher. By calculating, 8 -hour two shifts will be done at crusher site in a day.

1.4.9 Water use and fuel consumption

Ground water will not be used in limestone mining. The water sourced from the *Nga Wun Chaung* /Stream will be applied for domestic uses and for dust suppression, and washing machines and vehicles only. The daily water consumption (maximum) will be 2000 gal/day which means 630,000 gal/year. During the operation of limestone quarry, industrial water will be supplied from *Nga Wun Chaung* / stream situated at about 500 meters away from the limestone Quarry. Three concrete water tanks (each with 1000 gal. capacity) will be constructed and filled with water pumped from *Nga Wun Chaung*.

Fuel consumption for limestone production is 0.33 gal per one ton of limestone crushed rock (Aggregate). There are five 5 fuel tanks, each with the storage capacity of 6,400 gallons of diesel. Monthly diesel requirement is estimated to be 70,000 gallons to meet the fuel consumption of electricity and for the vehicles. The national grid power sources are not available so power will be from on-site generators will be sufficient for the project site. Electricity will be generated by own generators and the monthly electricity consumption (for Year 1 and 2 only) will be 1,958,400 units.

1.4.10 Waste soil and dumping site

The 24-Hour will begin the limestone production from the Block-3A. Based on the "Mineable Ore Reserve" and "waste soil", the Block-3A will produce 73.5 million tons over 30 years in total. After demarcation of the "Quarry Boundary", the "Waste Dumping Site" and "Limestone Storage Yard" were fixed.

The limestone mining process and methods used in this project will produce no discharge of chemical waste and industrial effluents to the environment. The waste

water, if any, will be treated and kept in a sedimentation pond before release. The location map of two sedimentation ponds (75m x145m) and collection ditches for erosion prevention were described in Fig.1.4.7 The crusher and stock pile area were also shown in this *Fig. 1.4.7*.

1.4.11 Access roads

The main access road from the foot hill to the uphill quarry will be 2.8 miles with 30 ft. wide graveled road. It will be used for transport of blasted limestone to the Crusher site, it was also described in Fig.1.4.7. Crusher plants and crushed rock will be placed at the foot hill of 200-meter square flat space. For the blasted rock transportation, the limestones are carried to the Crusher by using Backhoe excavators and 20-ton Dump Trucks. Some boulders which are bigger than the size of 600 mm x 800 mm will be crushed with a Hydraulic breaker. For the rock processing, two crushing and screening plants will be installed at the crusher site.

Moreover, the transport road from the quarry site to the project office (Khe Chaung village) as described in Fig.1.2 was renovated of former timber transport road, paved with gravels, 11-meter wide and it is accessible in all seasons. The San Thit Aung Co., Ltd. was contracted to upgrade the old road for transport of materials, fuel and staff and laborer from project office to Mine site.

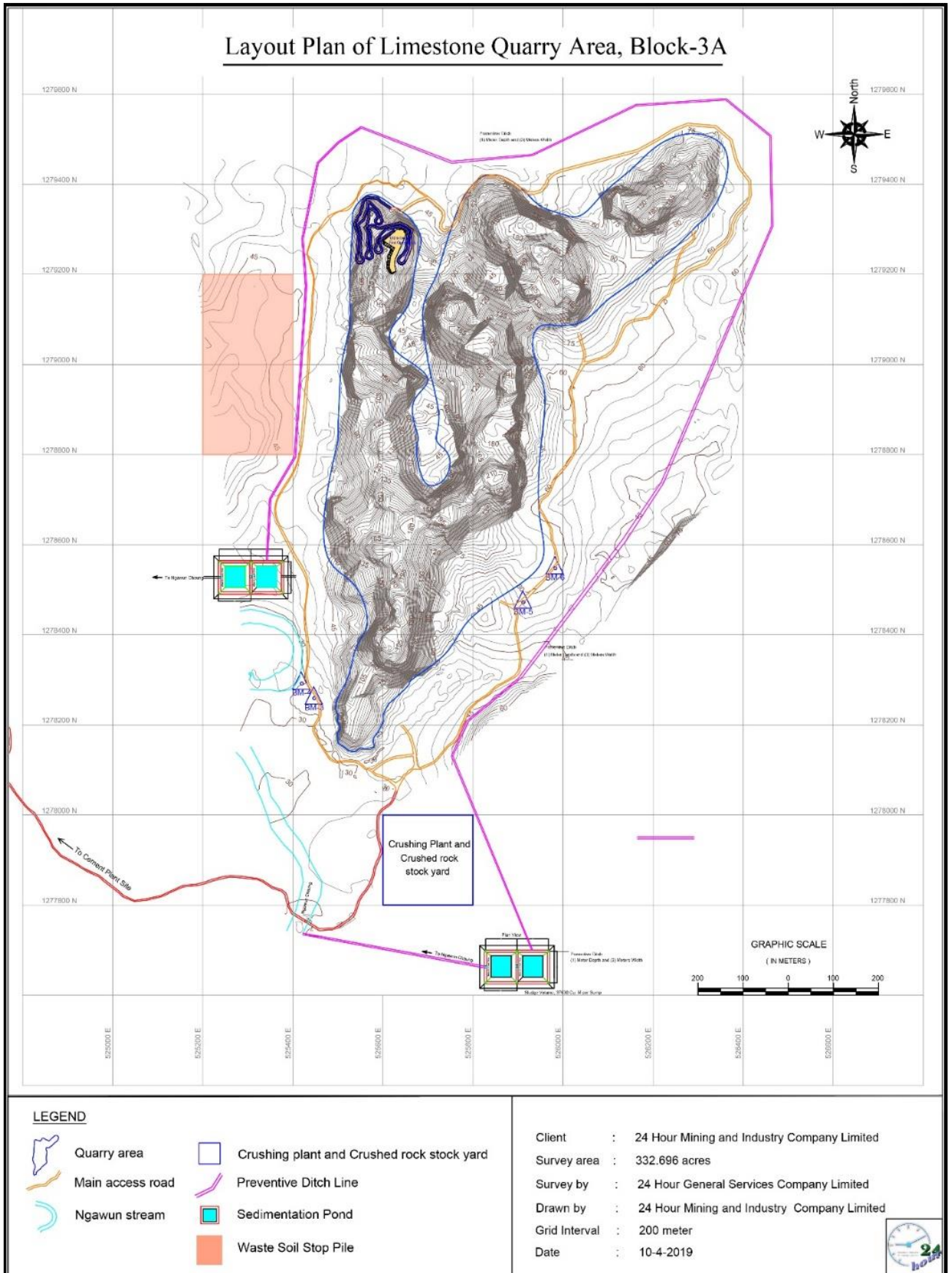


Fig. 1.4.7 Layout plan map of Quarry area, Prevention ditch line, Sedimentation Ponds, Crusher & stock pile site and Access Road of Limestone Mining Area.

1.4.12 Project’s implementation schedule

The permission for construction of explosive storage building in the compound of No.558 Infantry Regiment in Kama Line village was approved in 2022. The construction was under process and the submission of application of applying explosives and procurement will be conducted in 2024. The construction of a gravel road of 27 kms to the entrance of the quarry site (upgrading the old one) was completed in 2018 and 2019. The bridges and culverts construction will be completed during 2024 and some are under proceeding. The procurement of machinery and vehicles will be completed in April, 2024. The Crushers will be installed in the quarry site in 2025. The mine development for the limestone production will begin in October, 2025 and test run for blasting and crushing will start in November, 2025. The commercial limestone production is expected to start in December, 2025. The detailed plan for estimated Project implementation schedule is presented in Chapter 4 of this EIA Report.

1.5 Project Alternatives

The alternative analysis consists of the process of comparing potential impacts and mitigation options of a series of alternative locations, technologies, operations to identify optimal alternatives that meet national legislation was one of the primary criteria of the selected limestone area for determining and there are no other better site alternatives. The limestone deposits are found close to the surface and spread across a large distance, the huge potential availability with good quality. Therefore, there is no other better location for the project. The best technology for this limestone project is to use the “open cut mining” method since it was observed that it is more relevant than “Open cast mining”, quarrying and auger mining, based on the geological setting of the existing limestone deposits. The detailed comparisons of mining methods considered for the proposed project were discussed in Chapter 5.

It should be considered what would happen in the future if there is “No- Project Alternative”. The proposed project has a huge potential to uplift the local economy by providing employment, and will create procurement goods and service opportunities. Potential negative impacts caused by the project can be managed to acceptable levels if the recommendations in the EMP are successfully implemented.-Therefore, “No- Project Alternative” was not considered.

1.6 Description of Natural and Social Environment

The following section briefly describes the surrounding environments such as physical environment, biological environment and socioeconomic profile that characterize the potential area in and around the proposed project area.

i) Physical component

Item	Description
Geology	Tanintharyi Township is geologically made up of older Paleozoic rocks, Miocene rocks and Quarternary. Moreover, the patches of Mesozic and Paleozoic igneous intrusive and younger volcanic are found sporadically. The geology of the <i>Nga Wun Chaung</i> field area and its surroundings are characterized by a series of metamorphic and sedimentary rocks well known locally as the Mergui series. These occur on both sides of the <i>Nga Wun Chaung</i> and its surroundings. There are limestone cave of various size occurring at the base of some limestone hills which overly quartzite of Mergui Series. It can be assumed that the limestone is Permian age and quartzite is Carboniferous Age. Some are NNE- SSW trending while 200 west dipping and some are NNE- SSW trending and 300 west dipping. Figure 5.4 shows the “Geological map of Paung-Ni Kyauk Taung Area”.

Item	Description
Topography	Topographically, Tanintharyi Township possesses high land in the eastern part and low land area in the western part. In the eastern mountainous area, highest parts are the Kyaoyai Taung (1345 m), the Chaung Din Taung (859m), the Chaung Nawng Hoi (505 m), and the Nyawun Chaung Taung (728 m). The elevation is generally between 700 metres and 1300 metres above sea level. The highest peak is Mt. Kyaoyai Taung (1345 metres).
Drainage	Major River is the Tanintharyi River / Great Tenasserim flowing from north to south and the Little Tanintharyi River, (locally known as <i>Nga Wun</i> Chaung) the largest tributary of Tanintharyi, flowing from south to north enters into Tanintharyi River. Main tributaries found in the area are Thagyet Chaung (six-order), and Thein Kun (41km, seven-order), Indaw Creek (fifth-order), Mu Chaung (fifth-order), Kali Chaung (fifth-order), and Ye -zein Chaung (fifth-order).
Meteorological Features	Altitude, alignment of mountain, wind, and nearness to the sea influence the climate of Tanintharyi Region. It is fairly cold in cool and quite hot in summer. Generally, in summer months from the middle of March till the end of May, temperature is high. The cool weather usually sets in November and lasts till the end of January. During the three cool months, the morning and evening are hot and the night cold.
Natural Hazards	Tanintharyi Township is often affected by seasonal floods. Due to the incessant rains in Tanintharyi Region made the water level high in the Tanintharyi River which reached at danger levels during July, 2018. Flood occurrence commonly happened in the Tanintharyi Region, like many other regions of Myanmar. It was noted that there were serious floods in 2015, 2018 and 2021 in Tanintharyi. Tanintharyi recorded 253 mm of rainfall on 19 July 2023 which surpassed 232 mm figure recorded in July 2021. Heavy rains and strong winds caused landslides and falling trees in Kawthaung, Dawei and Myeik Towns. The cyclones and earthquakes hardly hit the Tanintharyi Region.

ii) Physical Environmental Survey

Item	Description
Field measurement studies	Field measurement studies were conducted by the surveyors of Environment Quality Management (EQM) Laboratory, EIA Team and 24-Hour company members for the measurement of water, air and noise quality in the AOI of the proposed limestone project area during 21 – 24, December, 2021.
Water quality	Two sample points of surface water were collected from Ban Gwan Village and Nga Wun Chaung; one groundwater sample from a dug well of Khae Chaung Village. These samples were sent to the SGS (Mineral Services) Myanmar Limited for Phosphorus and grease and ISO TECH Laboratory for other quality test in Yangon. The results showed that all water samples have a good quality for drinking and domestic uses, in comparing with WHO Standards. The metals compositions were in the range of permissible level, except for Fe, which is higher than the WHO guidelines (0.3 mg/l). The highest value of Fe (0.65 mg/l) was found in water samples of <i>Nga Wun</i> Stream. The other parameters were found to be lower than WHO drinking water guidelines. The detailed data provided from the laboratories and discussion were shown Chapter 6, Section 6.3.8.
Air Quality & Meteorology	Three locations of air sampling points were - Near Project Site, Khae Chaung Office and Near Nga Wun River. Regarding average concentrations of ambient air parameters monitored all of the points, the existing baseline particulates level (PM10 and PM2.5) met the guidelines values of Myanmar NEQEG. In terms of gases level, all gases levels (one-hour average level of CO and NO ₂ and 8 hr. average of CO and O ₃ and 24 hr. average level of SO ₂) met the guidelines. The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were also presented. The results from EQM Lab and discussion were presented in Chapter 6, Section 6.3.9.

Noise Level Analysis	Three sampling points of noise level examinations were - Khe Chaung Project Office, Chaung Nauk Pyan School, and Point 3: Aye Thar Yar Monastery. The noise levels (LAeq) were recorded by using Decibel X:dB Sound Level Meter. Generally, the average noise levels (both day and night time) at all sampling points met the value with EQEG. However, in the day time, the noises were higher than the standard level, mainly captured from car, motor cycle and people activities, generally passing by. The noise levels of Pont 3: near the Monastery were the lowest among the three sampling points. More explanations were described in Chapter 6, Section 6.3.10.
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iii) Biological components

Item	Description
Flora	The most prevalent forest types are upland evergreen forest (42.3% of area) and lowland evergreen forest (21.6%). While just 27.1% of upland evergreen forest was classified as degraded, the 66.0% of mangrove forest and 47.5% of the region's biologically-rich lowland evergreen forest were classified as degraded. According to the field surveys, the species which fall in high frequency were <i>Dipterocarpus</i> , <i>Hydnocarpus</i> ., and <i>Xerospermum</i> Blume, considered as the most common species. The existing vegetation included food and fruit species, valuable timber species and important medicinal species, such as <i>Ficus</i> , <i>Cinnamomum spp.</i> , <i>Sterculia</i> were also found. The abundant forests species were predominantly pioneers with potential to provide medicinal products, timber or local construction materials to the local.
Fauna	The recorded animals include Butterfly, Aquatic species, Amphibia, Reptile, Bird and Mammal; all together 108 species under 61 Families and 31 Order as shown in the following. It includes 12 spp. of butterfly and 20 spp. of Aquatic species (Fish & Prawn). The spp. number of Reptile, Bird and Mammal were observed as 11, 35 and 20, respectively. Conservation status of recorded animals in the study area showed that the two bird species (Helmeted Hornbill, Gurney's Pitta) recorded in the study area were critically endangered (CR); and one bird species and five mammals were endangered species. It was also observed that one aquatic species, two bird and 8 mammals were vulnerable (VN). The total six species of animals were Near Threatened (NT) and total 5 species were found to be the Least Concern (LC) according to the IUCN.
Aquatic spp.	Overall, 20 aquatic species were recorded in the study area, including 19 fish species belonging to 17 genera under 12 families of eight orders and only one river prawn species of the order Decapoda. Of the 20 species, 17 aquatic species are classified as Least Concern (LC); two species are Near Threatened (NT); and one species is Vulnerable (VU) in the IUCN Red List

iv) Social component

Item	Description
Demography	The total population of Ma Noe Yone Village Tract and Chaung La Mu VT were similar, 4510 and 5063 people, respectively. Aye Thar Yar Village had the highest number of people (1165) followed by Ma Noe Yone Village (563) and Khae Chaung Village (534). It is observed that gender is almost equally distributed in all study villages.
Ethnicity and Religion	In sample survey village tracts, regarding the ethnicity of village people Bamar was highest number followed by Kayin people in both Village Tracts. In Ma Noe Yone VT, Buddhists are higher number of 2,562 people, followed by Christians (1,945). However, in Chaung La Mu VT, the religions of all residents (5063) were Buddhists.
Land Use	The land use in Tanintharyi Township shows that the total crop sown areas were 120,329 acres of which the paddy land (<i>Le Land</i>) were 32,098 acres while 434 acres of other crops are grown in <i>Ya Land</i> . Reserved Forest area was 8428 acres. There are a vast area of Virgin land/ Myay- yaing (1,170,124 acres) and Taw -yaing /unclassified forest (879,213 acres).

	The local people grow some orchard plantation, such as betel nuts and banana in <i>Taungya</i> lands.
Public Health	The most affected cases in Tanintharyi Township in 2015 and 2019 were Diarrhea, Dysentery and Malaria. It was observed that the Malaria cases declined in 2019 than in 2015 significantly. The reason was noted to be strenuous efforts of Malaria Campaign by the government and the NGOs. The activities included provision of long-lasting insecticide-treated mosquito nets and vital community-based health education and etc.
Cultural Heritage	There is no cultural or historic site or religious sites within the project study area and surrounding of the limestone quarry site. As the religious structures, there are one or two monasteries (temple) and pagodas or church in the study villages, all of them are more than 20 – 30 km away the limestone project site.
Economic profile	
The socio-economic surveys were conducted in five sample villages from 58 households. Chaung Lamu and Chaung Nauk Pyan villages of Chaung La Mu VT in Tanintharyi Township, which are situated about 20 miles away from the project quarry site. Taung Nge and Manoe Yone, Khe Chaung villages of Ma Noe Yone VT in Bokpyin Township which are located on the way of limestone transport road.	
Land ownership	Most villagers had small-scale plantations of betel nut and banana and only a few with rice farms (<i>Le</i>) and <i>Taungya</i> farming.
Income distribution of households	The survey results showed that the households of “Lower income group: < 3,000,000 MMK per year” are higher in number than the “Higher income group: > 6,000,000MMK” in all study villages.
Education	A Basic Education High School was located in Ma Noe Yone VT while Chaung La Mu VT had one Basic Education Middle School and four Basic Education Primary Schools.
Health	Tanintharyi Township has three public hospitals, two public clinics, and twenty-two local health centers. In the project villages, villagers had to go to the rural health center (RHC) at Khae Chaung village. There was no RHC in Chaung La Mu VT. People did not have any serious records of health issues and most respondents said the common disease was flu.
Electricity and water use	Since the national grid lines are not available, villagers use solar power and diesel engine generators. Majority of households use underground water and surface/ stream water for drinking and household use, which are easily available all year round.

1.7 Impact Assessment and Mitigation Measures

1.7.1 Impact assessments during the limestone production project

The activities conducted in three stages of limestone mining, namely Mine Development (M-D), Mine Operation (M-O) and Reclamation and Mine Closure (M-C) and the anticipated activities of respective stages were considered. Their impacts on three environmental components to be considered were – “Social environment, Natural environment and Environmental pollution”. Their possible impacts are identified and the extent of the impacts are also evaluated one after another for each project stage by applying the rating criteria against the above-mentioned environmental items. In this way, the magnitudes of environmental impacts were estimated and the significance of the impacts assessed for all stages of the proposed limestone project.

The results of the impact assessment showed that among the total 28 number of anticipated items, four (4) items of social environments, nine (7) items of the natural environment and six (6) items of the environmental pollution were found to have negative impact (B-): not significant but negative impact is expected. In addition, two items of natural environment (i.e., “Topography and Geology” and “Landscape and Aesthetic Values”) of the project quarry sites will have significant negative impact, unacceptable adverse impacts because there will be an irreversible impact on the ecosystem during the M-D and M-O stages.

The project will have positive impacts on “Social environment” – the item “Local economy such as employment and livelihood” since it will create employment, services and purchases of local community during all project stages.

1.7.2 Mitigation Measures

Mitigation measures are focused mainly during the M-O; however, it should also be incorporated during the M-D and M-C stages as part of the overall design for the proposed development. This will provide guidance to appropriate parties that would be assuming responsibility for maintaining and regulating the operations. Mitigation measures have been detailed for the following aspects of the Project. The following *Table 1.7.1* shows the effects and mitigation measures studied and mitigated to reduce or control the environmental impacts of the limestone mining industry during construction and operational stages.

Table.1.7.1 Summary of Key Environmental Impact and Mitigation Measures

	Subject	Implementation period	Mitigation Measures
1	Air quality	During mine construction/development, operation and mine closure phases	<ul style="list-style-type: none"> • Low speed for vehicles (max speed of 30 km/h) including in vicinity of villages. • Limestone grinding mill to control dust by using bag filters, • Watering of access roads to control dust • Ensure inspection and maintenance vehicles equipped with water spraying for frequent application. • Sprinkle with water as per necessary • Plan and manage for systematic and safe blasting; select best blasting design • Select only spot with limestone; careful observation of quarry/mining faces
2	Noise and vibration	M-D, M-O, M-C	<ul style="list-style-type: none"> • The noise level at a distance of 5 m during the operation of the device will be controlled, • Environmental noise monitoring will be carried out periodically at appropriate locations to comply with NEQG during operation. • Plan in the Pre-construction Phase for procurement of equipment, and vehicles that emit lower noise level, • Plan for noise management, to meet statutory requirement (rules, regulations), • Follow acceptable blasting practices e.g., those that resulted in more rock fragmentation and lower vibration (e.g., relatively shallow slanting drill holes method), • Select appropriate explosives, use emulsion type, • All drillings and blasting must be strictly supervised by competent demolition experts,
3	Water quality	M-D, M-O, M-C	<ul style="list-style-type: none"> • There is no effluent from the limestone mining activities. • Office wastes from kitchens and staffs will be treated with a sanitation system. • Engine oil and fuel will be stored in a safe place to protect against fire. • Oil spills cleared up and not allowed to enter water course, • Plan and manage to prevent the contamination of soil and eventually groundwater, • Maintain vehicles and machinery adequately to prevent spillages resulting in surface water contamination,
4	Solid wastes	M-D, M-O, M-C	<p>Waste</p> <ul style="list-style-type: none"> • Recycling waste (plastic, wood, metal, paper as much as possible, • Separate bins in offices and living areas for solid waste and garbage collection, • Disposal of non-recyclable waste to the site approved by the Township Development Committee.

	Subject	Implementation period	Mitigation Measures
			<p>Waste from limestone mines</p> <ul style="list-style-type: none"> • Direct application of topsoil from limestone mines for greening and rehabilitation, • Silica-rich limestone and dolomite limestone will first be extracted and ground separately for use in construction and road construction for limestone mines, • All waste materials (earth, rocks) resulting from construction work should be disposed of at a designated spot, • Solid waste and liquid waste from field camp should be also disposed of at designated spot,
5	Soil Management Plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • After production, the topsoil from the limestone mines will be spread over for planting. • During earth work the top soil should be separately stockpiled from other sub-surface soil or rocks • Top soil removed should be stored on higher ground outside the normal flood level; • Excavated top soil should be removed from all areas where physical disturbances (wind, water) of the surface occur • Top soil should not be used for maintaining access road or for building • Stockpiles of top soil should be grassed or allowed to naturally vegetate for stabilization and prevent erosion • Growing weeds on the land will reduce soil erosion. • Prevention of soil erosion and siltation to the nearby stream, particularly in rainy season, embankments should be made, if necessary.
6	Erosion and sedimentation	M-O, M-C	<ul style="list-style-type: none"> • Install collection ditches and sedimentation pond to collect the eroded soils/ rocks especially in rainy season
7	Traffic management plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • Providing appropriate traffic and road safety training to drivers, • Set and maintain speed limit codes.
8	Flora and Fauna / Biodiversity Management Plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • Rehabilitation of temporary affected areas with vegetation / shrubs / grasses depending on completion; • Environmental awareness training for workers to conserve local biodiversity, • No employees will be allowed to collect, hunt or fish for natural resources. • The trade of flora and fauna species will be prohibited.
9	Occupational Health and Safety Management Plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • Workers will be provided with personal protective equipment (PPE) in the event of a mechanical accident. • Ear plugs and other PPE to be worn by all workers. • In the event of an emergency, first aid kits, Access to medicines and ambulances, • Providing occupational health and safety training • Adherence to mine safety measures, • Keep explosives in maximum security depot/magazine, • Provide adequate training for blasting and the safety storage, handling and application of explosives, • Distribute quarry/mining operation manuals to worker,
10	Workplace fire prevention plan	M-D, M-O, M-C	<p>The following steps will be taken to reduce the risk of workplace fires:</p> <ul style="list-style-type: none"> • Systematic handling of flammable hazardous materials • Firefighting equipment and systems used to control fire hazards • Assign the person responsible for fire prevention and control equipment and systems

	Subject	Implementation period	Mitigation Measures
			<ul style="list-style-type: none"> • Conduct fire drills of workers to understand fire hazards and protection
10	Emergency Response Plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • Careful planning of emergency procedures, • Organize and provide first aid training and fire prevention and fighting training, • Educate and train workers for good working practice, good engineering practice, good safety practice and good housekeeping practice, • Prevent and avoid accidents and try to achieve zero accident at workplaces, • All workers will be provided with - Emergency Contact Information, Communication method, Emergency Response, First Aid Kits, etc.
11	Community Health and Safety Management Plan	M-D, M-O, M-C	<ul style="list-style-type: none"> • Fence off the blasting area to prevent local people and animals straying into the area • Establish defense and control management links for the following issues and provide the necessary funding. <ul style="list-style-type: none"> • Health Awareness and Education, • Epidemic Reporting, • Infectious diseases (including COVID -19 disease), Malaria etc.
12	Engagement of community and development	M-D, M-O, M-C	<p>Occasional discussions will be held to address these project issues to address local concerns. The following are the benefits for local development:</p> <ul style="list-style-type: none"> • Occupation; Education; Economic development • Health and Social Welfare; Infrastructure
13	Corporate Social Responsibility (CSR)	Period of operation	<ul style="list-style-type: none"> • In implementing CSR programs, 24-Hour will coordinate with the departments and link with township rural development projects. • It will be designed taking into account the issues on of local people
14	Mine closure plan	Operating period and mine closure period	<ul style="list-style-type: none"> • Rehabilitation of limestone mines • Planting fast-growing trees • Establish a budget for post-closure rehabilitation • Regular review of mine closure plans • Replant on exposed soils to strengthen against erosion.

1.8 Risk Assessment

The objectives of risk assessment are to –

- Reduce risk at source
- Take responsibility for managing their own safety outcomes
- Assess risk to safety and health of any persons who may be affected by their undertaking, and
- Identify hazards and risk of injuries/accidents

The Employer/ (24-Hr) shall do the following for the risk assessment of the proposed limestone project.

- Conduct risk assessment to OSH risk posed to any persons arising from their undertaking,
- Eliminate the risk where possible, or if not take measures to control the risk such as: substitution, engineering controls, administrative controls, including safe work procedures, and provision and use of suitable personal protective equipment.

The following are the summary of the most potential hazards identified for the proposed project based on the Tasks / Activities / Work places involved and control measures to be taken for each hazard for elimination or reduction of risk involved.

Table 1.8.1 Potential hazards identified for the proposed limestone project and control measures

Identified Hazards	Mechanism	Control	Action
1. Inundation	Catchment Area water during Rains	All around dump's drains are to be prepared to collect the rain water from the catchments of the dumps; In case of any siltation or damage, the drain may cause water entry into the quarry; Sufficient height bund shall be maintained all along the edge of the quarry to prevent inadvertent entry of water	De-siltation will be done every year before onset of monsoon and whenever required during monsoon; Sufficient height bund shall be maintained all along the edge of the quarry to prevent inadvertent entry of water
2. Slope Stability	Failure of Pit Slope when the depth is more and intercepted by number of faults	The overall pit slopes vary from 70° to 33°. This has been done to ensure safe pit slope for the prevalent strata conditions.	The movement of the slope shall be observed by installing monitoring station; Surveyor should ensure frequently.
3. Heavy Earth Moving Machinery (HEMM) movement	Failure of vehicle stability resulting toppling	Ensure placement and movement of HEMM only on the stable and level ground.	Not to allow any HEMM movement within a distance of 5 m from the edge; Provide stable and level ground at loading point for placement of HEMM of blasted / loose bench; Unloading of material shall be done over the stable dumps at a distance of minimum 3 m from the edge
		Run the HEMM with in permissible speed limits; Using good quality tires	Ensure by surprise checks whether the HEMM is being operated within the speed limits; Arrange speed locking over HEMM where ever it is possible; Replace worn out tires in time with good quality tires.
	Run over by vehicles / HEMM	Persons/ conveyance vehicles to maintain a safe distance on haul roads and 50 m at loading and unloading points from working HEMM; Prevent un-authorized drivers. Persons to maintain a safe distance from moving vehicles. Prevent boarding / alighting the moving vehicles.	To develop awareness among employees to maintain a minimum distance of 30 m on haul roads and 50 m at loading and un- loading points from moving and working HEMM; Insist all Operators / drivers to wear identity cards while they are on duty. To ensure no person shall be allowed to enter within a distance of 30m of moving vehicles; Develop awareness among the employees not to board / alight from moving vehicles/ HEMM
	Sliding of dumpers / tippers / dozers at dump edge	Restrict the deck height to 30 m only; No HEMM shall be allowed to work over the edge of any unconsolidated dump	To ensure that the height of each deck doesn't exceed 30 m under any circumstances; To deploy a spotter for guiding the tippers / dumpers at unloading point on elevated platform.
4. Drilling	While changing drill barrels / rods	Ensure proper holding of drill barrels, while loading / unloading (Attachment / Detaching) on the drill mast.	Drill operator should ensure.
5. Blasting	While	Transport the explosives and	Transportation of explosive should

	transportation	accessories in vehicle approved under explosive rules; Standard Operating Procedures (SOP) should be followed	be done under the supervision of competent person
	While blasting	Avoid blasting during cloudy days and when the wind is blowing towards structures; All loose debris will be cleared off from the blasting site; A free face will always be maintained; In multi row blasting, greater relief will be provided between rows using suitable delay intervals; Proper use of different type of relay / delay detonator for proper sequencing of the blast will be used.	Blasting in charge should ensure.
6. Electricity	Switching on power when persons are at Work; Dragging of cable by hoisted body of dumper, Transmission lines / cables cross the haul roads.	Shut down procedure shall be strictly implemented. Identification of cables and switches shall be displayed; Transmission lines /cables shall only be laid on 12-meter height towers, as per The Electricity Authority Regulations,	Supervisors having valid electrical supervisory certificate only shall be deployed on the jobs.
7. Fires	Spontaneous heating in the crushing and/or blasting areas, etc.	Sufficient water spraying arrangement will be provided by using water sprinklers / through pipe lines	Separate Fire Fighting crew shall be trained for fighting the fires.

1.9 Cumulative Impact Assessment

1.9.1 Identifying resources that have potential for cumulative impacts

Cumulative impacts result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones. Based on the site surveys, FGD, KII, and secondary documents from relevant organizations in the Tanintharyi Township, it was observed that there are no any other similar ongoing or previous projects such as mining development, timber harvest, near the project site and in its AOI. In addition, there are no projects like upstream timber harvest, upstream water sewage plant, a series of mining and hydropower projects on the same water body, they may affect water quality, in addition to the effects on water quality from the proposed project. It was also noted that, in near future, there were no upcoming projects in surrounding area, either. Therefore, cumulative impacts of the project and other existing economic activities or projects were not considered in the study area.

1.10 Community Engagement and Community Development

The successful community engagement and community development is a critically important requirement throughout the EIA process and the mine life cycle. Consultation is only one part of the necessary engagement between the communities and the project. Public Consultation Meeting (PCM) and Public Disclosure (PD) for EIA were conducted at two different stages (EIA scoping stage and draft EIA report stage) in order to collect opinions and feedback through the public engagement and disseminate information about the project and EIA study.

To give the information about the proposed project, four villages in Tanintharyi Township (Chaung Nauk Pyan, Chaung Lamu, Aye Thar Yar, and Ta Pa Lat) and three villages in Mandaing Sub- Township (Khe Chaung, Taung Nge, Ywa Thar Yar) were identified as the project affected persons (PAP) since they were located nearest to the proposed project site. The village heads, representatives, elders, women and youth were invited to the PCM at village level.

1.10.1 Summary of Consultation at Scoping Stage

PCM at Township level: Venue: General Administrative Office, Tanintharyi Township on 20th December 2021 – Attendees: Total 17 persons (10 Males and 7 Females)

PCM at Village level: Venue: Project Office of 24- Hour Mining and Industry Co., Ltd. at Khe Chaung Village, Manoe Yone Village Tract, Bokpyin Township on 23th December 2021; Attendees - Total 49 persons (31 Males and 18 Females) - from seven villages, namely Chaung Nauk Pyan, Chaung Lamu, Aye Thar yar, Ta Pa Lat, Khe Chaung, Taung Nge, and Ywa Thar Yar.

i) PCM at Township Level

The local authorities suggested the 24-Hour to undertake the mining operations in accordance with the rules and laws of ECD and Department of Mining. They also urged the EIA team to make efforts for a quality EIA report which will represent a reference of operation manual to the project proponent.

The ECD and FD officers gave additional explanation on the ESIA procedure and forest conservation activities, respectively. The participants shared the experiences of mining projects. The local authorities offered their assistance to the project, and they expected it would bring the all-round local and regional development to the Tanintharyi. The 24 -Hour representatives confirmed for local jobs and local purchase, using more local products than others for the project operation.

ii) PCM at Village level

The consultation and feedback showed that most villagers had no worries about negative environmental and social issues identified by all stakeholders. Since the nearest village from the project is Ma Noe Yone, about 20 miles from the Block - 3 quarry site, no impact of pollution will be considered. Their orchard plantation will also be impacted. It was suggested that care should be taken for the least negative impacts on plantation, as well as on the local peoples' health, and the comprehensive consultation may be needed to solve the problems.

The waste water discharge from the project was raised but the issue was settled by the project manager confirming that the nature of the limestone production will not produce waste water and the siltation to the nearby stream will also be mitigated by installation of sedimentation ponds / embankments before flowing down to the stream. The attendees requested more job opportunities and more CSR budget allocation. The representatives of 24 -Hour assured for the jobs and supports of as school, health clinics, and religious affairs as much as possible.

1.10.2 Summary of Consultation at EIA Stage

The second time of the PCM and PD were conducted during the preparations of draft EIA Report. The project information was announced through the relevant authorities, namely Myeik District and Tanintharyi Township GAD offices and Village Tract GAD officials and communities' leaders. The announcement letters were posted on the notice boards of these GAD offices and Village Tract GAD offices of Ye Phyu,

Chaung Nauk Pyan and Khe Chaung-Manoe Yone Villages. The posters of PCM announcement were also posted in these villages. Executive summary of EIA report in Myanmar language and “Comment forms” were provided at the disclosure places.

i) Myeik District Level PCM

The Myeik District meeting was organized at the Grand Jade Hotel in Myeik on 5 Sept., 2023. The staffs from various government organizations were 16 numbers in total, including 5 women and 11 males. The summary of findings from the event was as follows -

The local authorities were well aware of the project and expected the project’s positive impact will improve the livelihoods of the region, to a considerable extent. The GAD officer emphasized on the occupational health of workers, long-term affected by dust and noise pollution. The site engineers and responsible persons should urge the workers to strictly follow the mine safety rules, such as wearing PPE, taking care with explosives for blasting and etc. Myeik University participants pointed out that although the limestone production has fewer negative environmental impacts than the cement production, the project proponent should take commitments on mitigation measures as stated in the EMP. There will be long-term impacts on natural environment, flora, fauna and wildlife of the limestone ecosystem. Since the proposed project will last for about 30 - year production, the impacts on community health and safety issues and agricultural lands were also discussed. The recommendations from ECD and FD were to mitigate soil erosion and sedimentation problems at quarry site. The 24-Hour responded that they had already designed the construction of collection ditches around the quarry site and sedimentation pond to collect the sediments.

ii) Village Level PCM

Online PC meetings were organized at Ye Phyu Village and Chaung Nauk Pyan and Khae Chaung villages on 6, 7 and 8 Sept., 2023, respectively. The participants were 21, 20 and 18 people, respectively; a total of 59 persons (Male:37; Female 22). The participants came from ten villages, around the project area of Tanintharyi and Bokeyyin Townships, namely Ye Hpyu, Chaung La Mu, Ta pa Lat, Shan Inn Taw, Chaung Nauk Pyan, Aye Tha Yar, Khae Chaung, Ywar Thar Yar, Ma Noe Yone and Taung Nge villages.

They were gathered at the meeting points and U Khin Zaw Hein, Project Manager and U Kyaw Zin Latt, Project Engineer, facilitated the meetings. The video presentation about the project, EIA assessments, environmental and social impacts were explained by the EIA team members. The questions about the project description raised by the participants were answered by the project manager and engineer. Concerning the EIA processes and some environmental and social issues, the EIA team members who were standing by at the Grand Jade hotel gave quick responses to the audience through mobile phones and Viber calls.

Most participants asked for job opportunity and making contracts for supply of construction materials. Some villagers wanted to sure not to pollute the *Nga Wun* Stream and dusts and gases coming out from the project. Some were worried about the negative impacts on their agriculture and orchard plantation. A few villagers wanted to confirm that there will be no land grabbing / confiscation occur for the project by the company. Some villagers demanded to support the education and medical care of the community. The 24-Hour assured that the jobs will be given to the local villagers as many as practically possible for low-skill and medium -skill workers. The company will give priority to the local purchase so that the small-scale business and SME will develop in these areas. The local young graduates will be considered for the high-skill labor and administrative staffs of the company.

iii) Comment / feedback forms

To collect more information from the participants related with the proposed project, the comment/ feedback forms were distributed during the both PCM at district level and village levels. In the District level, out of the 16 participants, the ten (10) comment forms of the staffs from various government organizations were gathered. In this actual meeting, almost all participants discussed in detail their ideas and recommendations were similar with what they said during the meeting. The participant list and their comments forms were attached in the EIA Report, *Annex 10.1*.

After the village On-line PCM were organized at Ye Phyu, Chaung Nauk Pyan and Khae Chaung, comment forms were distributed for their opinion survey to fill in the forms. Generally, their comments and opinions to the proposed project were homogeneous to some extent. Most attendees asked to create jobs and support for educational and social development. Majority of participants agreed to the project while some were worried about the pollution. Some demanded to assign local young graduates and engineers in the project and give contracts to the local contractors. Some requested to provide clinic, schools, libraries, ambulance and more nurses assigned. The list of participants and their comments of the Village PCM were shown in Annex 10.2.

1.10.3 Future consultations during the project cycle

Since the public consultation should be a continuous process throughout the whole project period, and as regards the long Operation Phase, there should be regular public consultation meetings occasionally depending on the situation, or whenever there is a need. The 24-Hour shall disclose all relevant information about the proposed Project and its likely adverse impacts to the public and civil societies through the PCM at both township and village levels.

As the same manner conducted in the Scoping and EIA stages, 24-Hour disclosed the information about the Project (i) by means of national media (local newspapers); (ii) the website of the Project Proponent; and (iii) at the 24-Hour's branch office at Myeik Town. Executive Summary of EIA draft reports were distributed to the Myeik District and Tanintharyi Township General Administrative Departments and ECD. The full EIA Report (in English) and the "Executive Summary (in Myanmar)" will be disclosed on its website: www.24hourgroup.com.mm.

1.10.4 Community Engagement Plan

Based on the results of PCM at Scoping stage and EIA draft Report stage, and social and household surveys in the project areas, a community engagement plan will be developed. It involves a series of steps, namely (i) stakeholder identification; (ii) stakeholder analysis; (iii) engagement strategy; (iv) proposed consultation and participation activities; (v) procedures for disclosure and dissemination of information; (vi) a grievance redress mechanism; and (vii) a program for joint environmental and social monitoring and reporting to communities.

1.10.5 Community Development and Community Development Plan

The proposed limestone project can be assumed as a community development project which will be strengthening a local region in several different ways. The project will provide socio-economic benefits offered to a community as a whole and it will include long-term positive impacts on the prevailing economic conditions, various levels of education, the family units, or employment levels, among others.

Community development will also include providing capacity building training, contributing to communities so that they will be able to engage in economic and social programs of the project. The 24-Hour will draw a "Community

Development Plan” to cover the project site related villages. The plan will encourage on community driven development (CDD) as being based on concepts of participation, transparency, barrier removal, accountability, local power, and enhanced capacity. The program will consist of– Education, Infrastructure development, Health care and social welfare, all of which the community need the support most.

1.11 Mine Closure Plan

The purpose is to ensure mining area cleared and to rehabilitate the affected areas during the proposed mining activities. Rehabilitation activities include decommissioning, providing surface drainage and erosion protection across the entire site, establishing self-sustaining vegetative cover, meeting water quality standards, and minimizing post-closure maintenance requirements. The 24 -Hour has planned to deposit 3% of annual profit in the bank for the use of mine closure phase.

The project site will be rehabilitated and stabilized so that it is suitable for a sustainable land use compatible with the surroundings. For greening and rehabilitation of the quarry site and buffer zones, the native trees will be yearly cultivated, such as Kanyin, Thit-lein, Kan-Zaw, and etc. A 30-year Mine closure plan includes fulfilling the total of 2,000 acres (145,000 plants) with the estimated total cost of MMK 300 million.

The closure plan should be regularly updated and refined to reflect changes in mine development and operational planning. The plan also includes appropriate aftercare and continued monitoring of the site, pollutant emissions, and related potential impacts. Site conditions typically require a minimum period of five years after closure or longer. The tentative costs for activities of mine closure and post closure environmental monitoring were described in detail in Chapter 11 of this EIA.

1.12.1 Environmental and Social management System (ESMS)

The effective ESMP of 24-Hour will include (i) an environmental and social management plan (ESMP); (ii) well trained environmental professionals; and (iii) sufficient financial resources. The institutional arrangements will identify the people needed to implement the EMP, staffing positions and specific roles and responsibilities. Moreover, the System (ESMS) will be established at a Mine Level and required in order to avoid, minimize, restore, or offset impacts, and enhance positive impacts; to implement the ESMP and monitor its effectiveness. The ESMS and EMP will be fully implemented to achieve the goals of “EHS Policy Statement” of the 24-Hour, which stated “Zero fatalities and Zero accidents of workers, visitors or the public, Zero environmental concerns, risks or impacts”.

Table 1.12.1 Summary of Environmental and Social Management Plan

Component	Management Plan	Implementation Schedule
Air Quality	Low speed for vehicles (max. speed of 40 km/h) including in vicinity of villages,	All stages of limestone production (M-D, M-O, M-C)
	Watering of access roads to control dust, ensure inspection and maintenance vehicles equipped with water spraying for frequent application,	
	Bag filters are installed at every transfer point and limestone crusher for dust control. Conveyor belts will be covered to reduce fugitive dust emissions during transportation,	
	Regular and periodical maintenance of vehicles to prevent smoke pollutants,	
Noise and vibration	Undertake noise monitoring every 6 months. Monitoring to be conducted for 24hr period (day and night),	M-D, M-O, M-C

Solid Waste	Mine Waste: Topsoil / rocks generated from mine will be directly utilized for access road construction and tree replantation, Domestic waste: Waste will be disposed of in line with the Waste Management Plan. The waste produced during activities will be properly disposed of in a small pit and buried.	M-O, M-C)
Community Engagement and Development	Local Employment; Local Economic Development Grievance Mechanism; Corporate Social Responsibility (CSR)	M-D, M-O
Occupational Health and Safety	HSE unit will be formed; Health Care Facilities provided; Ear plugs and other personal protective equipment (PPE) to be worn by all workers.	M-D, M-O, M-C
Biodiversity conservation	Minimize vegetation clearance and habitat disturbance by demarcating the clearing boundaries in the mine site; No employees will be allowed to collect, hunt or fish for natural resources; The trade of species will be prohibited; Environmental awareness training to be given to all workers for the preservation of local species	M-D, M-O, M-C

1.12.2 Emergency Response Plans

The 24-Hour will make emergency response plans to be designed to deal with accidental spills, slope failures, fires, explosions, cyclones, unforeseen weather events, earthquakes, and other events. Emergency response plans include the information on -

- i. emergency resources (e.g., fire-fighting equipment; spill clean-up equipment; first aid supplies; medical clinics; emergency vehicles),
- ii. communication systems,
- iii. administration of the plan,
- iv. emergency response procedures (e.g., emergency notification, evacuation, fire suppression, spill clean-up; medical support) and etc.

24-Hr. Co., Ltd. will set up an “Emergency & Crisis Management Plan” which covers roles, responsibilities, systems and processes that the company’s Emergency Management Team (EMT) and Crisis Management Team (CMT) will follow when responding to an emergency or crisis. The Plan covers all operations and activities carried out by the company, such as Operational incidents, Environmental (Spill / Hydrocarbon Leak) incidents, Occupational Health Incidents, Personnel Incidents of the company members and workers and etc.

1.12.3 Environmental Monitoring Requirements

Monitoring is a required process to demonstrate compliance with legal limits of the proposed project. Examples of key aspects to be monitored by the Project are - Air Quality, Noise and Vibration, Water quality; Sewage and gases, etc. Considering mitigation measures against negative impacts in the EMP, 24-Hour prepared a environmental monitoring plan (EMoP) to support implementation of the measures ([Table 1.12.2](#)).

Table 1.12.2 Indicative environmental quality monitoring programs

Environmental Component or Issue	Location	Objective	Frequency and timing	Monitoring Responsibility
Surface Water Usage and Water Transfers	At water sources/ <i>Nga Wun</i> Stream	• Monitoring of water usage and water transfers	Mine dependent;	Department of Mines, Mining Enterprise, and Mining Operator

Surface Water Quality	At onsite and offsite water bodies affected by the mine	<ul style="list-style-type: none"> • Detecting changes in surface water quality • Checking for compliance with Water Quality Standards 	Surface Water analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator
Groundwater Quality	At sensitive receptors/ sample village wells	<ul style="list-style-type: none"> • Detecting changes in ground water quality • Checking for compliance with Groundwater Quality Standards 	Ground Water analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator
Air Quality	At sensitive receptors/ Mine site/ access road	<ul style="list-style-type: none"> • Detecting changes in air quality • Checking for compliance with Air Quality Standards 	Daily / Mine dependent/ Air quality analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator
Noise and Vibration	At sensitive receptors/ Mine site/ access road	<ul style="list-style-type: none"> • Detecting changes in noise levels • Checking for compliance with Noise Standards 	Daily / Mine dependent	DOM, Mining Enterprise, and Mining Operator
Erosion and Sedimentation	At risk prone areas/ Mine site/ access road	<ul style="list-style-type: none"> • Checking for erosion potential • Estimating rates of erosion 	Daily in rainy season/ Mine dependent	DOM, Mining Enterprise, and Mining Operator

1.12.4 Cost estimation for EMP and EMoP

The EMP Team and the monitoring team of 24-Hour will organize a biennial site visit of monitoring during the project implementation period. The 24-Hour has set up the allotment budget of 10,000,000 (Ten million) Kyats for the implementation of EMP and EMoP for every year. Provided that the allotted budget is insufficient, some more budgets will be added to cover all activities. The analysis of physical parameters, such as the measurement of air, water and soil quality will be conducted every year and whenever necessary. The budget for the general estimation for EMP and EMoP (25 million MMK) was estimated and will be bore by the 24-Hr. Co., Ltd.

1.12.5 Grievance Redress Mechanism (GRM)

In case of any concern, question or complaint related to the limestone mining project people can send the message through a grievance letter, telephone or any other communications. The 24-Hour will distribute the grievance forms at several entities, namely: Village Tract Administration's office; Ethnic leaders' houses, and 24-Hour. administrative offices in Ye Phyu Village and Khae Chaung village.

The grievance forms together with grievance boxes will be placed the above listed entities / locations. The responsible staffs will actively monitor the GRM by contacting the entities once a week to be sure whether a grievance has been placed or not. The company will provide an answer to any grievances / complaints received within a short period. The assigned unit of 24-Hour will take care any suggestions, comments, claims and complaints made by the general public.

1.13 Conclusion

Under the EIA study the potential impact assessment showed that the "Topography and Landscape" will have significant negative impacts owing to the quarrying for limestone Krasts. However, the mitigation measures, such as minimizing the land to be disturbed as much as possible, and implementation of reclamation and mine closure plans (replanting, recontouring, and restoration and stabilization of stream banks, etc.), will improve the topography and land scape to the nearness to its original state. It was also observed that the project will cause negative impacts, but not significant on the items such as "Soil erosion and

sedimentation, Air quality, Surface Water quality, Biodiversity (Terrestrial and Aquatic), etc. These impacts can be reduced if the appropriate measures are undertaken to address impacts. For example, the measures to protect air quality are “Low speed of vehicles, Limestone grinding mill using bag filters, Water-sprinkling of access roads, systematic and safe blasting, and etc.

To maintain the water quality safe, the measures are – such as, prevent engine oil and fuel and any oil spills, plan and manage to prevent the contamination of soil and groundwater, install collection ditches and sedimentation ponds at the foot of the quarry site to prevent erosion and sedimentation to the *Nga Wun* stream and other natural streams. In addition, waste from limestone mines and solid and liquid waste from field camps should be disposed of at the designated spot. For the biodiversity conservation, workers will be provided with environmental awareness training; no employees will be allowed to collect, hunt or fish for natural resources, the trade of flora and fauna species will be prohibited. In addition, the workers will be given occupational health and safety training; workers need to adhere to mine safety measures and wear the personal protective equipment (PPE) while working at the mine site. Provided that the recommended mitigation measures are properly implemented, the environmental and social impacts of the proposed project would be managed in a professional way and acceptable manner. Moreover, the proposed limestone development will bring significant positive impacts to the Tanintharyi Township level as well as the regional economy due to the Company’s large investment in mining industry. Local purchase and local employment plan, CSR activities will contribute job opportunities and incomes to the local communities, encouraging the uplift of local livelihoods.

The proposed project site is located in a degraded forest with low biodiversity and no cultural heritage sites and no potential or expectation for the tourism. Likewise, due to its low fertility and ragged hilly areas, mostly uninhabited, the development of agriculture, including animal husbandry, cannot be well developed in these areas. Thus, this area is particularly suitable for the limestone production.

In this regard, this EIA Report highlights that the proposed project is feasible from an environmental and social point of view, without any significant adverse impacts, and it will have positive impacts on the livelihoods of the local community.

အခန်း ၁။ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ အကျဉ်းချုပ်

၁။ နိဒါန်း

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက်သည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာနမှ လုပ်ကိုင်ခွင့်ပြုချက် ရရှိထားသော၊ တနင်္သာရီတိုင်းဒေသကြီး မြိတ်ခရိုင် တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ငဝန်ကြီးဝိုင်း အတွင်းရှိ ပေါင်နီကျောက်တောင်၊ စုစုပေါင်း မြေဧရိယာ (၂၈၈၀) ဧကတွင် ထုံးကျောက်တူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအား အကောင်အထည် ဖော်ဆောင် ရွက်မည်ဖြစ်ပါသည်။

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် (၂၄နာရီကုမ္ပဏီ) သည် အဆိုပါ စီမံကိန်း နှင့်ပတ်သက်သည့် နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာ (Scoping Report) ကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) ထံသို့ တင်ပြခဲ့ရာ အတည်ပြုကြောင်း ၂၀၂၂ခုနှစ် စက်တင်ဘာလ (၃၀)ရက်တွင်ပြန်ကြားခဲ့ပါသည်။ ဒုတိယအဆင့် အနေဖြင့် အဆိုပါစီမံကိန်း၏ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (Environmental Impact Assessment: EIA) ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းပါ ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (format) ပုံစံ နှင့်အညီ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (EIA) ရေးဆွဲရန် အတည်ပြုရွေးချယ် ထားသော တတိယအဖွဲ့အစည်းဖြစ်သည့် Green Growth Generation Co., Ltd. (GGG) သည် တနင်္သာရီ မြို့နယ် သိန်ခွန်းကျေးရွာအုပ်စု ပေါင်နီကျောက်တောင်ဒေသတွင် ထုံးကျောက်တူးဖော် ထုတ်လုပ်မှုစီမံကိန်း အတွက် စံချိန်မီသော EIA အစီရင်ခံစာတစ်စောင်ကို ပြင်ဆင်ရေး ဆွဲ ခဲ့ပါသည်။

၁။၁။ စီမံကိန်းအဆိုပြုသူ/ အဖွဲ့အစည်း ၏ အချက်အလက်များ

စီမံကိန်းအကောင်အထည်ဖော်မည့် အဖွဲ့အစည်း

ကုမ္ပဏီ အမည်	24 Hour Mining and Industry Co., Ltd
လိပ်စာ	၂၄နာရီသတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက် အမှတ် (၈၈)၊ ပြည်လမ်း၊ (၆.၅)မိုင်၊ လှိုင်မြို့နယ်၊ International Business Centre (IBC) ၊ ရန်ကုန်မြို့
တယ်လီဖုန်း	၀၉-၄၂၄၂၂၄၂၄၅ / ၀၉-၄၅၇၁၅၅၇၈၉
အီးမေး လိပ်စာ	24Hourcoltd@gmail.com
ဆက်သွယ်ရမည့်ပုဂ္ဂိုလ်အမည်	ဦးအောင်အောင်ဇော်
ရာထူး	မန်နေဂျင်းဒါရိုက်တာ
မှတ်ပုံတင်အမှတ်	၁၂/မဂတ(နိုင်)၀၃၅၅၃၀
လိပ်စာ	အမှတ် (၈၈)၊ ပြည်လမ်း၊ (၆) မိုင်ခွဲ၊ လှိုင်မြို့နယ်၊ International Business Centre (IBC)၊ ရန်ကုန်မြို့
စီမံကိန်း မန်နေဂျာ	ဦးခင်ဇော်ဟိန်း
မှတ်ပုံတင် အမှတ်	၈/ခမန (နိုင်) ၁၃၉၉၃၇

လိပ်စာ	ထုံးကျောက်ထုတ်လုပ်ရေးစီမံကိန်းရုံး၊ မနိုးရုံး - ခဲချောင်း ကျေးရွာ၊
	ဘုတ်ပြင်းမြို့နယ်၊ တနင်္သာရီတိုင်းဒေသကြီး
ဖုန်းနံပါတ်	၀၉-၂၅၉၁၉၄၆၂၁

၁၂။ EIA ရေးဆွဲရေး အဖွဲ့အစည်း ၏ အချက်အလက်များ

ကုမ္ပဏီ အမည်	Green Growth Generation Co., Ltd
လိပ်စာ	နံပါတ်(၁၂၉)၊(၁၉)လမ်းနှင့်(၈၇)လမ်းထောင့်၊ဇင်္ဂလက်ကွက် အောင်မြေသာဇံမြို့နယ်၊ မန္တလေး
တယ်လီဖုန်း	၀၉-၂၀၅၁၀၂၈
အီးမေး လိပ်စာ	khinlays2010@gmail.com
ဆက်သွယ်ရမည့်	ဒေါက်တာခင်လေးဆွေ
ပုဂ္ဂိုလ်အမည်	
ရာထူး	ဒါရိုက်တာ
မှတ်ပုံတင်အမှတ်	၉/ပမန(နိုင်)၀၈၃၇၁၃
လိပ်စာ	(၂၄၃/၂၅)၊၃၈လမ်း၊၇၂-၇၃လမ်းကြား၊ မဟာအောင်မြေမြို့နယ် မန္တလေးမြို့

၁၂။ မူဝါဒနှင့် ဥပဒေမူဘောင် ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာ လမ်းညွှန်ချက်၊ စံနှုန်းများ

စီမံကိန်း အဆိုပြုသူမှ စီမံကိန်းနှင့် စပ်လျဉ်း၍ ပြည်ထောင်စုသမ္မတ မြန်မာ နိုင်ငံတော်မှ လက်ရှိအချိန် အထိထုတ်ပြန်ထားပြီးဖြစ်သော ပတ်ဝန်းကျင်ဆိုင်ရာ၊ လူမှုဝန်းကျင်၊ လူမှုဖူလုံရေး၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ကိစ္စရပ်များနှင့် ပတ်သက်သည့် ဥပဒေများ၊ စည်းမျဉ်းစည်းကမ်းများ၊ သက်ဆိုင်ရာ ဝန်ကြီးဌာနမှ ထုတ်ပြန်ထားသော စည်းမျဉ်းစည်းကမ်း များနှင့် ဆက်စပ် အမိန့်ကြေညာစာ များကို လိုက်နာမည်ဖြစ်ပါသည်။

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၂
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေများ၊ ၂၀၁၄
- ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ ၂၀၁၅
- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ၊ ၂၀၁၅
- သတ္တုတူးဖော်ရေးလုပ်ငန်းများအတွက်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လမ်းညွှန်ချက် များ ၂၀၁၈
- မြန်မာ့သတ္တုတွင်းဥပဒေ ၂၀၁၅
- မြန်မာ့သတ္တုတွင်း နည်းဥပဒေများ ၂၀၁၈
- မြန်မာနိုင်ငံရင်းနှီးမြုပ်နှံမှု ဥပဒေ၊ ၂၀၁၆
- တိုင်းရင်းသားလူမျိုးများအခွင့်အရေး ကာကွယ်စောင့်ရှောက် ရေး ဥပဒေ၊ ၂၀၁၅
- ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီး ကာကွယ်ရေးဥပဒေ၊ ၂၀၁၃
- အလုပ်သမားအဖွဲ့အစည်းဥပဒေ၊ ၂၀၁၁
- အလုပ်သမားရေးရာ အငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ၊ ၂၀၁၂

- အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ၊ ၂၀၁၃
- လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးဆိုင်ရာဥပဒေ၊ ၂၀၁၉
- ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်စောင့်ရှောက် ရေးဥပဒေ၊ ၂၀၁၉
- ရှေးဟောင်းဝတ္ထုပစ္စည်း ကာကွယ်စောင့်ရှောက်ရေးဥပဒေ၊ ၂၀၁၅ (ပုဒ်မ ၁၂)
- သစ်တောဥပဒေ၊ ၂၀၁၈
- ဇီဝမျိုးစုံမျိုးကွဲနှင့်သဘာဝထိန်းသိမ်းရေးနယ်မြေများကာကွယ်စောင့်ရှောက်ခြင်း ဆိုင်ရာ ဥပဒေ၊ ၂၀၁၈ ၊ စသည်တို့ဖြစ်ပါသည်။

စီမံကိန်းအဆိုပြုသူမှ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ (EIA) ပြုစုသောအခါ တွင် အစီရင်ခံစာ၏ အခန်း(၃)တွင် မူဝါဒ၊ ဥပဒေနှင့်အဖွဲ့အစည်းဆိုင်ရာ မူဘောင် ဖော်ပြ ချက် များ နှင့်စီမံကိန်းမှလိုက်နာရမည့် ဥပဒေ ဆိုင်ရာ ကတိကဝတ်များစာရင်းတွင် ဖော်ပြထားသော ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးနှင့် လူမှုရေးဆိုင်ရာ မူဝါဒနှင့်စံချိန်စံညွှန်းများ၊ တည်ဆဲပတ်ဝန်းကျင် ထိန်းသိမ်း ရေးဥပဒေ နှင့်နည်းဥပဒေများ၊ မြန်မာနိုင်ငံ၏ တည်ဆဲဥပဒေများနှင့်နည်းဥပဒေများ၊ အပြည်ပြည် ဆိုင်ရာ ကွန်ဗင်းရှင်းများ၊ စာချုပ်များနှင့် သဘော တူညီချက်များ၊ အမျိုးသားနှင့် အပြည်ပြည်ဆိုင်ရာစံချိန်စံညွှန်းများနှင့် လမ်းညွှန်ချက်များ အပါအဝင်မူဝါဒနှင့် ဥပဒေ ရေးရာမူဘောင်များအား ပတ်ဝန်းကျင်နှင့်လူမှုရေး ထိခိုက်မှု ဆန်းစစ်လေ့လာခြင်းတွင် လိုက်နာ ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း ဖော်ပြထားပြီးဖြစ်ပါသည်။

စီမံကိန်းအကောင်အထည်ဖော်ဆောင်သူသည် စဉ်ဆက်မပြတ် ဖွံ့ဖြိုးတိုးတက်ရေးနှင့် သဘာဝပတ်ဝန်းကျင် ကာကွယ်ရေးအတွက် လိုအပ်သော အခြေခံမူများနှင့် လုပ်ဆောင်ချက်များကို သက်ဆိုင်ရာ နိုင်ငံတကာ သဘောတူညီချက် များနှင့်စာချုပ်များလည်း လိုက်နာမည်ဖြစ်ပါသည်။ ဤစီမံကိန်းသည် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးကင်းရေး နိုင်ငံတကာ လမ်းညွှန်ချက်များ စံနှုန်းများကို လိုက်နာမည်ဖြစ်ပါသည်။ ကမ္ဘာ့ဘဏ် အဖွဲ့ (World Bank Group/ IFC/2007) မှထုတ်ပြန်ထားသော ပတ် ဝန်း ကျင် ကျန်းမာရေးနှင့် ဘေးကင်းရေး ဆိုင်ရာ ကဏ္ဍအလိုက် လမ်းညွှန်ချက်များအား လိုက်နာ ဆောင် ရွက် မည်ဖြစ်ပါသည်။

၁၂၄။ စီမံကိန်း အကြောင်းအရာ အချက်အလက်များ

၁၂၄.၁။ စီမံကိန်းတည်နေရာ

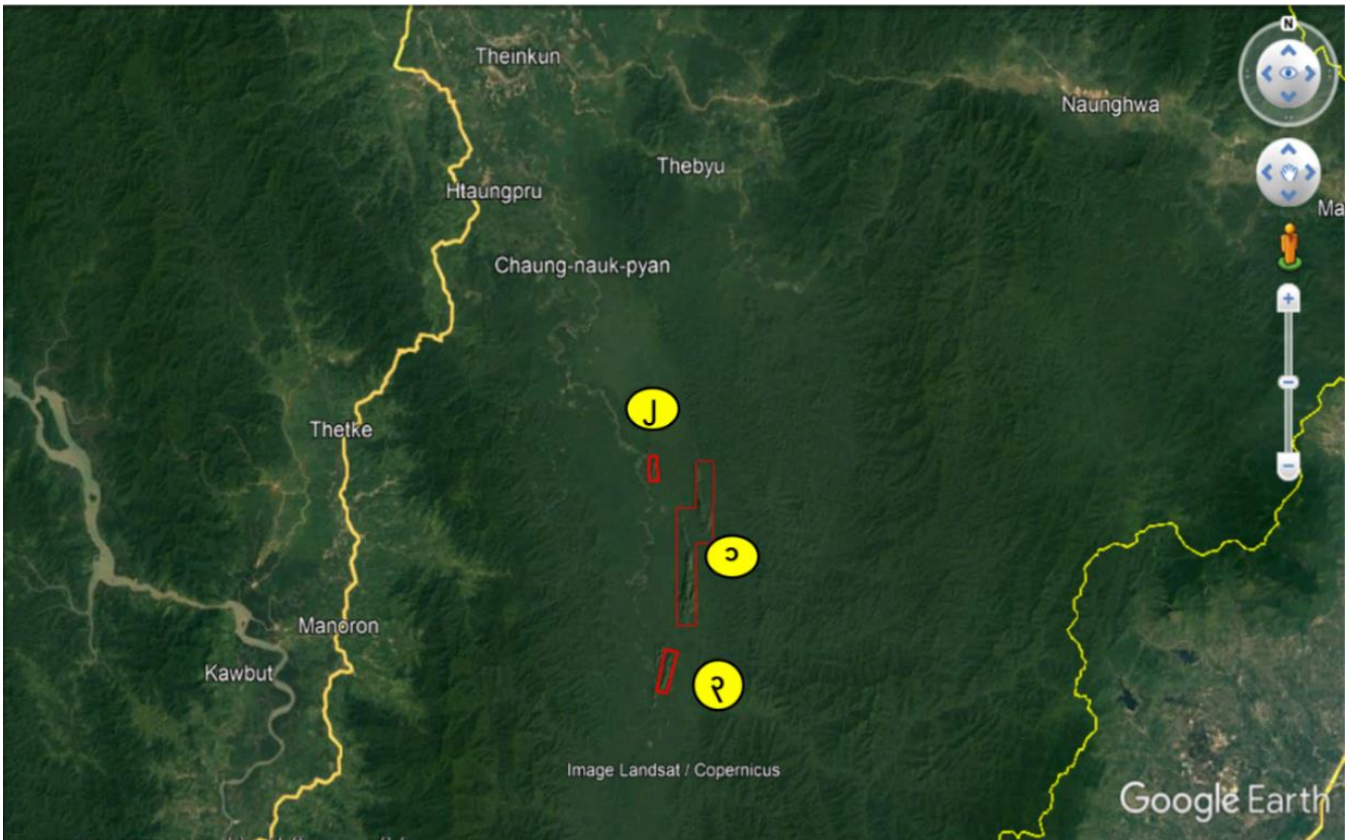
စီမံကိန်းသည် တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ငဝန်ကြိုးဝိုင်းအတွင်းရှိ ပေါင်နီ ကျောက်တောင် တွင် ဖြစ်ပါသည်။ ၂၄နာရီ ကုမ္ပဏီလီမိတက် အနေဖြင့် ပေါင်နီ ကျောက်တောင်တွင် ထုံးကျောက်လုပ်ငန်း လုပ်ဆောင်ရန် အတွက် ၂၀၁၃ ခုနှစ်တွင် ခွင့်ပြုမိန့် ရရှိထားပြီး ဖြစ်ပါသည်။ စီမံကိန်း တည်နေရာသည် မြိတ်မြို့မှ ၉၅ မိုင်(၁၅၂ကီလိုမီတာ) တနင်္သာရီမြို့ မှ ၄၅မိုင်(၇၂ကီလိုမီတာ) ကွာဝေးပါသည်။ ငဝန်ချောင်း၏ အရှေ့ဘက်တွင် တည်ရှိပါသည်။ စီမံကိန်းသည် လုပ်ကွက်(၁) - မြေဧရိယာ (၂၂၀၀) ဧက၊ လုပ်ကွက်(၂) - မြေဧရိယာ (၂၀၀) ဧက၊ လုပ်ကွက်(၃) - မြေဧရိယာ (၄၈၀) ဧက ဖြစ်ပြီး စုစုပေါင်းမြေဧရိယာ (၂၈၈၀) ဧက ဖြစ်ပါသည်။

၁၂၄၂။ စီမံကိန်း၏ အဓိကရည်ရွယ်ချက်များ

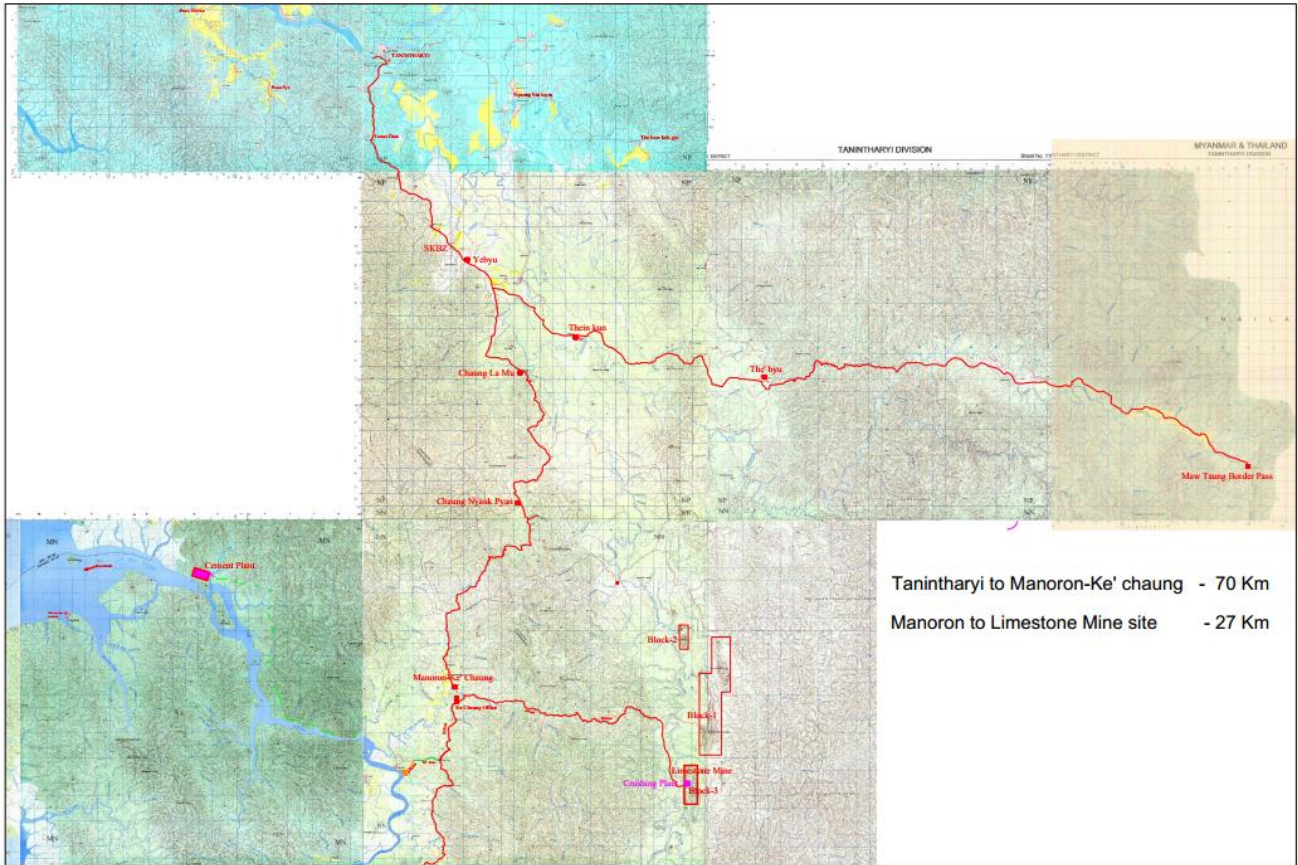
- (၁) ဘိလပ်မြေစက်ရုံသို့ ထုံးကျောက်ရောင်းချခြင်းဖြင့် မြန်မာနိုင်ငံအတွင်း ဆောက်လုပ်ရေးလုပ်ငန်း အတွက် ကုန်ကြမ်းပစ္စည်းများ ဖူလုံမှုရှိစေရန်
- (၂) ဆောက်လုပ်ရေးလုပ်ငန်းအတွက် ကုန်ကြမ်းပစ္စည်းများအား တနင်္သာရီတိုင်းအတွင်း နှင့် အခြား ဒေသများ သို့ပါဖြန့်ဖြူးနိုင်ရန်
- (၃) မြန်မာနိုင်ငံ စက်မှုလုပ်ငန်းနှင့် လူမှုစီးပွားအဆောက်အအုံများ ဖွံ့ဖြိုးတက်လာစေရန်
- (၄) မြန်မာနိုင်ငံ၏ စက်မှုကဏ္ဍသို့ နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုများ ဝင်ရောက်လာစေရန်တို့ ဖြစ်ပါသည်။

၁၂၄၃။ စီမံကိန်းတည်ဆောက်မည့် လုပ်ငန်းအစီအစဉ်

တည်ဆောက်ရေးလုပ်ငန်းများအတွက် ဒီဇိုင်းရေးဆွဲခြင်း၊ တင်ဒါခေါ်ယူခြင်း၊ စက်ပစ္စည်းမှာယူ တပ်ဆင်ခြင်း၊ ထုတ်လုပ်မှု အကြိုလုပ်ငန်းဆောင်ရွက်ခြင်းများကို ၂၀၂၄ ခုနှစ် နှစ်ဦးပိုင်းတွင် စတင်လုပ်ဆောင်မည် ဖြစ်ပြီး (၂) နှစ်ခန့် ကြာမြင့်ပါမည်။ ခန့်မှန်းကုန်ကျစားရိတ်ငွေ စုစုပေါင်း ပမာဏမှာ အမေရိကန် ဒေါ်လာ (၅.၈) သန်း ဖြစ်ပါသည်။



ပုံ ၁ (ခ) စီမံကိန်းတည်နေရာပြမြေပုံ



ပုံ ၁ (ခ) စီမံကိန်းတည်နေရာနှင့် ရွာများ တည်နေရာပြမြေပုံ

၁။၂။ စီမံကိန်း အကြောင်းအရာ အချက်အလက်များ

စီမံကိန်း အတွက် ဓါတ်အားပေးဝေမှု၊ ရေလိုအပ်ချက် ၊ လောင်စာဆီလိုအပ်ချက် ထုတ်လုပ်မှုစွမ်းရည်နှင့် ဝန်ထမ်းအင်အား စသည်တို့ကို အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၁။ စီမံကိန်း အကြောင်းအရာ အချက်အလက်များ

တည်ဆောက်မှု အဆင့်	၂ နှစ်
လုပ်ငန်းလည်ပတ်မှုအဆင့်	၅၀ နှစ် နှင့် သက်တမ်းတိုးနိုင်သည်။
ခွင့်ပြုမိန့်ကာလ	၁၀ နှစ် နှင့် သက်တမ်းထပ်မံတိုးနိုင်သည်။
ထုတ်လုပ်မှုစွမ်းရည်	တစ်နှစ် လျှင် ၂.၂၅ သန်း တန်
ထုတ်ကုန်များ	Limestone Crushed Rock (CaCO ₃)
အရွယ်အစား	၀ - ၀.၅ မီလီမီတာ၊ ၅ - ၅၀ မီလီမီတာ
လစဉ် လောင်စာဆီလိုအပ်ချက်	ဒီဇယ်ဂါလံ (၇) သောင်း
လစဉ်လျှပ်စစ်ဓာတ်အားသုံးစွဲမှု (၁ နှစ် နှင့် ၂ နှစ် အတွက်သာ)	၁,၉၅၈,၄၀၀ ယူနစ် (ကိုယ်ပိုင်ဂျင်နရေတာများမှလျှပ်စစ်ဓာတ်အားထုတ်လုပ်မည်ဖြစ်သည်။)
မြေအောက်ရေ	ကျောက်မိုင်းတွင် ရေအနည်းငယ် လိုအပ်သောကြောင့် မြေအောက်ရေကို အသုံးမပြုပါ။ ငဝန်ချောင်းမှ ရေကို အိမ်တွင်း အသုံးပြုရန်၊ ဖုန်မှုန့်ကင်းစင်စေရန်၊ အဝတ်လျှော်စက်နှင့် မော်တော်ယာဉ်များ အတွက်သာ အသုံးပြုမည်ဖြစ်သည်။

နေ့စဉ် ရေသုံးစွဲမှု (အများဆုံး)	တစ်နေ့လျှင် ၂၀၀၀ ဂါလန် တစ်နှစ်လျှင် ၆၃၀,၀၀၀ ဂါလန်
ဝန်ထမ်း	လူအင်အား ၁၇၃ ဦး နှစ်စဉ် လစာမှာ ကျပ် ၁၄၇၁,၆၈၀,၀၀၀ (တစ်လလျှင် ကျပ် ၁၂၂၆.၄ သိန်း)။
ဝန်ထမ်းအနာဂတ်အဖွဲ့အစည်း	နှစ်စဉ် ဝန်ထမ်း ၁၇၃ ဦးရှိမည်ဖြစ်သည်။
အလုပ်ချိန်	တစ်နေ့လျှင် ၈ နာရီ (နှစ်ဆိုင်း)၊ တစ်ပတ် လျှင် ၄၈ နာရီ၊ (နှစ်ဆိုင်း) ကျောက်မိုင်းထုတ်လုပ်ခြင်းအတွက် ဝန်ထမ်းများကို ခန့်အပ်ရာတွင် ဒေသခံ (၎င်းတို့၏ကျွမ်းကျင်မှုအပေါ်မူတည်၍) ဦးစားပေး ဆောင်ရွက်ပါမည်။ ထို့အပြင် ဒေသခံများအား ပုတ်ပြတ်စာချုပ်ဖြင့် အခါအားလျော်စွာ ငှားရမ်းမည်ဖြစ်သည်။

စီမံကိန်း အဆောက်အဦ များမှာ စည်းဝေးခန်းမ တစ်ခုအပါအဝင် အဆောက်အဦ ၁၉ လုံးရှိပြီး ၎င်းတို့မှာ အလုပ်သမား တန်းလျား၊ စတို၊ ဝန်ထမ်းနေအိမ်၊ ထမင်းစားခန်း၊ ရုံး နှင့် ကားရပ်နားရန်နေရာတို့ ဖြစ်ပါသည်။ စီမံကိန်း အဆောက်အဦများကို ခဲချောင်းကျေးရွာရှိ စီမံကိန်းရုံးဝင်းအတွင်း ထားရှိပါမည်။ စီမံကိန်းရုံးဝန်းတွင် ဓာတုပစ္စည်း အသုံးပြုမှု လုံးဝမရှိပါ။ ထုံးကျောက်မိုင်း ဧရိယာတွင် မိုင်းရုံး၊ ဆီစတိုနှင့် စက်ပြင်အလုပ်ရုံ တို့ထားရှိပါမည်။ မိုင်းဧရိယာတွင် ဓါတုပစ္စည်း အသုံးပြုမှု လုံးဝမရှိပါ။ အဆောက်အဦ စာရင်းကို အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၂။ စီမံကိန်းဆိုင်ရာ အဆောက်အဦများ

Office and Camp Building			
No	Building / Facility	Sizes	Units
Project Office Site			
1	Project Office	60' x 40'	1
2	Meeting Room	40' x 40'	1
3	Sub-Store	60' x 20'	1
4	Dining Room	60' x 15'	1
5	Officer House	30' x 30'	2
6	Staff House	40' x 50'	6
7	Other Rank Barrack	30' x 60'	6
8	Car Parking		1
Mine Site			
1	Operation Office	40' x 20'	1
2	Fuel Store	50' x 50'	1
3	Work Shop	60' x 30'	1

စုစုပေါင်း ဝန်ထမ်းအင်အား ၁၇၃ ဦး ဖြစ်ပြီး အသေးစိတ်စာရင်း ကို အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၃။ ဝန်ထမ်းအင်အားစာရင်း

စဉ်	လုပ်ငန်း	ဝန်ထမ်းဦးရေ(ဦး)
၁။	စီမံခန့်ခွဲမှု	၃
၂။	မိုင်းတူးဖော်ခြင်းနှင့် ကြိုတင်ခွဲခြားခြင်း	၁၃၀
၃။	စက်ပြင်အလုပ်ရုံ	၁၈
၄။	အုပ်ချုပ်မှု	၂၁
၅။	စာရင်းကိုင်	၁
	စုစုပေါင်း	၁၇၃ ဦး

၁၂၄။ ထုံးကျောက်တူးဖော်မှု လုပ်ငန်းစဉ်အဆင့်ဆင့်

သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန၊ သတ္တုတွင်းဦးစီးဌာနထံမှ မြန်မာနိုင်ငံ၏ သတ္တုတွင်း ဥပဒေအရ ထုံးကျောက် (စက်မှုတွင်းထွက် ကုန်ကြမ်း) အကြီးစား တူးဖော်ထုတ်လုပ်ခွင့် (၁၀) နှစ်သက်တမ်းဖြင့် ခွင့်ပြုမိန့် ရရှိထားပြီး Open Cast နည်းလမ်း ဖြင့် တူးယူပါမည်။ စီမံကိန်းသည် တစ်နှစ်လျှင် တန်ချိန် တစ်သိန်း (၁၀၀,၀၀၀) ထုတ်လုပ်ရန် စာချုပ်ထားပါသည်။ တစ်ရက်လျှင် တန် (၅၀၀၀) ကျဘိလပ်မြေစက်ရုံ တစ်လိုင်း တည်ဆောက်ပြီးချိန်တွင် နှစ်စဉ် (၂.၂၅ သန်း) တူးဖော် ထုတ်လုပ် ပါမည်။ ဒုတိယအဆင့် အနေဖြင့် တစ်ရက်လျှင် တန် (၅၀၀၀) ကျ စက်ရုံ၊ ဒုတိယ တစ်လိုင်းထပ်မံ တည်ဆောက်ပြီးချိန်တွင် နှစ်စဉ် (၄.၅) သန်း တူးဖော်ထုတ်လုပ်ပါမည်။ အကြမ်းအားဖြင့် - မိုင်းခွဲခြား၊ သယ်ဆောင်ခြင်း၊ ထုံးကျောက်ကြိတ်ခွဲခြင်းနှင့် စုပုံခြင်း၊ သတ္တုတွင်း ပိတ်သိမ်းခြင်း စသော လုပ်ငန်းစဉ်များပါဝင်ပါသည်။

မိုင်းခွဲပြီး ထုံးကျောက်များကို ကားဖြင့် သယ်ယူကာ ထုံးကျောက်ကြိတ်ခွဲစက်သို့ ပို့ဆောင် ပါမည်။ ကြိတ်ခွဲပြီး ထုံးကျောက်များကို ကြိတ်ခွဲစက် အနီးရှိ ထုံးကျောက်စုပုံကွင်းသို့ ရွေ့လျားစက်ခါးပတ်ဖြင့် ပို့ဆောင်၊ စုပုံ ပါမည်။ တူးဖော်ခြင်း လုပ်ငန်းတွင်လည်း ငဝန်ချောင်းရေကို အသုံးပြုပါမည်။ ယခုလက်ရှိ အခြေအနေတွင် ပတ်ဝန်းကျင် ညစ်ညမ်းမှု ဖြစ်စေသည့် အရာများ မတွေ့ရှိရပါ။

၂၄နာရီ ကုမ္ပဏီလီမိတက်သည် အဆိုပြုထားသော ထုံးကျောက်ထုတ်လုပ်မှုနှင့် စပ်လျဉ်း၍ မိုင်းစတင်ခြင်း၊ လုပ်ငန်းဆောင်ရွက်ခြင်း၊ မိုင်းပိတ်သိမ်းခြင်းတို့ ဆောင်ရွက်ရာတွင် ဖြစ်ပေါ်လာနိုင်သော ဆိုးကျိုးများကို လျော့ချရန်နှင့် ကောင်းကျိုးများကိုတိုးမြှင့်ရန်သင့်လျော်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် ရေးဆွဲခြင်းနှင့်အကောင်အထည်ဖော်ဆောင်ရွက်ခြင်းဖြင့်စီမံကိန်းဧရိယာ၏ ပတ်ဝန်းကျင်ကို အပြည့်အဝ ကာကွယ်ရန် လုပ်ဆောင်မည်ဖြစ်ပါသည်။

လေထု ရေထု နှင့် ပတ်ဝန်းကျင် ညစ်ညမ်းမှု လျော့နည်းစေမည့် လုပ်ငန်းများကို သတ်မှတ် လုပ်ဆောင် နိုင်ရန် အတွက်ဖြစ်နိုင်ချေရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများကို လျော့နည်း စေရန် “ပတ်ဝန်းကျင်စီမံခန့်ခွဲရေးအစီအစဉ် (Environmental Management Plan:

EMP)” “စောင့်ကြည့် အကဲဖြတ် ခြင်းလုပ်ငန်း အစီအစဉ် ” (Environmental Monitoring Plan: EMoP) အရ ၂၄နာရီ ကုမ္ပဏီ မှ တာဝန်ယူ လုပ်ဆောင်သွားမည် ဖြစ်ပါသည်။

၁၂၄၆။ ထုံးကျောက်တူးဖော်ခြင်း နှင့် ဖောက်ခွဲခြင်း

ကြိတ်ခွဲခြင်း အတွက် ထုံးကျောက်တောင်ခြေတွင် ကြိတ်ခွဲစက် (၂) လုံး တည်ဆောက်ထားပါသည်။ မိုင်းခွဲပြီး ထုံးကျောက်များကို ကားဖြင့် သယ်ယူကာ ထုံးကျောက်ခွဲစက်သို့ ပို့ဆောင်ပါမည်။ ကြိတ်ခွဲစက် တစ်လုံး၏ အလုပ်လုပ်နိုင်စွမ်းမှာ တစ်နာရီလျှင် ၁၃၀၀ တန်ဖြစ်ပါသည်။ ထုံးကျောက် သိုလှောင်ခြင်း အတွက် ကြိတ်ခွဲပြီးထုံးကျောက်များကို ထုံးကျောက် စုပုံကွင်းသို့ ရွေ့လျားစက်ခါးပတ်သုံးပြီး ပို့ဆောင်ပါသည်။ ရွေ့လျားစက်ခါးပတ် အရှည်မှာ ၁၀၀ မီတာ ဖြစ်ပါသည်။ ဖုန်မှုန့်များ ထွက်ရှိခြင်းမှ လျော့နည်းစေရန် ရွေ့လျားစက်ခါးပတ်အား ဖုံးအုပ်ကာကွယ်ထားပါသည်။

ဇယား ၄။ ထုံးကျောက် ယမ်းခွဲတူးဖော်ခြင်းလုပ်ငန်း အချိန်ဇယားနှင့် အလုပ်ချိန် ဇယား

အကြိမ်အရေအတွက်	၅ ရက်လျှင် တစ်ကြိမ်
အချိန်	နံနက် ၁၁ မှ နေ့လည် ၁၂ နာရီ
မှတ်ချက်။ ။	ဘာသာရေးဆိုင်ရာနေ့ကြီးရက်ကြီးများတွင် မိုင်းခွဲခြင်း လုပ်ငန်းများမဆောင်ရွက်ပါ။
အလုပ်ချိန်	လုပ်ငန်းဆောင်ရွက်မှုများ
နံနက် ၈ နာရီ မှ ညနေ ၄ နာရီ	ထုံးကျောက်မိုင်းခွဲခြင်း။ သယ်ယူပို့ဆောင်ခြင်းနှင့် ကြိတ်ခွဲခြင်း
ညနေ ၄ နာရီမှ ည ၁၂ နာရီ	သယ်ယူပို့ဆောင်ခြင်း နှင့် ကြိတ်ခွဲခြင်း

၁၂၄၇။ စီမံကိန်းအပိုင်းအလိုက် မိုင်းတူးဖော်မည့်အစီအစဉ်

ပထမအဆင့်တူးဖော်မည့်အစီအစဉ်မှာ (၁ နှစ်မှ ၁၀ နှစ်အတွင်း) တွင် ပင်လယ်ရေမျက်နှာပြင် အထက် ၂၁၀ မီတာ မှ ၁၅၆ မီတာ အထိ တူးဖော်ပါမည်။ ခန့်မှန်းခြေထုတ်လုပ်မှုပမာဏမှာ တန်ချိန် ၂၄ သန်း ဖြစ်ပါသည်။ ဒုတိယအဆင့် အနေနှင့် (၁၁ နှစ်မှ ၂၀နှစ်အတွင်း)တွင် ပင်လယ်ရေမျက်နှာပြင် အထက် ၁၀၂ မီတာ အထိ တူးဖော်ပြီး ခန့်မှန်းခြေထုတ်လုပ်မှုမှာ တန်ချိန် ၂၅ သန်း ခန့် ဖြစ်ပါသည်။ တတိယအဆင့် တူးဖော်မှုအစီအစဉ် (၂၁ နှစ်မှ ၃၀ နှစ်ထိ) ပင်လယ်ရေမျက်နှာပြင်အထက် ၄၀ မီတာအထိတူးဖော်ပြီး ခန့်မှန်းခြေထုတ်လုပ်မှုမှာ တန်ချိန် ၂၄.၅ သန်း ခန့်ဖြစ်ပါသည်။

၁၂၄၈။ မိုင်းထုတ်လုပ်မှုနည်းစံစနစ်

ထုံးကျောက်များ၏ တည်ရှိမှုအခြေအနေနှင့် မြေမျက်နှာပြင် အနေအထားအရ ဟင်းလင်းဖွင့် တူးဖော်ရေးစနစ် (Open - pit) ကို အသုံးပြုပါမည်။ ၎င်းစနစ်မှာအပေါ်ယံမြေလွှာမှာ အစပြု၍ ထုံးကျောက်လွှာ များကို တစ်လွှာချင်းတူးဖော်ဖယ်ထုတ်သည့် စနစ်ဖြစ်ပါသည်။ အပေါ်ယံမြေလွှာ ကျောက်များကို စွန့်ပစ်ခြင်းမပြုပဲ မိုင်းအဝင်လမ်း ခင်းရာတွင် အသုံးပြုပါမည်။

၁၂၄၉။ ထုံးကျောက်ထုတ်လုပ်မှု

နေ့စဉ်၊ လစဉ်၊နှစ်စဉ် ထုံးကျောက်ထုတ်လုပ်မှု စွမ်းရည် ကို အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၅။ ထုံးကျောက်ထုတ်လုပ်မှု စွမ်းရည်

နေ့စဉ်ထုတ်လုပ်မှု	၁၀၃၂၁ မက်ထရစ်တန်
လစဉ်ထုတ်လုပ်မှု	၁၀၅,၀၀၀ - ၂၆၀,၀၀၀ မက်ထရစ်တန်
နှစ်စဉ်ထုတ်လုပ်မှု	၂၂၅၀,၀၀၀ မက်ထရစ်တန်

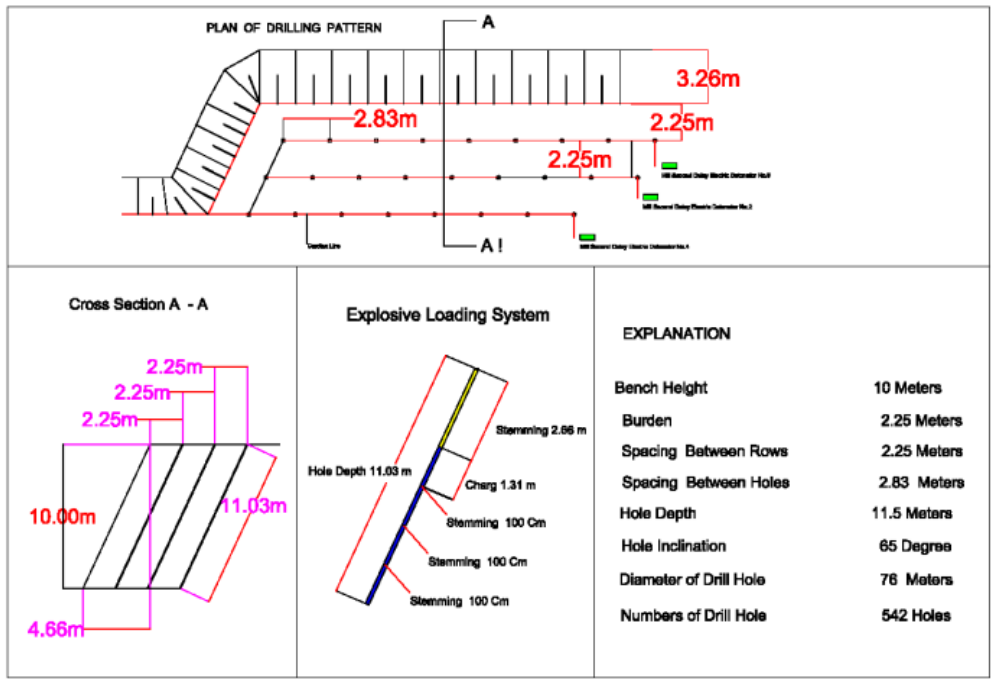
၁၂၄၁၀။ ဖောက်ခွဲခြင်း

ယမ်းတွင်း တူးရန်အတွက် ထုံးကျောက်ရိုင်း၏ Physical နှင့် mechanical အရည်အသွေးများအရ Hydraulic Crawler type Top Hammer Drill ကို အသုံးပြုပါမည်။ တွင်းအကျယ်မှာ ၇၆ မီလီမီတာ ဖြစ်ပါ၍ တွင်းအနက်မှာ ၁၁.၀၃ မီလီမီတာ ဖြစ်သည်။ ဖောက်ခွဲရာတွင် ဖြစ်ပေါ်လာမည့် တုန်ခါမှုများနှင့် ကျောက်များလွင့်စင်မှုကို လျော့နည်းစေရန် တင်းကြပ်စွာ ထိန်းချုပ်ပါမည်။ ဖောက်ခွဲပြီးနောက်ကျောက်တုံးအရွယ်အစား (၇၀၀ x ၁၀၂၀) မီလီမီတာ ထက်ကြီးသော အရွယ်အစားသည် ၅% ထက်မပိုစေပါ။ ကြီးမားသော ကျောက်တုံးများကို Hydraulic Breaker နှင့် Hammer တို့ဖြင့် ထုခွဲမည်ဖြစ်ပြီး ယမ်းဖောက်ခွဲနည်းကိုအသုံးမပြုပါ။ ၎င်းမှာ ပတ်ဝန်းကျင်သို့ ကျောက်တုံးကျောက်စများ လွင့်စင်မှုမှ ကာကွယ်ရန် ဖြစ်ပါသည်။ ဖောက်ခွဲမှုဒီဇိုင်းကို အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၆ ။ ဖောက်ခွဲမှုဒီဇိုင်း

ထုတ်လုပ်မှု	တစ်နှစ်လျှင် ၂.၂၅ သန်းတန်
တွင်းအကျယ်	၇၆ မီလီမီတာ
တွင်းအနက်	၁၁.၀၃ မီတာ
Burden အကွာအဝေး	၂.၈၅ မီတာ
တွင်းတစ်ခုနှင့်တစ်ခု အကြားအကွာအဝေး	၃.၀၃မီတာ
Stemming/ ကျင်းပိတ်	၂.၆၅မီတာ
တွင်းအရေအတွက်	ခန့်မှန်းခြေ တစ်နှစ်လျှင် ၁၁,၀၀၀ ကျင်း
ဖောက်ခွဲပုံစံ	၅ ရက်လျှင် တစ်ကြိမ်၊ တစ်ကြိမ်လျှင် (၂၅၀) ကျင်း၊ တစ်ကြိမ်ခွဲလျှင် ထုံးကျောက် ၁၁,၉၃၂ တန် ရရှိပါမည်။
အသုံးပြုဖောက်ခွဲပစ္စည်း (S-Minor Blocks)	ထုံးကျောက်တစ်ကုဗမီတာလျှင် Emulsion ယမ်း ၀.၃၇ ကီလိုဂရမ် အသုံးပြုပါမည်
တစ်နှစ်အတွင်း ယမ်းခွဲချိန်	(၄၄) ကြိမ်

ဖောက်ခွဲမှုအစီအစဉ်နှင့်တူးဖော်မှုဖြတ်ပိုင်းပုံစံ အောက်တွင် ဖော်ပြထားပါသည်။



ပုံ ၂။ ဖောက်ခွဲမှုအစီအစဉ်နှင့်တူးဖော်မှုဖြတ်ပိုင်းပုံစံ

၁၂၄၁၁။ မြေကော်ခြင်း (shoveling) နှင့် သယ်ယူပို့ဆောင်ခြင်း

ထုံးကျောက်များကို ကော်တင်ခြင်းအတွက် Hydraulic excavator ၃ စီး (၃.၀မီတာ CAT 320 LCA type) ကိုအသုံးပြုပါမည်။ သယ်ယူပို့ဆောင်ခြင်းလုပ်ငန်းတွင် တန်၂၀ ဆန့် ထရပ်ကား (Dump truck) အစီးရေ ၂၅ စီးကို အသုံးပြုပါမည်။ ထုတ်လုပ်မှုလိုအပ်ချက်ကို ပြည့်မီစေရန် လိုအပ်သလို အစီးရေတိုးပါမည်။

၁၂၄၁၂။ ထုံးကျောက် ကြိတ်ခွဲခြင်း

ထုံးကျောက်တောင်ခြေတွင် ၁ နာရီ လျှင် ၁၃၀၀ တန် ကြိတ်ခွဲနိုင်သောခွဲစက်နှင့် ဇကာစနစ်၂ယူနစ် တပ်ဆင်ပါမည်။ ၎င်းတို့ ၏ နမူနာပုံကို အောက်ပါအတိုင်း တွေ့မြင်နိုင်ပါသည်။ ကြိတ်ခွဲစက်များမှ ထွက်ရှိလာသော ထုံးကျောက်များကို ကျောက်ခွဲစက်အနီးတွင်ပင် စုပုံပါမည်။



ပုံ ၃။ တစ်နာရီတန် ၁၃၀၀ ကြိတ်ခွဲစက် ရှုမြင်ကွင်းပုံ
 ၁၂၄၂၁။ ထုံးကျောက်တူးဖော်ခြင်းနှင့် ကြိတ်ခွဲခြင်းအတွက် ယန္တရားများ
 ကျောက်မိုင်းထုတ်လုပ်ခြင်းနှင့် ကြိတ်ခွဲခြင်းအတွက် ယဉ်/ယန္တရားများစာရင်း
 အောက်ပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၇။ ကျောက်မိုင်းထုတ်လုပ်ခြင်းနှင့် ကြိတ်ခွဲခြင်းအတွက် ယဉ်/ယန္တရားများစာရင်း

Sr. No.	Machine	Model	Reqd. (Unit)
1	HE 3 M3 Excavator	320LCA	3
2	DT 10 Wheels (20 Tons)		25
3	Hydraulic Crawler Drill	HD1000-I Soosan	3
4	Hydraulic Excavator for Breaker	220LCA	2
5	Hydraulic Breaker		2
6	Bulldozer	SD22	2
7	Wheel Loader, 4 M3	LG 956L	2
8	Truck Crane (2) Tons		1
9	1300 Tph Crushing Plant (China)	From Liming China	2
10	Power System (1500) PRIME KVA Genset	Cummins, KPA38G2	2

၁၂၅။ စီမံကိန်း အခြားရွေးချယ်စရာ နည်းလမ်းများ

စီမံကိန်းနေရာသည် ထုံးကျောက်တောင်များတည်ရှိသော နေရာတွင် တည်ရှိပြီး ကောင်းမွန်သည့် ထုံးကျောက်အရည်အသွေးလည်း ပါရှိပါသည်။ အကြီးစား ကျောက်ထုတ်လုပ်ခြင်း ၊ ကြိတ်ခွဲခြင်းများကို ပြုလုပ်ရန် မြေပြန့်နေရာ လွတ်များလည်းရှိပါသည်။ EIA အဖွဲ့အနေဖြင့် ဤကုမ္ပဏီသည် ခေတ်မီတိုးတက်သော နောက်ဆုံးပေါ် နည်းစနစ်များ၊ ဖောက်ခွဲခြင်း နည်းပညာများကို သုံးစွဲမည်ဟု လေ့လာသိရှိခဲ့ပါသည်။ ထုံးကျောက်မိုင်း စီမံကိန်းဝင်းအတွင်းတွင် ထုံးကျောက် ကြိတ်ခွဲစက်၊ ဆီသိုလျောင်ရုံ စသည်တို့ကိုလုံခြုံရေး အကောင်းဆုံး အနေ အထားဖြင့် ထားရမည် ဖြစ်ပါသည်။ မြေဧရိယာ ရရှိမှု အခြေအနေ ၊ သယ်ယူပို့ဆောင်ရေး ကုန်ကျစရိတ် ၊ ရေရရှိမှုနှင့်

အကွာအဝေး တို့အတွက် ဤနေရာထက် ပို၍ သင့်လျော်သော အခြားနေရာ မရှိပါ။ ဤနေရာတွင် ဆောင်ရွက်ရန် အကောင်းဆုံး ဖြစ်နေပါသည်။ ဤဒေသတွင် ထုံးကျောက်စီမံကိန်း မဆောင်ရွက် ဖြစ်ပါက ဒေသတွင်း စီးပွားရေး တိုးတက်မှု ဖြစ်နိုင်မည် မဟုတ်ပါ။ ဤနေရာသည် ထုံးကျောက်များသာ ထွက်ရှိသော နေရာ ဖြစ်သဖြင့် ဒေသတွင်း အရင်းအမြစ်များကို အသုံးမပြုနိုင်ပါက များစွာ ဆုံးရှုံးနစ်နာမည် ဖြစ်ပါသည်။ အခြားသော စိုက်ပျိုးရေး မွေးမြူရေး လုပ်ငန်းများနှင့်လည်း မသင့်တော်ပါ။

၁၆။ စီမံကိန်းဧရိယာ၏ သဘာဝ ပတ်ဝန်းကျင် အခြေအနေများ

စီမံကိန်း ဧရိယာ၏ ပတ်ဝန်းကျင်လေ့လာဆန်းစစ်ရာတွင် ရုပ်ပိုင်းဆိုင်ရာ၊ ဇီဝဗေဒဆိုင်ရာ၊ လူမှု စီးပွားရေးဆိုင်ရာ အချက်အလက် များနှင့် ယဉ်ကျေးမှုဆိုင်ရာ အဆောက်အဦများ၊ တနင်္သာရီမြို့နယ်မြေမျက်နှာပြင်သွင်ပြင် စသည်တို့ ပါဝင် ပါသည်။ စီမံကိန်းဧရိယာ အတွင်း နှင့်အနီးပတ်ဝန်းကျင်ရှိ ရုပ်ပိုင်းဆိုင်ရာ မြေမျက်နှာသွင်ပြင်၊ ရေဆင်း၊ ရာသီဥတု ပထဝီဝင် အနေအထား၊ ဘူမိဗေဒဆိုင်ရာ အချက်များ မြစ်ချောင်းအင်းအိုင်များ၊ သဘာဝ ဘေးအန္တရာယ် စသည်အချက်အလက်များအား မြို့နယ် စစ်တမ်းကောက်ယူ၍ရရှိသောတွေ့ရှိချက်များကို ဤ အစီရင်ခံစာ ၏ အခန်း(၆)တွင် အသေးစိတ်ဖော်ပြထားပါသည်။

၁) ရုပ်ပိုင်းဆိုင်ရာအချက်အလက် များ

အကြောင်းအရာ	ဖော်ပြချက်
မြေမျက်နှာ သွင်ပြင်	တနင်္သာရီမြို့နယ် ၏ အရှေ့ဘက်ပိုင်းသည် ကုန်းမြင့် ဖြစ်ပြီး အနောက်ဖက်ပိုင်း မှာ မြေနိမ့်ပိုင်းဖြစ်သည်။ အမြင့်ဆုံးတောင်မှာ Kyaoyai (၁၃၄၅ မီတာ) ဖြစ်၏ ။ Chaung din Taung (၈၅၉ မီတာ) Chaung Nawng Hoi (၅၀၅ မီတာ) တောင်များ ဖြစ်ကြပါသည်။ ငဝန်ချောင်း၏ အရှေ့နှင့်အနောက် နှစ်ဘက်လုံးတွင်အနယ်ကျထုံးကျောက်များ (Mergui series) တည်ရှိ ပါသည်။ မြို့နယ် တစ်ခုလုံး ၏ အမြင့်ပေမှာ ပင်လယ်ရေ မျက်နှာပြင်မှ ၂၀ မီတာမှ ၁၃၀၀ မီတာ အတွင်း ဖြစ်ပါသည်။
ရေဆင်း	အဓိက မြစ်မှာ တနင်္သာရီမြစ်ကြီးဖြစ်ပြီး မြောက်မှ တောင်သို့ စီးဆင်းပါသည်။ ၎င်း၏အကြီးဆုံး မြစ်လက်တက်ဖြစ်သောတနင်္သာရီမြစ်ကလေးခေါ် ငဝန်ချောင်းသည် တောင်မှ မြောက်သို့ စီးဆင်းပြီး တနင်္သာရီ မြစ်ကြီးထဲသို့ စီးဝင်သွားပါသည်။ ထုံးကျောက်တောင် တန်းများမှာ ငဝန်ချောင်းလွင်ပြင် တဝိုက် တွင်တည်ရှိ ကြသည်။ အခြားသော မြစ်လက်တက် များ မှာ Thagyet Chaung သိန်းခွန် အင်းတော်ချောင်း မူးချောင်း ကလီချောင်း) နှင့် ရဲစိမ်းချောင်း တို့ဖြစ်ပါသည်။
မိုးလေဝသ	တနင်္သာရီတိုင်း ရာသီဥတုသည် တည်နေရာ တောင်တန်းများ ၊ လေတိုက်မှု ၊ ပင်လယ်နှင့် အနီးအဝေး စသည်တို့ ပေါ်တွင် မူတည်ပါသည်။ ပုံမှန်အားဖြင့် နွေရာသီသည် အပူချိန်အမြင့်ဆုံးဖြစ်ပြီး မတ်လ လယ်မှ မေလကုန်ထိ ဖြစ်ပါသည်။ အေးမြသော ရာသီဥတုသည် နိုဝင်ဘာလမှ ဇန်နဝါရီလကုန်ထိ ဖြစ်ပါသည်။ တနင်္သာရီမြို့နယ်၏ ၁၀ နှစ် (၂၀၀၉ ခုနှစ် မှ ၂၀၁၈ ခုနှစ်) အတွင်း ပျမ်းမျှ မိုးရွာရက် နှင့် မိုးရေချိန် တို့ကို အခန်း (၅) တွင် ဖော်ပြထားပါသည်။

သဘာဝ ဘေးအန္တရာယ်	တနင်္သာရီ မြို့နယ်သည် မကြာခဏ ရေကြီးမှု အန္တရာယ် ကြုံတွေ့ရပါသည်။ ၂၀၁၅၊ ၂၀၁၈ နှစ် နှင့် ၂၀၂၁ ခုနှစ် များတွင် မိုးအဆက်မပြတ်ရွာသွန်းမှုကြောင့် တနင်္သာရီမြစ်ရေ မြင့်တက်လာပြီး စိုးရိမ်ရေ မှတ် ကျော်လွန်၍ ရေကြီး ရေလျှံ ဖြစ်ခဲ့ပါသည်။ ၂၀၂၃ ခုနှစ် ဂျူလိုင်လအတွင်း မိုးရေချိန် (၂၅၃ မီလီမီ တာ) အများဆုံးဖြစ်ခဲ့ကာ ကော့သောင်း၊ ထားဝယ်၊ မြိတ်မြို့ များတွင် ရေကြီးခဲ့ပါသည်။ ဆိုက်ကလုံး နှင့် ငလျင်ဘေး အန္တရာယ် တို့မှာမူ တနင်္သာရီတိုင်းဒေသကြီးတွင် ဖြစ်ပေါ်မှု နည်းပါးပါ သည်။
လူဦးရေဆိုင်ရာ အချက်များ	မြို့နယ် အတွင်းတွင် ရပ်ကွက် (၂) ခု နှင့် ကျေးရွာ အုပ်စုပေါင်း (၁၉) ခု ပါဝင်ပါသည်။ လူဦးရေအများစု သည် ကျေးလက်ဒေသတွင် နေထိုင်ကြပြီး မြို့နေ လူဦးရေ မှာ ၅.၂ % ရှိပါသည်။ ၂၀၁၉ ခုနှစ်တွင် မြို့နယ် အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန၏ စာရင်းအရ လူဦးရေသည် ၁၀,၈၈၄ ဦး ရှိပြီး တနင်္သာရီ မြို့နယ်တွင် ၉၇,၈၀၉ ဦးနှင့် မောတောင်မြို့နယ် ခွဲ တွင် ၄၀၃၃ ဦးရှိပါသည်။
မြေအသုံးချမှု	တနင်္သာရီ မြို့နယ်တွင် စုစုပေါင်း စိုက်ပျိုးမြေ ၁၂၀,၃၂၉ ဧက ရှိ၍ လယ်မြေ ဧရိယာ ၃၂,၀၉၈ ဧက နှင့် ကိုင်းကျွန်းမြေ ၄၃၄ ဧက ရှိပါသည်။ ကြိုးဝိုင်း ကာကွယ်တော ဧရိယာမှာ ၈၄၂၈ ဧက ရှိပြီး တောရိုင်းနှင့် မြေရိုင်းတို့မှာ ၈၇၉,၂၁၃ ဧက နှင့် ၁၁၇၀,၁၂၄ ဧကတို့ အသီးသီး ဖြစ်ပါသည်။ မစိုက်ပျိုးသော ဧရိယာ (လူနေအိမ်ခြေလမ်း စသည်) တို့မှာ ၆၂၅,၀၉၈ ဧက ဖြစ်ပါသည်။
ယဉ်ကျေးမှု အမွေအနှစ် များ	တနင်္သာရီမြို့နယ်၏ စီမံကိန်း ပြုလုပ်သည့် ဧရိယာ အနီးတဝိုက်တွင် ယဉ်ကျေးမှု ဆိုင်ရာ အထိမ်းအမှတ်များ၊ အမွေအနှစ် နေရာ ဒေသများ၊ ရှေးဟောင်း နေရာများ၊ ဘာသာရေး ဆိုင်ရာ အဆောက်အဦး များ မတွေ့ရှိရပါ။ ကျေးရွာများတွင်မူဘုရား စေတီ ကျောင်းကန်များ၊ ခရစ်ယာန် ဘုရားရှစ်ခိုးကျောင်း များ ရှိကြပါသည်။ သို့သော်သမိုင်းဝင်ရှေးဟောင်းများမဟုတ်ကြခြင်းမှာအများစုမှာ အသစ်တည်ထားသောရွာများဖြစ်ကြပါသည်။

၂) ရုပ်ပိုင်းဆိုင်ရာအချက်အလက် များအတွက်စစ်တမ်းကောက်ယူခြင်း

လိုအပ်သောစစ်တမ်းကောက်ယူမှုများအတွက်၊ ကွင်းဆင်းလေ့လာ/တိုင်းတာရာတွင် လေထုအရည်အသွေး၊ ရေအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှုတိုင်းတာမှုများ၊ သက်ရှိဇီဝအစိတ်အပိုင်းနှင့် လူမှုပတ်ဝန်းကျင်အခြေအနေစသည်တို့ကို စီမံကိန်းဧရိယာ၏ (၅)ကီလိုမီတာစက်ဝန်းအတွင်း ၂၀၂၁ ခုနှစ် ဒီဇင်ဘာလ ၂၃ - ၂၅ ရက်များအတွင်းတွင် တိုင်းတာခဲ့ပါသည်။

အကြောင်းအရာ	ဖော်ပြချက်
ရေထုအရည် အသွေး	ရေနမူနာများကို မြေပြင်ရေအဖြစ် ဘန်ခွမ်းရွာ နှင့် ငဝန်ချောင်းရေ၊ မြေအောက်ရေအဖြစ် ခဲချောင်း ကျေးရွာရေတွင်းတို့မှ နမူနာ (၃) ခု ကောက်ယူခဲ့ ပါသည်။ (ISO-Tech Laboratory) သို့ ပေးပို့စမ်းသပ်ခဲ့ပါသည်။ စမ်းသပ်ချက် အဖြေများအရ ရေအရည် အသွေးများ သည် (WHO) ၏စံညွှန်း များ အရ သောက်သုံးရေ နှင့်သုံးစွဲရေအတွက် သင့်တော်ကောင်းမွန် ကြောင်းတွေ့ရှိ ရပါသည်။ ရေနမူနာများ တွင်လည်း အန္တရာယ်ရှိ ဓာတ်ပစ္စည်းများ ဖြစ်သော (အာဆင်းနစ် As၊ နိုက်ထရိတ် NO ₃ ၊ ခဲ Lead) စသည်တို့ မပါဝင်ပါ။ အသေးစိတ်အချက်များကို အခန်း ၆၊ ပိုဒ်ခွဲ ၆-၃-၈ တွင် ဖော်ပြထား ပါသည်။
လေထုအရည် အသွေး	နမူနာ များကို စီမံကိန်းဧရိယာ အတွင်း၊ ငဝန်ချောင်းအနီး၊ ခဲချောင်းကျေးရွာအနီး၊ စုစု ပေါင်း နေရာ (၃) ခု မှကောက်ယူခဲ့ပါသည်။ ၎င်းတို့ကို တိုင်းတာ ရာတွင် “EQM Co., Ltd.” မှ ဝန်ထမ်း များ၊ EIA အဖွဲ့နှင့် ၂၄နာရီ ကုမ္ပဏီ ၏အဖွဲ့ နှင့်အတူ တိုင်းတာခဲ့ ပါသည်။ တွေ့ရှိချက် အဖြေများကို ပတ်ဝန်း ကျင် ဆိုင်ရာ အရည်အသွေးထုတ် လွှတ်မှု လမ်းညွှန်ချက်များ NEQEG Guidelines (၂၀၁၅) ၏ တန်ဖိုးများ နှင့်နှိုင်းယှဉ်လေ့လာခဲ့ ပါ သည်။ အသေးစိတ်အချက်များကို အခန်း ၆၊ ပိုဒ်ခွဲ ၆-၃-၉ တွင် ဖော်ပြထားပါ သည်။

	လေထုအရည်အသွေး တစ်နာရီပျမ်းမျှအဆင့်၊ (၂၄) နာရီပျမ်းမျှအဆင့်၊ တန်ဘိုး များမှာ NEQEG သတ်မှတ်ချက် တန်ဖိုးများ၏ အောက်တွင် ရှိနေကြောင်း တွေ့ရပါသည်။ အမှုန် များ၊ ထုတ်လွှတ် အခိုးအငွေ့ သိပ်သည်း ပါဝင်မှုပမာဏ များ (PM ₁₀ , PM _{2.5}) သည်လည်း NEQEG သတ်မှတ်ချက် တန်ဘိုး များထက်ကျော်လွန်မှုမရှိပေ။
ဆူညံသံ အဆင့်များ	ဆူညံသံ အဆင့်များ ကို ခဲချောင်း ကျေးရွာရုံး၊ ချောင်းနောက်ပြန်စာသင်ကျောင်း၊ အေးသာယာရွာဘုန်းကြီးကျောင်း တို့တွင်တိုင်းတာခဲ့ပါသည်။ စစ်တမ်းရလဒ်များသည် လည်း အများအားဖြင့် NEQEG ၏ တန်ဘိုးများ အောက်တွင် ရှိနေကြောင်း တွေ့ရှိရ ပါသည်။ တိုင်းတာသည့်အနီးတဝိုက်တွင် ဖြတ်သန်းသွားလာကြသော မော်တော်ယာဉ်များ ဆိုင်ကယ်သံများ ကြောင့် ဆူညံသံမြင့်တက်ခြင်းမှလွဲ၍ နေရာအများစုတွင် လူနေကျပါးသော ကျေးရွာဒေသ၏ သဘာဝအတိုင်း တွေ့မြင်ရပါသည်။

၃) ဇီဝဝန်းကျင်အခြေအနေ

အကြောင်းအရာ	ဖော်ပြချက်
အပင်မျိုးစိတ်များ	ထင်ရှားသောသစ်တောအမျိုးအစားများမှာ အမြင့်ပိုင်း အမြစ်မီးသစ်တော (၄၂.၃ %)၊ အနိမ့်ပိုင်းအမြစ်မီးသစ်တော (၂၁.၆%) တို့ဖြစ်ကြပါသည်။ အမြစ်မီးသစ်တော ၏(၂၇.၁ %) နှင့်ဒီရေတောတို့၏(၄၇.၅%) တို့မှာအဆင့်အတန်းနိမ့်သစ်တော များဖြစ် ကြပါသည်။ အများဆုံးတွေ့ရသောအပင်များမှာ <i>Dipterocarpus baudii</i> နှင့် <i>Xerospermum noronhianum</i> (Blume) တို့ဖြစ်ပြီး သစ်သီးပင်များ သစ်အမျိုးမျိုး၊ ဆေးဘက်ဝင်အပင်များလည်းပေါက်ရောက်လျက်ရှိပါသည်။
သတ္တဝါမျိုးစိတ်များ (ကုန်းနေ)	သတ္တဝါမျိုးစိတ်များကို စုစုပေါင်း ၁၀၈ မျိုးစိတ်၊ မျိုးရင်းပေါင်း ၆၁၊ နှင့်မျိုးစဉ် ၃၁ ခုတို့ဖြစ်ပါ သည်။ လိပ်ပြာမျိုးစိတ် ၁၂ခု၊ ရေနေသတ္တဝါ မျိုးစိတ် ၂၀၊ ခုတွေ့ရပါသည်။ တွားသွားသတ္တဝါ၊ ငှက်များ၊ နို့တိုက်သတ္တဝါတို့၏ မျိုးစိတ်တို့မှာ ၁၁၊ ၃၅၊ ၂၀ခုအသီးသီးဖြစ်ကြပါ သည်။ ဤဒေသတွင် မှတ်တမ်းများအရတွေ့ရသော Helmeted Hornbill (အောက်ချင်းမြီးရှည်) နှင့် Gurney's Pitta (တက်တူးရင်မဲ)တို့မှာ IUCN Red List အရ ဆိုးဝါးစွာမျိုးတုန်း အန္တရာယ်ရှိသောမျိုးစိတ် များ(CR) ဖြစ်ကြပါသည်။ ငှက်မျိုးစိတ် ၁ခုနှင့်နို့တိုက်သတ္တဝါမျိုးစိတ် ၅ခုတို့မှာ မျိုးတုန်း အန္တရာယ် ရှိသောမျိုး စိတ်များ ((EN)စာရင်းဝင်များဖြစ်ကြပါသည်။
သတ္တဝါမျိုးစိတ်များ (ရေနေ)	ရေနေသတ္တဝါ မျိုးစိတ် ၂၀ တို့တွင် ၁၇ ခုမှာ မျိုးတုန်း အန္တရာယ် နည်းပါး(LC)၊ ၂ ခုသည် အန္တရာယ် ရှိ နိုင်ခြေရှိ (NT)သော စာရင်းဝင်များ ဖြစ်ကြပါသည်။

၄) လူမှုစီးပွားရေးဆိုင်ရာအချက်များ

လူမှုစီးပွားဆိုင်ရာအခြေခံ အချက်အလက်များကို ၂၀၂၁ ခုနှစ် ဒီဇင်ဘာလ(၂၃-၂၅) ရက်အတွင်း စီမံကိန်းဧရိယာ ၏အနီးတဝိုက်တွင်တည်ရှိသော ရွာပေါင်း (၅) ရွာ မှ အိမ်ထောင်စု (၅၈) စုကို ကျပန်းစစ်တမ်း ကောက်ယူ ခဲ့ပါသည်။ ၎င်းကျေးရွာများမှာ ဘုတ်ပြင်းမြို့နယ်၊ မနီးရုံးကျေးရွာအုပ်စုအတွင်းရှိ ခဲချောင်းကျေးရွာ၊ မနီးရုံးကျေးရွာ၊ တောင်ငယ်ကျေးရွာ နှင့် တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု အတွင်းရှိ ရေဖြူကျေးရွာ၊ ချောင်းလမုကျေးရွာအုပ်စု အတွင်းရှိ တားပလက်ကျေးရွာ၊ အေးသာယာကျေးရွာ နှင့် ချောင်းနောက်ပြန် ကျေးရွာတို့

ဖြစ်ပါသည်။ အိမ်ထောင်စုစစ်တမ်း၏ အသေးစိတ် တွေ့ရှိချက်များကို လူဦးရေဆိုင်ရာအချက်များ၊ အလုပ်အကိုင်များ၊ မြေယာပိုင်ဆိုင်မှု၊ စီးပွားရေးရာ ပိုင်ဆိုင်မှုများ၊ ပညာရေး၊ ကျန်းမာရေး၊ တစ်နှစ်ဝင်ငွေစသည်တို့ကို အခန်း (၆) အခန်းခွဲ ၆.၅ တွင် ထည့်သွင်း ဖော်ပြထားပါသည်။

အကြောင်းအရာ	ဖော်ပြချက်
ကျေးရွာအုပ်စု လူဦးရေ	စစ်တမ်းကောက်ယူခဲ့သော မနီးလုံး ကျေးရွာအုပ်စု နှင့် ချောင်းလမု ကျေးရွာအုပ်စု တို့တွင်လူဦးရေမှာ ၄၅၁၀ ၊ ၅၀၆၃တို့ဖြစ်ပါသည်။ အေးသာယာကျေးရွာသည် လူဦးရေအများဆုံး (၁၁၆၅) နှင့် မနီးလုံး ကျေးရွာတွင် (၅၆၃)၊ ခဲချောင်းကျေးရွာတွင် (၅၃၄) ဦးနေထိုင်ကြပြီး၊ ကျား၊ မအချိုးမှာတူညီလှနီးပါး ဖြစ်ပါသည်။
လူမျိုးစုနှင့်ဘာသာရေး	ကျေးရွာအုပ်စုနှစ်ခုလုံးတွင် ဗမာ လူမျိုးဦးရေသည်အများဆုံးဖြစ်ပြီး ကရင်လူမျိုးကဒုတိယ ဖြစ်ပါသည်။ မနီးလုံး ကျေးရွာအုပ်စုတွင်ဗုဒ္ဓဘာသာဝင် (၂၅၆၂) ဦးရေနှင့်ခရစ်ယန် ဘာသာ ဝင်(၁၉၄၅) ဦး ရှိပါသည်။ ချောင်းလမု ကျေးရွာအုပ်စုတွင် အားလုံးမှာ ဗုဒ္ဓဘာသာဝင် များ (၅၀၆၃) သာ ဖြစ်ကြပါသည်။
စီးပွားရေးလုပ်ငန်း	အဓိကလုပ်ငန်းမှာ တနိုင်တပိုင် တောင်ယာ စိုက်ပျိုးရေး (စပါး၊ ကွမ်းသီး ငှက်ပျော) နှင့်စားသုံးသီးပင်များကဲ့သို့သော ဥယျာဉ်ခြံမြေများ ရှိကြသည်။ ရွာသူရွာသား အများစု သည် ဆီအုန်းစိုက်ခင်းနှင့်ကုမ္ပဏီများတွင် လုပ်သားများ ဖြစ်ကြပါသည်။ ၎င်းအပြင် ပြင်ပသို့ သွားရောက် လုပ်ကိုင်ကြသည် ရွှေ့ပြောင်း လုပ်သားများ၏ ပြန်လည် ပေးပို့သော ဝင်ငွေကိုလည်း အမှီပြုကြပါသည်။
အိမ်ထောင်စု ဝင်ငွေ	စစ်တမ်း၏အဖြေများအရကျေးရွာအားလုံးတို့တွင် ဝင်ငွေနည်းသော အုပ်စု (တစ်နှစ် လျှင်ကျပ်ငွေသိန်းသုံးဆယ်၏အောက်(< ၃,၀၀၀,၀၀၀) ဝင်ငွေရှိသော အိမ်ထောင်စု ဦးရေက၊ ဝင်ငွေများသော အုပ်စု (တစ်နှစ်လျှင် ကျပ်ငွေသိန်းခြောက်ဆယ်အထက် (> ၆,၀၀၀,၀၀၀) ထက် အိမ်ထောင်စု ဦးရေပို ရှိကြောင်းတွေ့ရပါသည်။ ထို့ကြောင့်ဝင်ငွေနည်းသောမိသားစုများက ဝင်ငွေများသောမိသားစုများ ထက်လည်း ကောင်း၊ ဝင်ငွေအလတ်တန်းစားများ (> ၃,၀၀၀,၀၀၀ - < ၆,၀၀၀,၀၀၀) ထက် လည်းကောင်း၊ ဦးရေပို ရှိကြောင်း တွေ့ရပါ သည်။ထို့ကြောင့်စီမံကိန်းကျေးရွာများ၏ စီးပွားရေးဖွံ့ဖြိုးမှုနည်းပါးကြောင်း တွေ့ရပါသည်။
ပညာရေး	မနီးလုံး ကျေးရွာအုပ်စု တွင်အခြေခံပညာအထက်တန်း ကျောင်း (၁) ကျောင်း ရှိပြီး ချောင်းလမု ကျေးရွာအုပ်စုတွင် အခြေခံအလယ်တန်း ကျောင်း (၁) ကျောင်း နှင့် အခြေခံမူလတန်း ကျောင်း (၄)ကျောင်းတို့ ရှိပါသည်။
ကျန်းမာရေးစောင့်ရှောက်မှု	ချောင်းလမု ကျေးရွာအုပ်စုတွင် ပြည်သူ့ ကျန်းမာရေး စင်တာ မရှိပါ။ ခဲချောင်း ကျေးရွာတွင် ကျန်းမာရေး စင်တာတစ်ခုရှိပါသည်။ ဤကျေးရွာများ ရှိ ပြည်သူများ တွင် မိုးရာသီတွင် အဖြစ်များဆုံး ရောဂါမှာ ရာသီတုပ်ကွေးဖြစ်၍အခြားဆိုးရွားသောကျန်းမာရေးဆိုင်ရာ မှတ်တမ်းများ မတွေ့ရှိ ရ ပါ။ အိမ်ထောင်စုအားလုံးနီးပါးသည် ယင်လုံအိမ်သာ အမျိုးအစားများကို အသုံးပြုနေကြပြီး ကောင်းမွန်သော မိလ္လာစနစ်လည်းရှိပါသည်။ ၂၀၁၅ ခုနှစ်နှင့် ၂၀၁၉ ခုနှစ် အတွင်းတွင် ဖြစ်ပွားမှု အများဆုံး ရောဂါများမှာ Diarrhoea Dysemtery ,Malaria တို့ဖြစ်ပါသည်။ ငှက်ဖျားရောဂါဖြစ်ပွားမှုမှာ ၂၀၁၅ ခုနှစ်မှ ၂၀၁၉ ခုနှစ် အတွင်းတွင် သိသိသာသာ လျော့နည်းသွားပါသည်။
သောက်သုံးရေ	သောက်သုံးရေ အရင်းအမြစ်များမှာ ယေဘုယျအားဖြင့် ရေတွင်း၊ ရေကန်နှင့် မြစ်၊

	<p>ချောင်းများမှဖြစ် ၍ လက်တွင်း နှင့် စက်ရေတွင်း များကို အဓိကထား အသုံးပြုကြပါသည်။ အိမ်ထောင်စုအများစုသည် မြေအောက်ရေနှင့် မြေမျက်နှာပြင်/ စမ်းချောင်းရေကို သောက်သုံးရန်နှင့် အိမ်သုံးအတွက် တစ်နှစ်ပတ်လုံး အလွယ်တကူ ရနိုင်ပါသည်။</p>
<p>လျှပ်စစ်ဓါတ်အား</p>	<p>လျှပ်စစ်ဓါတ်အားလောင်းလက်လှမ်းမမီသေး၍ ရွာပိုင်မီးစက်များ၊ ဆိုလာမီးများကို အသုံးပြုကြပါသည်။ နမူနာကောက်ယူခဲ့သောကျေးရွာ (၅) ရွာမှာ ကိုယ်ပိုင်ဆိုလာ စွမ်းအင်နှင့် အစုအဖွဲ့လိုက် ထူထောင်ထားသော မီးစက်များကို အဓိက အသုံးပြုလျက်ရှိပြီး အချို့မှာ ဘက်ထရီအိုးများဖြင့် သုံးစွဲလျက်ရှိပါသည်။</p>

၁၂၇။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း(EIA) နှင့် လျော့ပါးစေရေး အစီအမံများ

၁၂၇၁။ ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာသက်ရောက်မှုများကို ဆန်းစစ်သည့်စနစ်နှင့် ချဉ်းကပ်ပုံ

ထုံးကျောက်တူးဖော်ထုတ်လုပ်မှုစီမံကိန်း၏ စီမံကိန်းအကောင်အထည်ဖော်မှုကာလများ အဖြစ် လုပ်ငန်းများ မှာ အောက်ပါအတိုင်းဖြစ်သည်။

၁။ စီမံကိန်းလုပ်ငန်း အကြိုကာလ

၂။ ထုံးကျောက်တူးဖော် ထုတ်လုပ်မှုလုပ်ငန်း အတွက်ပြင်ဆင်မှု/ မိုင်းဖွင့်ခြင်း ကာလ

၃။ ထုံးကျောက်တူးဖော် ထုတ်လုပ်မှု လုပ်ငန်း လည်ပတ် ခြင်းကာလ

၄။ မိုင်းပိတ်သိမ်း ခြင်းနှင့် ပြန်လည်တည်ဆောက်ထိန်းသိမ်းရေးကာလ

၎င်းတို့အနက်ပတ်ဝန်းကျင်ထိခိုက်မှုအများဆုံးဖြစ်ပေါ်နိုင်ခြေရှိသော၊အဆင့်သုံးဆင့်ပြင်ဆင် မှုကာလ /တည် ဆောက်ရေးအဆင့်၊ ထုတ်လုပ်မှု အဆင့် နှင့် မိုင်းပိတ်သိမ်း အဆင့်)တို့ကို ဆန်းစစ်ထားပါသည်။

ယခင် ဆောင်ရွက်ခဲ့သော နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအဆင့် (Scoping Stage) တွင် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းကို စီမံကိန်းဖော်ပြချက်များနှင့် အဆိုပြု စီမံကိန်းတည်နေရာတိုက်ရှိ ပတ်ဝန်းကျင်နှင့် လူမှုရေးအခြေအနေများ အပေါ်အခြေခံပြီး ကနဦးအနေဖြင့် ဆန်းစစ်ခဲ့ပြီး ဖြစ်ပါသည်။ ဒုတိယ(EIA) အဆင့် တွင် အောက်ဖော်ပြပါ လက္ခဏာရပ်များဖြင့် အသေးစိတ်ဆန်းစစ်ခဲ့ ပါသည်။ လေ့လာဆန်းစစ်ချက်များ အနေဖြင့် သဘာဝပတ်ဝန်းကျင်၊ ဇီဝဝန်းကျင်၊ လူမှုစီးပွားရေးနှင့် ကျန်းမာရေး၊ ညစ်ညမ်းမှု၊ စသည်တို့ ပါဝင်ပါသည်။ သဘာဝပတ်ဝန်းကျင်၊ လူမှုပတ်ဝန်းကျင် တို့၏ ထိခိုက်မှုများအား A မှ D ထိ အောက်ဖော်ပြပါ ညွှန်းကိန်းများအတိုင်း အမျိုးအစား ခွဲခြားထားပါသည်။

- A - : သိသာသောဆိုးကျိုးသက်ရောက်မှု A + : သိသာသောကောင်းကျိုးသက်ရောက်မှု
- B - : ဆိုးကျိုးသက်ရောက်မှုအချို့ B + : ကောင်းကျိုးသက်ရောက်မှုအချို့
- C : အကျိုးသက်ရောက်မှုမရှင်းလင်းသဖြင့်ထပ်မံလေ့လာရန်လိုအပ်သည်။
- D : အကျိုးသက်ရောက်မှုမရှိသလောက်ဖြစ်၍ထပ်မံလေ့လာရန်မလိုအပ်။

၁၂၇၂။ ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာအမျိုးအစားများသတ်မှတ်ခြင်း

မြန်မာနိုင်ငံတော်မှ လက်ရှိအချိန်အထိ ထုတ်ပြန်ထားပြီးဖြစ်သော ပတ်ဝန်းကျင်ဆိုင်ရာ၊ လူမှုဝန်းကျင်၊ ပတ်သက် သည့် ဥပဒေများ၊ စည်းမျဉ်းစည်းကမ်းများ၊ လမ်းညွှန်ချက်များအရ သဘာဝပတ်ဝန်းကျင် နှင့်လူမှုရေးဆိုင်ရာ သက်ရောက်မှု အမျိုးအစားများ သတ်မှတ်ခြင်းအတွက် သဘာဝပတ်ဝန်းကျင်နှင့် လူထုကျန်းမာရေး ဘေးအန္တရာယ် ကင်းရှင်းရေး ဆိုင်ရာဆင်ခြင်သုံးသပ်ခြင်းတွင် လေအရည်အသွေး၊ ရေအရည်အသွေး၊ မြေဆီလွှာ၊ စွန့်ပစ်ပစ္စည်း၊ ကမ္ဘာကြီးပူနွေးလာမှု၊ ဒေသတွင်းရာသီဥတု၊ အပင်၊ တိရစ္ဆာန်ဂေဟဗေဒစနစ်တို့ ပါဝင်ပါသည်။ လူမှုရေး ဆိုင်ရာဆင်ခြင်သုံးသပ်ခြင်းတွင် ပြန်လည်ချထားခြင်း နှင့်မြေနေရာရယူမှု၊ အလုပ်အကိုင်နှင့် အသက်မွေးမှု၊ လက်ရှိလူမှုရေးဆိုင်ရာ အခြေခံအဆောက်အဦများနှင့် ဝန်ဆောင်မှုများ၊ မြေအသုံးချမှု နှင့်အရင်းအမြစ်များ၊ လူမှုအဖွဲ့အစည်းများ၊ ချို့တဲ့သူများ ထိခိုက်လွယ်သော အုပ်စုများ မျိုးနွယ်စုများ၊ ယဉ်ကျေးမှုအမွေအနှစ်များ၊ စသည့် တို့ပါဝင်ပါသည်။

၁၂၇၃။ ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများအား အဆင့်ခွဲခြားသတ်မှတ်ခြင်း

ဤစီမံကိန်းကြောင့်ဖြစ်နိုင်ချေရှိသော ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာ သက်ရောက်မှုများကို လေ့လာရာတွင် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ အမျိုးအစား တခုချင်းစီအလိုက် တိုက်ရိုက်သက်ရောက်မှု များနှင့် စုပေါင်း သက်ရောက်မှုများကို ဆင်ခြင်သုံးသပ်ခြင်းများ ပါဝင်ပါသည်။ သက်ဆိုင်ရာ ဝန်ကြီးဌာနမှ လမ်းညွှန်ချက်များနှင့် လက်ရှိမြန်မာနိုင်ငံ၏ သဘာဝနှင့် လူမှု ပတ်ဝန်းကျင် ဆိုင်ရာ အခြေခံ စည်းမျဉ်း ဥပဒေများကို ထည့်သွင်းစဉ်းစားပြီး သက်ရောက်မှုများအား တခုချင်းစီအလိုက် အမျိုးအစားခွဲခြားရာတွင် လူမှုပတ်ဝန်းကျင် တွင် (၁၂) မျိုး၊ သဘာဝ ပတ်ဝန်းကျင် အခြေ အနေ (၁၀)မျိုး နှင့် ပတ်ဝန်းကျင် ညစ်ညမ်းမှု တွင် (၆) မျိုး၊ စုစုပေါင်း (၂၈)မျိုး ပါဝင်ခဲ့ပါသည်။ ၎င်းတို့၏ ထိခိုက်မှုများအား A မှ D ထိ အောက်ဖော်ပြပါ ညွှန်းကိန်း များအတိုင်း အမျိုးအစား ခွဲခြားထား ပါသည်။ စီမံကိန်း ကြောင့်ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများအား ဆန်းစစ်ချက်များ ဆောင်ရွက်ခဲ့ရာတွင် လူမှု ပတ်ဝန်းကျင် တွင် (၄)မျိုး၊ သဘာဝ ပတ်ဝန်းကျင်တွင် (၉)မျိုး နှင့် ပတ်ဝန်းကျင် ညစ်ညမ်းမှုတွင် (၆) မျိုး၊ စုစုပေါင်း (၁၉) မျိုးတွင် ဆိုးကျိုး သက်ရောက်မှုအချို့ရှိကြောင်း (B -) တွေ့ရပါသည်။ လျော့ပါးရေး အစီအမံ များဖြင့် ၎င်းသက်ရောက်မှုများအား အတတ်နိုင်ဆုံးလျှော့ချနိုင်ပါမည်။ သိသာသော ဆိုးကျိုး သက်ရောက်မှု များ (A -) ကို “မြေမျက်နှာသွင် ပြင် နှင့်ဘူမိဗေဒ၊ ရှုမျှော်ခင်းနှင့် မျက်စိပသာဒ” အချက်များတွင်တွေ့ရပြီး၊ ဤ စီမံကိန်းကြောင့်သက်ရောက်မှု မရှိ သ လောက် ဖြစ် သော (D) အချက် (၈) ခုကိုလည်း ဆန်းစစ်တွေ့ရပါသည်။ သို့သော်လည်း လူမှုပတ်ဝန်းကျင်တွင် မူ ဒေသတွင်း “စီးပွားရေး (အလုပ်အကိုင်အခွင့်အလမ်း)များ” တိုးမြှင့်လာနိုင်သဖြင့် ကောင်းကျိုးသက်ရောက်မှု (B+) ကို တွေ့ရပါသည်။

၁၇၂၄။ ဖြစ်နိုင်ခြေရှိသောအဓိက ဆိုးကျိုးသက်ရောက်မှုများနှင့်လျော့ချခြင်းနည်းလမ်းများ

ထုံးကျောက်တူးဖော်ထုတ်လုပ်ခြင်း လုပ်ငန်းမှ ပတ်ဝန်းကျင် အပေါ်သက်ရောက်မှုများအတွက် လုပ်ငန်း အဆင့်တိုင်းတို့တွင် ဖြစ်နိုင်ခြေရှိသော ဆိုးကျိုး သက်ရောက်မှုများကို လျော့ချနိုင်ရန် (သို့မဟုတ်) ထိန်းချုပ်နိုင်ရန်အတွက် လေ့လာ ရရှိထားသော သက်ရောက်မှုများနှင့် လျော့ပါးရေး အစီအမံများကို အောက်ဖော်ပြပါ ဇယားတွင် ဖော်ပြထားပါသည်။ လေ့လာ ဆန်းစစ်ချက်များအရ တွေ့ရှိရသော ဆိုးကျိုးသက်ရောက်မှု (B -) နှင့် သိသာသောဆိုးကျိုးသက်ရောက်မှု (A -) တို့ တွေ့ရှိရသည့် အချက်များကို အောက်ဖော်ပြပါ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်တွင် လျော့ချနိုင်သောနည်းလမ်းများကို ရေးဆွဲထားပြသည်။ အဆိုပါ လျော့နည်းစေမည့် နည်းလမ်းများကို အကောင်အထည် ဖော်ဆောင်မည့် အဖွဲ့အစည်းများ မှာ စီမံကိန်း ကန်ထရိုက်တာ နှင့် ၂၄နာရီ ကုမ္ပဏီ၏ စီမံကိန်းမန်နေဂျာတို့က လိုက်နာအကောင် အထည်ဖော်ကြပါမည်။ မြို့နယ်/ခရိုင် ဌာနဆိုင်ရာများ၊ သယံဇာတ နှင့်သဘာဝ ပတ်ဝန်းကျင် ထိန်းသိမ်း ရေးဝန်ကြီးဌာန၊ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာန တို့၏ လမ်းညွှန်ချက်များအတိုင်း လိုက်နာဆောင်ရွက် သွားမည်ဖြစ်ပါသည်။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို ၂၄နာရီ ကုမ္ပဏီ၏ အသုံးစရိတ် မှကျခံပါမည်။

ဇယား ၈။ ဖြစ်နိုင်ခြေရှိသောအဓိက ဆိုးကျိုးသက်ရောက်မှုများနှင့်လျော့ချခြင်းနည်းလမ်းများ

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ/	စီမံကိန်းကာလ	လျော့နည်းစေမည့် နည်းလမ်းများ
လူမှုပတ်ဝန်းကျင်			
၁	လုပ်ငန်းခွင်ကျန်းမာရေး နှင့် လုံခြုံမှု အခြေအနေ	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ လ၊မိုင်းပိတ် သိမ်း ခြင်း	လုပ်ငန်းခွင် မတော်တဆ ထိခိုက်မှုများ လျော့နည်းစေရန် ဘေးအန္တရာယ် လေ့ကျင့် သင်ကြားမှုများ၊သင်တန်းများပေးခြင်း။ အလုပ်သမားများအား စက်ပိုင်းဆိုင်ရာ မတော်တဆမှု ဖြစ်နိုင်သည့် နေရာများတွင် တစ်ကိုယ်ရည်သုံးအကာ အကွယ်ပစ္စည်း များ (PPE) များ ထောက်ပံ့ထားမည်ဖြစ်သည်။ အလုပ်သမား များ၏ PPE ဝတ်စုံ ဝတ်ဆင်မှုကို အမြဲစစ်ဆေးပါမည်။ အခြေစိုက် စခန်း သန့်ရှင်းရေး လုပ်ဆောင်မှုများကို ပုံမှန်စစ်ဆေးခြင်းများ။ အလုပ်သမားများ ၏ကျန်းမာရေးကို ပုံမှန်စစ်ဆေး၍ ကုသပေးခြင်း အကြံဉာဏ်ပေးခြင်းများ ပြုလုပ်ပါ မည်။ မည်သည့်အရေးပေါ်အခြေအနေတွင်မဆို ရှေးဦးသူနာပြု ပစ္စည်းများ၊ ဆေးဝါးများနှင့် ဆေးရုံကား စသည့်တို့အား အသုံးပြုနိုင်စေခြင်း။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး သင်တန်း များ ပေးခြင်း၊ အကြံ ဇာတိတိုက်လေ့ကျင့်ခြင်းများကို ပြုလုပ်ပါမည်။ မိုင်းဖောက်ခွဲခြင်းဆိုင်ရာ အန္တရာယ်ကင်းရှင်းရေး အစီ အစဉ်များ လိုက် နာ ခြင်း။
၂	လမ်းပန်းဆက်သွယ်ရေး	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ	ယာဉ်များနှင့် ကုန်တင်ကားများကို တစ်နာရီလျှင် ကီလိုမီတာ (၄၀)ထက်မပိုစေရန် တားမြစ် ထားရပါမည်။ စီမံကိန်း ဆောက် လုပ်ရေး လုပ်ငန်းများ အတွက် သယ်ယူပို့ ဆောင်ရာတွင်

		လ၊မိုင်းပိတ် သိမ်း ခြင်း	ယာဉ်စည်းကမ်း လမ်းစည်းကမ်း ကို လိုက်နာရန် သတိပေးပါမည်။ မော်တော်ယာဉ်မောင်း သူများကို လုံလောက်သော သင်တန်းများ တက်ရောက် စေပါမည်။ လုပ်ငန်းခွင်တွင် ယာဉ် သွား လာမှု အမှတ်အသားများနှင့် အလွယ် တကူ မြင်တွေ့ နိုင်သော ဆိုင်းဘုတ်များကို ရှင်းလင်းစွာ ညွှန်ပြ တပ်ဆင်ထားပါမည်။
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သဘာဝဝန်းကျင်			
၃	ရှုမျှော်ခင်း နှင့်မျက်စိ ပသာဒများ	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ လ၊မိုင်းပိတ် သိမ်း ခြင်း	ထုံးကျောက် တူးဖော်ခြင်းလုပ်ငန်းစဉ်နှင့် ပတ်သက်သည့် လုပ်ဆောင်မှု တိုင်းတွင် ရှုမျှော်ခင်း နှင့်မျက်စိပသာဒများကို ထိခိုက်မှုအနည်းဆုံး ဖြစ်စေရန် ပြုလုပ်ပါမည် ယာယီသက် ရောက်မှုရှိသည့် လုပ်ငန်းနေရာ များအား အလုပ်ပြီးစီးမှု အပေါ်မူတည်၍ လုပ်ငန်းလည်ပတ်စဉ်နှင့် မိုင်းပိတ်သိမ်း ခြင်း ကာလများတွင် အပင်/ချုံ/ မြက် များဖြင့် ပြန်လည် စိုက်ပျိုးပြုပြင်ခြင်း၊ ဒေသတွင်း ဇီဝမျိုးကွဲများထိန်းသိမ်း ရန် အလုပ်သမားများ အား ပတ်ဝန်းကျင် ဆိုင်ရာ အသိပညာ သင်တန်းပေးခြင်း။
၄	မြေမျက်နှာသွင် ပြင်နှင့်ဘူမိဗေဒ	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ လ၊မိုင်းပိတ် သိမ်း ခြင်း	ထုံးကျောက် တူးဖော်ခြင်းလုပ်ငန်းစဉ်နှင့် ပတ်သက်သည့် လုပ်ဆောင်မှု တိုင်းတွင် မြေမျက်နှာသွင်ပြင်နှင့် ဘူမိဗေဒကို ထိခိုက်မှုအနည်းဆုံး ဖြစ်စေရန် ခေတ်မီ စက်ပစ္စည်းများ၊ တိုးတက်ကောင်းမွန်သော နည်းစနစ် များကို လိုက်နာကျင့် သုံးရပါမည်။ ထုံးကျောက်မိုင်းဟောင်းနေရာအားပြန်လည် ထူထောင်ခြင်း၊ အကြီးမြန် သစ်ပင်များစိုက်ပျိုးခြင်း။ ထုံးကျောက်မိုင်းပိတ်သိမ်းပြီးနောက်ပိုင်းကာလများအတွင်းစောင့်ကြပ် ကြည့်ရှု စစ်ဆေးခြင်း။
၅	မြေဆီလွှာတိုက်စားခြင်း နှင့် အနည်ကျစုပုံခြင်း	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ လ၊မိုင်းပိတ် သိမ်း ခြင်း	မြေတိုက်စားခြင်းနှင့် အနည်ကျခြင်း ကို ထိန်းချုပ်ရန် နန်းကာများနှင့် အနည်ထိုင်ကန်များကို သင့်လျော်သော နေရာများတွင် ထည့်သွင်း တည်ဆောက်ထား ပါမည်။ ရေဆင်းမြောင်းများကိုစီမံကိန်းတောင်ခြေပတ်လည်တွင်တူးဖော်ခြင်း၊ အနည်များစုပုံစေရန် အနည်ထိုင်ကန်များဆောက်လုပ်ထားခြင်း။
၆	အပင်တိရိစ္ဆာန်ဂေဟဗေဒ စနစ် (ကုန်းနေ/ ရေနေ)	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော် ထုတ်လုပ်မှုကာ လ၊မိုင်းပိတ် သိမ်း ခြင်း	အပင်တိရိစ္ဆာန်ဂေဟဗေဒစနစ် ကို ထိခိုက်မှု အနည်းဆုံး ဖြစ်စေရန် သစ်ပင်ဝါးပင်များခုတ်ခြင်း အပင်ငယ်များ မြက်ခင်း များ ရှင်းလင်းခြင်း မှ တတ်နိုင်သမျှ ရှောင်ရှားပါမည်။ မိုင်းတူးဖော်ပြီးသည့် နေရာများနှင့် မိုင်းပိတ်သိမ်းချိန်တွင် သစ်ပင်၊ ဝါးပင်များ စနစ်တကျပြန်လည် စိုက်ပျိုး ခြင်း၊ စီမံကိန်း ပြုလုပ်မည့် ဧရိယာ အတွင်း တွင် လည်းကောင်း၊ စီမံကိန်း ၏ (AOI) နေရာတိုက်တွင် လည်းကောင်း၊ကုန်းနေ ရေနေတိရိစ္ဆာန် သားငှက်များ အမဲလိုက်ခြင်း။ ရောင်းဝယ်ဖောက်ကားခြင်း တို့ကိုတားမြစ်ခြင်း။
ပတ်ဝန်းကျင် ညစ်ညမ်းမှု			
၇	လေထု အရည်အသွေး	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော်	ထုံးကျောက်ကြိတ်ခွဲစက်တွင်ဖုန်ထွက်ရှိမှုများကိုထိန်း ချုပ်ရန် အဖုံးအကာများ တပ်ဆင်ခြင်း၊ လွန်တူးစက်များတွင် ဖုန်စုပ်စက်များ

		ထုတ်လုပ်မှုကာလ၊ မိုင်းပိတ်သိမ်းခြင်း	ပါဝင်ခြင်း၊ မီးခိုးကြောင့် ညစ်ညမ်းမှုများမှ ကာကွယ်ရန် ယာဉ်များကို ပုံမှန်အချိန်မှန် ထိန်းသိမ်းပြုပြင်ခြင်း၊ စီမံကိန်းနေရာ တည်ဆောက်ရေး ဧရိယာနှင့် လမ်းများကို ရေဖြန်းခြင်းများ ပါဝင်ရပါမည်။
၈	ဆူညံသံနှင့် တုန်ခါမှု	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော်ထုတ်လုပ်မှုကာလ၊ မိုင်းပိတ်သိမ်းခြင်း	စက်ပစ္စည်းများလုပ်ဆောင်နိုင်စွမ်းအပြည့်မောင်းနှင့်အသုံးပြု နေစဉ် ၅မီတာ အကွာရှိ သက်ရောက်နိုင်မည့် ဆူညံသံအဆင့်အား လုပ်ငန်းလည်ပတ်စဉ် ကာလ NEQG နှင့် ကိုက်ညီစေရန် ထိန်းချုပ်သတ်မှတ်ထားမည် ဖြစ်သည်။ ပတ်ဝန်းကျင်ဆူညံသံ စောင့်ကြပ် ကြည့်ရှုခြင်းများအား သင့်လျော် သည့် နေရာများတွင် ကာလအပိုင်းအခြားအလိုက် ဆောင်ရွက်သွားမည် ဖြစ်သည်။ ကျယ်လောင်သော ဆူညံသံများ မြေကြီးတုန်ခါမှု များ လျော့နည်းစေသည့် နည်းလမ်းများကို အသုံးပြုပြီး ဆူညံသံများ ထွက်ပေါ်စေသည့် လုပ်ဆောင်မှုများကို နေ့အချိန်တွင်သာ လုပ်ဆောင်စေပါမည်။
၉	ရေထု အရည်အသွေး	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော်ထုတ်လုပ်မှုကာလ၊ မိုင်းပိတ်သိမ်းခြင်း	တူးဖော်ရေး လုပ်ငန်းမှ ဘေးအန္တရာယ်ရှိသော ဓါတုပစ္စည်းများ မထွက်ရှိစေရန်၊ ပတ်ဝန်းကျင် မြစ်ချောင်း များသို့ မကျရောက်စေရန် အစဉ်ကျပြုရပါမည်။ လောင်စာဆီနှင့်စက်ဆီများအတွက် ကောင်းမွန်သော သိုလှောင်ရုံ တည်ဆောက်ပြီး မီးဘေး အန္တရာယ် မှလည်းကာ ကွယ်ရန်လုံခြုံသည့် အဆောက်အအုံ ဖြစ်ရပါမည်။
၁၀	စွန့်ပစ်ပစ္စည်း	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော်ထုတ်လုပ်မှုကာလ၊ မိုင်းပိတ်သိမ်းခြင်း	စွန့်ပစ် ပစ္စည်း များ စွန့်ပစ်ခြင်း အစီအစဉ်သည် စွန့်ပစ် ပစ္စည်း စီမံခန့်ခွဲခြင်း စည်းမျဉ်းများ လိုအပ်ချက်များနှင့် ကိုက်ညီရပါမည်။ စီမံကိန်း ဧရိယာတွင် အမှိုက်များ မီးရှို့ခြင်း ကိုတားမြစ်ပါမည်။ စီမံကိန်း ဧရိယာတွင် အဖုံးအကာပါသော အမှိုက်ပုံး (သို့) အမှိုက် ကန်များ ကို ပြင်ဆင်ပေးပါမည်။ အမှိုက်သိမ်းဆည်းခြင်းနှင့် စွန့်ပစ်ရန် အတွက် သက်ဆိုင်ရာ ဒေသအာဏာပိုင်များ (သို့) ကန်ထရိုက်တာကို အကြောင်းကြားပါမည်။ အန္တရာယ်ရှိသော ပစ္စည်းများ ကို စွန့်ပစ်ရာတွင် သက်ဆိုင် ရာ စည်းမျဉ်းများနှင့် အညီ စွန့်ပစ်ပါမည်။ ဤလုပ်ငန်းစဉ် တွင်အစိုင်အခဲ စွန့်ပစ်ပစ္စည်းမှ ဓာတုဗေဒ ပစ္စည်း အချို့ (မာကျူရီ၊ ခဲ) နှင့် တိုက်ရိုက် ထိတွေ့မှု မရှိနိုင်အောင် ကြိုတင် ကာကွယ် ရပါမည်။
၁၁	မြေဆီလွှာ ညစ်ညမ်းမှု	မိုင်းဖွင့်ခြင်း ကာလ၊ တူးဖော်ထုတ်လုပ်မှုကာလ၊ မိုင်းပိတ်သိမ်းခြင်း	စက်ယန္တရား ကြီးများ နှင့် အခြားလုပ်ဆောင်မှုများမှ ဆီယိုစိမ့်မှု၊ မတော်တဆဖိတ်စင်မှုများကို ကာကွယ်ရပါမည်။ အကယ်၍ ကျရောက်ပါက အန္တရာယ် သက်သာ စေရန် နည်းလမ်း/ ကုထုံးများအတိုင်း လိုက်နာ ကျင့်သုံး ရပါမည်။

၁၈။ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း

ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၏ ရည်ရွယ်ချက်များမှာ၊ ဘေးအန္တရာယ်များ၏ ရင်းမြစ်များကို လျော့ပါးစေခြင်း၊ မိမိတို့၏ ဘေးကင်းလုံခြုံရေးအတွက် မိမိတို့ကိုယ်တိုင် စီမံဆောင်ရွက်ကြခြင်း၊ အခြားသူများအတွက် လုံခြုံရေးနှင့် ကျန်းမာရေးအန္တရာယ် ကျရောက်နိုင်မှုများကို ဆန်းစစ်ခြင်း၊ ဘေးအန္တရာယ်များ၊ မတော်တဆဖြစ်မှုများ ထိခိုက်ဒဏ်ရာ ရရှိမှု တို့ကို ခွဲခြားဖော်ထုတ်ခြင်း တို့ဖြစ်ပါသည်။ ထုံးကျောက်မိုင်း တူးဖော်ထုတ်လုပ်ရေး လုပ်ငန်း ကြောင့် ပတ်ဝန်းကျင်ရှိ ပြည်သူများ အပေါ် ဘေးအန္တရာယ်ကျရောက်နိုင်မှုများကို ခွဲခြမ်းစိတ်ဖြာ ခြင်း တွင်ဘေးအန္တရာယ်များ ဖော်ထုတ်ခြင်းနှင့် အကဲဖြတ်ခြင်းတို့ပါဝင်ပါသည်။ ထုံးကျောက်မိုင်း တူးဖော်ထုတ်လုပ်ရေး လုပ်ငန်းတွင်၊ လုပ်ငန်းသဘာဝ၊ လုပ်ဆောင်ချက်၊ နေရာတို့အပေါ်မူတည်၍၊ ဆန်းစစ်လေ့လာ ချက်များအရဖြစ်နိုင်ခြေအရှိဆုံးသော ဘေးအန္တရာယ် များနှင့်၊ ၎င်းတို့ကိုထိန်းသိမ်း ကာကွယ်ရေး နည်းလမ်းများကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၉။ ဖြစ်နိုင်ခြေအရှိဆုံးသော ဘေးအန္တရာယ် များနှင့်ထိန်းသိမ်းကာကွယ်ရေးနည်းလမ်းများ

စဉ်	ဘေးအန္တရာယ်	ဖြစ်ပေါ်ကျရောက်နိုင်မှု	ထိန်းသိမ်းကာကွယ်ခြင်း
၁	ရေကြီးနစ်မြုပ်ခြင်း	မိုင်းရေယာနယ်အတွင်း မိုးသည်းထန်စွာရွာမှု၊	ရေစွန့်ထုတ်ရန်ရေစီးမြောင်းများ ဖော်ထုတ်ခြင်း၊ ရေမြောင်းများပျက်စီးခြင်း၊ အနည်ကျမှုများကြောင့်၊ ဘောင်အမြင့်ကိုသတ်မှတ်ရာတွင်ရေမဝင် နိုင်စေရန်သင့်တော်သောအမြင့်ထားရှိခြင်း၊
၂	ကုန်းဆင်း/ ဆင်ခြေ လျော့များ တည်ငြိမ်မှု	မိုင်းတွင်း၏ ဆင်ခြေ လျော့များ နိမ့်ကျပျက်စီးခြင်း	ပုံမှန်စစ်ဆေးခြင်း (အများအားဖြင့်ဆင်ခြေလျော့ ၇၀° မှ ၃၀° အကြားတွင်ရှိခြင်း)
၃	စက်ယန္တယားကြီး များအသုံးပြုသွားလာ မှု	စက်ယန္တယားကြီးများလဲကျ တိမ်းမှောက် ခြင်း	ညီညာသောမြေခိုင်မာသောမြေမျက်နှာပြင်ပေါ် တွင်ထားရမည်။ ကုန်းမြေအစွန်းနှင့် ၅ မီတာ အကွာတွင်ရှိရမည်။မောင်းနှင်သူသည်သတ်မှတ် မိုင်နှုန်း ထက်မကျော်ရ၊ တာယာများကောင်းမွန်ရမည်၊
၄	တိုက်ခိုက်မိခြင်း	ရွှေ့လျားနေသောစက်ကြီး များနှင့်အလုပ် သမားများ ၏ စိတ်ချ ရသော အကွာ အဝေး မှာ ၅၀ မီတာ ကွာဝေး ရမည်။ ရွှေ့လျား နေ သော စက်ကြီးများ ပေါ်သို့တက်ခြင်း ဆင်းခြင်းမရှိရပါ။	တာဝန်ရှိ သူမှအပအခြားသူများမောင်းနှင် ခွင့်မရှိရပါ။ အလုပ်သမားများကို ရွှေ့လျားနေသောစက်ကြီးများနှင့် ပတ်သက် ၍ ပညာပေးသင်တန်းများ ပို့ချခြင်း၊
၅	လွန်တူးခြင်း တွင်းဖောက်ခြင်း	လွန်တူးကိရိယာကိုကိုင်တွယ်ရာ တွင် ကျွမ်းကျင်သူများဖြစ်၍ စနစ်တကျ ကိုင်တွယ်ရမည်	လွန်တူးပညာရှင်မှ တာဝန်ယူကြီးကြပ်ရမည်။

၆	မိုင်းဖေါက်ခွဲရန်ပြင်ဆင်ခြင်း	ဖေါက်ခွဲရေးပစ္စည်းများကို တွယ်ရာ တွင်လည်းကောင်း၊ သယ်ဆောင်ရာတွင် လည်းကောင်း၊ တွင်သတ်မှတ် ထားသော စည်းကမ်း၊ နည်း ဥပဒေများ ကို လိုက်နာရန်	သတ်မှတ်ထားသောပညာရှင် မှ တာဝန်ယူကြီးကြပ်ရမည်။
၇	မိုင်းဖေါက်ခွဲခြင်း	မိုးအုံ့ တိမ်ထူသောနေ့များ၊ လေတိုက် နှုန်း မြင့်သောအချိန်များတွင် မပြုလုပ် ရပါ။ ဆက်တိုက်ဖောက်ခွဲ ရန်လိုအပ် ပါက အချိန်ကာလတစ်ခုခု ရှိမရှိ ခြုံငုံစစ်ဆေးရပါမည်	သတ်မှတ်ထားသောပညာရှင်မှ တာဝန်ယူကြီးကြပ်ရမည်။
၈	လျှပ်စစ်ဓါတ်အား	လုပ်ငန်းခွင်တွင်လူများရှိနေစဉ်တွင် သာလျှပ်စစ် မီးကိုသုံးစွဲရန်၊ မီးကြိုးများ သွယ်တန်းရာတွင် ၁၂ မီတာ အမြင့်၊ သို့မဟုတ် သတ်မှတ်ထား သော အမြင့်ရှိတာဝါတိုင်များကိုသုံး ရန်၊ မီးခလုတ်၊ ကြိုးများကိုစနစ်တကျတပ် ဆင်ရန်	
၉	မီးဘေးအန္တရာယ်	အပူလွန်ကဲခြင်း၊ ဝါယာရှော့ဖြစ်ခြင်း	မီးဘေးအန္တရာယ်ကာကွယ်ရေးအစီအစဉ်များ စနစ်တကျရေးဆွဲထားခြင်း၊ ဇော်တိုက်လေ့ကျင့်ခြင်း၊ မီးသတ်ယာဉ်နှင့်ယန္တရားများလုံလောက်ခြင်း။

၁၂၉။ ဆက်စပ်သက်ရောက်မှု ဆန်းစစ်ခြင်း

စီမံကိန်းလုပ်ငန်းတစ်ခုကို လက်ရှိဆောင်ရွက်နေသော သို့မဟုတ် အနာဂတ်တွင် ဆောင်ရွက်မည်ဟု မျှော်မှန်းထားသော စီမံကိန်းများနှင့် ပေါင်းလိုက်သောအခါတွင် ဆင့်ကဲ၊ ဆတိုးဖြစ်ပေါ်လာသော၊ ပေါင်းစပ်ဖြစ်ပေါ်သော အကျိုးသက်ရောက်မှုများကြောင့် ဆက်စပ်သက်ရောက်မှုများ ဖြစ်ပေါ်လာနိုင်ပါသည်။ အန္တရာယ်ဆန်းစစ်ရာတွင် ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာ တန်ဖိုးရှိ အစိတ်အပိုင်းများ (VEC) မှာ - ဇီဝမျိုးစုံမျိုးကွဲနှင့် ဂေဟစနစ်ဝန်ဆောင်မှုများ၊ လူမှုဆိုင်ရာ ကျန်းမာရေး၊ စီးပွားရေး စသည်တို့ ပါဝင်ပါသည်။ ယခုအဆိုပြုထားသော ထုံးကျောက်စီမံကိန်းတွင် ဒေသဆိုင်ရာအစိုးရအဖွဲ့များ (တနင်္သာရီတိုင်း၊ မြို့နယ်) နှင့် ၎င်းကျေးရွာ ပြည်သူလူထု ပါဝင်သော ဆွေးနွေးပွဲရလဒ်များမှ လည်းကောင်း၊ စီမံကိန်းဒေသ အနီးတဝိုက် (မိုင် ၅၀ ပတ်လည်တွင်) လုပ်ဆောင်နေဆဲ စီမံကိန်းများ မရှိပါ။ သစ်ထုတ်လုပ်ခြင်း၊ ရေအားလျှပ်စစ်ထုတ်ဖော်ရေး အခြား မိုင်းတွင်းများ မရှိပါ။ ထို့အပြင် နောင်ကာလတွင် လုပ်ဆောင်မည့်စီမံကိန်းများလည်းမရှိပါ။ သို့ပါ၍ ယခု ထုံးကျောက်တူးဖော်ရေး စီမံကိန်း ဆက်စပ်သက်ရောက်မှု ဆန်းစစ်ခြင်းကို ပြုလုပ်ရန် မလိုအပ်ပါ။

၁၂၁၀။ ဒေသခံပြည်သူများ ချိတ်ဆက်ပါဝင်ခြင်း နှင့် ဒေသဖွံ့ဖြိုးရေး

၁၂၁၀၁။ လုပ်ဆောင်မည့် နည်းလမ်းများနှင့် ချဉ်းကပ်ပုံ

အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲ (Public Consultation Meeting- PCM)၊
အများပြည်သူသို့ ထုတ်ဖော် တင်ပြခြင်း (Public Disclosure- PD) တို့သည်

စီမံကိန်းအစီအစဉ် အကောင်အထည် ဖော်မှုကြောင့် ထိခိုက်ခံစားရသူများ (Project Affected Persons)၊ အခြားပတ်သက် ဆက်နွယ်နေသူများမှ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာသော ဆိုးကျိုးသက်ရောက်မှုများအပေါ် ၎င်းတို့၏ အမြင်များကို ထုတ်ဖော်နိုင်ပြီး ဖြစ်နိုင်ချေရှိသော သက်ရောက်မှု လျော့ပါးသက်သာစေသည့် အစီအမံများကို အကြံပြုနိုင်သော နေရာတစ်ခု ဖြစ်ပါသည်။ အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်း၏ ရည်ရွယ်ချက်များ မှာ -

- (၁) စီမံကိန်း အကောင်အထည်ဖော် ဆောင်ရွက်ရာတွင် သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် ထိခိုက်မှု မရှိစေရန် စနစ်တကျဆောင်ရွက်ပုံ အဆင့်ဆင့်ကို အများပြည်သူ ပွင့်လင်းမြင်သာစွာ သိရှိနိုင်ရန်၊
- (၂) စီမံကိန်းနှင့် သက်ဆိုင်သူများထံမှ စီမံကိန်းအပေါ်၎င်းတို့၏ စိုးရိမ်ပူပန်မှုနှင့် အကြံပေးချက်များ ကို ပြောကြား နိုင်မည့် အခွင့်အရေးရရှိနိုင်ရန်၊ စီမံကိန်းအပေါ်အများပြည်သူ၏ အမြင်နှင့် တုန့်ပြန်မှုများကို ရယူနိုင်ရန်၊
- (၃) စီမံကိန်းနှင့်ပတ်သက်၍ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် အပေါ် သက်ရောက်နိုင်မှုများကို အများပြည်သူသို့အသိပေးတင်ပြရန်၊
- (၅) အများပြည်သူများထံမှ စီမံကိန်းအပေါ်ထားရှိသော သဘောထား မှတ်ချက်များ၊ အကြံပြုချက်များအား ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာတွင် ထည့်သွင်း ဖော်ပြရန် နှင့် ထိခိုက်မှု ဆန်းစစ်ခြင်း ဆောင်ရွက်ရာတွင် ထည့်သွင်းလုပ်ဆောင်သွားရန် တို့ဖြစ်ပါသည်။

၁၁၀၂။ ဒေသခံပြည်သူများ ချိတ်ဆက်ပါဝင်ခြင်း

တိုင်ပင်ဆွေးနွေးခြင်း လုပ်ငန်းမှာ ထုံးကျောက်မိုင်းလုပ်ငန်း နှင့် ဒေသခံပြည်သူများ အကြား လိုအပ်နေသည့် ချိတ်ဆက်ပါဝင်မှု လုပ်ငန်းစဉ်၏ တစ်စိတ်တစ်ပိုင်း ဖြစ်သည်။ ဤသို့ ပြည်သူများ ချိတ်ဆက်ပါဝင်မှုသည် စနစ်ကျ၍ စဉ်ဆက်မပြတ် ထပ်တလဲလဲ လုပ်ငန်းစဉ် တစ်ခု ဖြစ်သည်။ စီမံကိန်း စီမံချက် ရေးဆွဲစဉ်မှစ၍ ပိတ်သိမ်းပြီးအဆင့်များအထိ ရေရှည်တည်တန့်စွာ ဆောင်ရွက်ရပါမည်။ ဒေသဖွံ့ဖြိုးရေးအတွက် ကုမ္ပဏီမှ ဒေသခံပြည်သူများ၏ လူမှုဆိုင်ရာ စီးပွားရေး၊ ပညာရေး၊ ကျန်းမာရေး ဖွံ့ဖြိုးရေးတို့ကို ဆောင်ရွက်ပေးရပါမည်။ သို့မှသာ စီမံကိန်း အနီး ပတ်ဝန်းကျင်ရှိ ဒေသခံများသည် စီမံကိန်း၏ ရင်းနှီးမြှုပ်နှံမှုကြောင့် ဖွံ့ဖြိုးမှုကောင်းကျိုးများကို ရရှိကြပါမည်။

၁၁၀၂။ စီမံကိန်းနှင့်ပတ်သက်သည့် ထိခိုက်ခံရသူနှင့် အခြားသက်ဆိုင်သူများကို ဖော်ထုတ်ခြင်း

အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲ နှင့် အသိပေးကြေညာခြင်းကို လူထု၏ ထင်မြင်ယူဆချက်နှင့် အကြံပြုချက်များကို စုဆောင်းပြီး စီမံကိန်းနှင့် EIA လေ့လာမှုဆိုင်ရာ အချက်အလက်များကို ဖြန့်ဝေရန် ရည်ရွယ်၍ အဆင့်နှစ်ဆင့် (နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအဆင့်နှင့် EIA အဆင့်) တွင်ပြုလုပ် ခဲ့ပါသည်။ အဆိုပြု ထုံးကျောက်မိုင်းသည် တနင်္သာရီမြို့နယ်အတွင်းတွင် တည်ရှိပြီး၊ စီမံကိန်းရုံးခွဲသည် မဏ္ဍိုင်မြို့နယ်၊ မနီးရုံး-ခဲချောင်းကျေးရွာတွင် တည်ရှိပါသည်။ အဆိုပြုထားသည့် စီမံကိန်းနှင့်ပတ်သက် သည့်

သတင်းအချက် အလက်များပေးရန် ကျေးရွာအဆင့် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲသို့ တနင်္သာရီမြို့နယ်ရှိ ကျေးရွာ လေးရွာ (ချောင်းနောင်ပြန်၊ ချောင်းလမ၊ အေးသာယာ၊ တာပလတ်) နှင့် ဘုတ်ပြင်းမြို့နယ်/မဏ္ဍိုင်မြို့နယ် ရှိကျေးရွာ သုံးရွာ (ခဲချောင်း၊ တောင်ငယ်၊ ရွာသာယာ) ကျေးရွာများအား ဖိတ်ကြားခဲ့သည်။

၁၁၀၀၄။ နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအဆင့်တွင် အများပြည်သူနှင့် တွေ့ဆုံ ဆွေးနွေးပွဲ ရလဒ်များ / အကျဉ်းချုပ်

၂၄နာရီ ကုမ္ပဏီသည် မြို့နယ်အဆင့် နှင့်ကျေးရွာ အဆင့် ပြည်သူတို့ အားအသိပေးခြင်း၊ တွေ့ဆုံဆွေးနွေးပွဲ များ ကျင်းပခြင်းများကို EIA လမ်းညွှန်ချက်များအတိုင်း စီစဉ်ဆောင်ရွက် ခဲ့ပါသည်။ ပထမအကြိမ် တွေ့ဆုံဆွေးနွေးပွဲများ ကို (၁) မြို့နယ်အဆင့် အစည်းအဝေးကို တနင်္သာရီမြို့နယ် အထွေထွေအုပ်ချုပ်ရေးမှူးရုံးတွင် (၂၀-၁၂- ၂၀၂၁) နေ့တွင်ကျင်းပခဲ့ပြီး။ ဌာနဆိုင်ရာ ဝန်ထမ်းများ ၁၆ ဦး (ကျား ၁၂ + မ ၄) တက်ရောက် ခဲ့ပါသည်။ (၂) ကျေးရွာအဆင့် အစည်းအဝေးကို မဏ္ဍိုင်မြို့နယ် မနီးရုံး ကျေးရွာ အုပ်စု ခဲချောင်းကျေးရွာတွင် (၂၃-၁၂-၂၀၂၁) နေ့တွင် ပြုလုပ်ခဲ့ပါသည်။ ကျေးရွာ (၇)ရွာမှပြည်သူ (၄၁) ဦး (ကျား ၃၁ + မ ၁၀) တက်ရောက် ခဲ့ပါသည်။

ပြည်သူလူထု၏ ထင်မြင်ချက်နှင့် အကြံပြုချက်များကို နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်း အစီရင်ခံစာ တွင်အသေးစိတ်ဖော်ပြ ထားပြီးဖြစ်ပါသည်။ တွေ့ဆုံဆွေးနွေးပွဲ ရလဒ်များ အကျဉ်းချုပ် ကို ဤ (EIA) အစီရင်ခံစာတွင် ထပ်မံဖော်ပြ ထားပါသည်။

၁) မြို့နယ်အဆင့်

- (က) ECD နှင့် သတ္တုတွင်းဦးစီးဌာန၏ စည်းမျဉ်းစည်းကမ်းဥပဒေများနှင့်အညီ ထုံးကျောက်တူးဖော်ခြင်း လုပ်ငန်းကို ဆောင်ရွက်သွားရန် ဒေသဆိုင်ရာများက အကြံပြု ပါသည်။
- (ခ) ဒေသခံကျေးလက်ဒေသ ဖွံ့ဖြိုးတိုးတက်ရေး လုပ်ငန်းများကို အလေးထား ဆောင်ရွက်ရန် ၂၄နာရီ ကုမ္ပဏီကို အကြံပြုတောင်း ဆိုထားပါသည်။
- (ဂ) တနင်္သာရီမြို့နယ်တွင် သတ္တုတွင်းလုပ်ငန်း၊ ဆီအုန်းစိုက်ခင်းနှင့် ဆီအုန်းနှင့် ရော်ဘာစက်ရုံများ အများအပြားရှိခဲ့သော်လည်း တနင်္သာရီမြို့နယ် ဖွံ့ဖြိုး တိုးတက်မှု သိသိသာသာ မတိုးတက်သေးပါ။ အကယ်၍ ၂၄နာရီ ကုမ္ပဏီသည် ဒေသခံများအား အလုပ်အကိုင်များ ပိုမိုပေးဆောင်ပြီး၊ စီမံကိန်းအတွက် ဒေသထွက်ကုန်များကို ပိုမိုအသုံးပြုပါက ဒေသဆိုင်ရာ လုပ်ငန်းများစွာ တိုးတက်လာမည်ဖြစ်ပါသည်။
- (ဃ) ECDနှင့် FD အရာရှိတို့က ESIA လုပ်ထုံးလုပ်နည်းနှင့် သစ်တောထိန်းသိမ်းခြင်းဆိုင်ရာ လုပ်ဆောင်ချက်များ အပေါ် ထပ်လောင်း ရှင်းလင်း ဆွေးနွေးခဲ့ကြပါသည်။ တနင်္သာရီမြို့နယ် သတ္တုလုပ်ငန်းရှင်များ အသင်းဥက္ကဋ္ဌက သတ္တုတူးဖော်ရေး လုပ်ငန်းခွင် အတွေ့အကြုံများကို သက်ဆိုင်သူများအား မျှဝေဆွေးနွေးခဲ့ပါသည်။

၂) ကျေးရွာအဆင့်

- (က) ဘိလပ်မြေစက်ရုံမှ ထုံးကျောက်များ လာရောက် သယ်ဆောင်မည့်လမ်းရှိ ဥယျာဉ်ခြံမြေ အချို့အား ထိခိုက်နိုင်ပါသည်။
- (ခ) သက်ရောက်မှု အနည်းဆုံး ဖြစ်စေရန် နှင့် ဒေသခံ ပြည်သူများ၏ ကျန်းမာရေး ကိုလည်း ဂရုပြုဖြေရှင်းရန် ဆွေးနွေး အကြံပြု ခဲ့ကြပါသည်။
- (ဂ) ဒေသခံပြည်သူများ အလုပ်အကိုင် အခွင့်အလမ်းများ ပိုမိုရရှိလာစေရန် အခမ်းအနားသို့ တက်ရောက်လာသူများက တောင်းဆိုခဲ့ကြပါသည်။
- (ဃ) ရွာသူရွာသားများက CSR ဘတ်ဂျက်ခွဲဝေပေးရေးနှင့် ကျောင်း၊ ကျန်းမာရေး ဆေးခန်း၊ သာသနာရေးစသည့် အလုပ်အကိုင်နှင့် ပံ့ပိုးကူညီမှုများအတွက် အာမခံချက်ပေးရန် တောင်းဆို ခဲ့ကြပါသည်။
- (င) ၂၄နာရီ ကုမ္ပဏီသည် တက်ရောက်လာသူများအား စီမံကိန်း လုပ်ငန်းများ ဆောင်ရွက်စဉ်အတွင်း ပွင့်လင်းမြင်သာစွာ လုပ်ဆောင် သွားမည်ဖြစ်ကြောင်း ကတိပြုခဲ့ပါသည်။
- (စ) ဒေသခံပြည်သူများ၏ စိုးရိမ်ပူပန်မှုများနှင့် ထိခိုက်မှုပြဿနာများကို အမြန်ဖြေရှင်းပေးမည့် မကျေနပ်ချက် ပြန်လည်ဖြေရှင်းရေး Grievance Redress Mechanism (GRM) အစီအစဉ်ကိုထည့်သွင်း မည်ဖြစ်ကြောင်း ဆွေးနွေးခဲ့ကြပါသည်။
- (ဆ) ၂၄နာရီ ကုမ္ပဏီလီမိတက်မှ ပတ်ဝန်းကျင်၊ လူမှုရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ထိခိုက်မှုများအပေါ် လျော့ပါးသက်သာစေရေးအစီအမံများ ချမှတ်ခြင်းနှင့် စောင့်ကြည့်ခြင်း အစီအစဉ်များချမှတ်ရန် လူထုညှိနှိုင်းမှု မှတစ်ဆင့် ရရှိသော ထင်မြင်ယူဆချက်များနှင့် အကြံပြုချက်များကို EIA လေ့လာမှုနှင့် အစီရင်ခံစာတွင် ထည့်သွင်းဖော်ပြသွားမည်ဖြစ်ကြောင်း ပြောကြားခဲ့ပါသည်။

၁၂၀၁၅။ EIA အဆင့် အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲများကျင်းပခြင်း

၂၄နာရီ ကုမ္ပဏီ သည် မြို့နယ်အဆင့် နှင့် ကျေးရွာ အဆင့် ဒုတိယအကြိမ် ပြည်သူသို့ အသိပေးခြင်းများကို လမ်းညွှန်ချက်များအတိုင်း စီစဉ်ဆောင်ရွက်ခဲ့ပါသည်။ တနင်္သာရီမြို့နယ်အတွင်းရှိ ဒေသခံအဖွဲ့အစည်းများ၊ အစိုးရဌာနဆိုင်ရာအဖွဲ့အစည်းများ၊ ပြည်သူလူထု အခြေပြု အဖွဲ့အစည်းများ နှင့် စိတ်ပါဝင်စားသည့်မည်သူမဆို အစည်းအဝေး ကြေညာစာ နှင့်တကွ ဖိတ်ကြားစာများကို ပြင်ဆင်ခြင်း၊ ဖြန့်ဖြူးခြင်းနှင့် ကြေညာခြင်းများပြုလုပ်ခဲ့ပါသည်။ ပတ်ဝန်းကျင်ရှိ ဒေသခံများအားဖိတ်ကြားရန်အတွက် ရပ်ကွက် အုပ်ချုပ်ရေးမှူးမှတစ်ဆင့် ဖိတ်ကြားလွှာများအား ပေးပို့ခဲ့ပါသည်။ အများပြည်သူနှင့် ဆွေးနွေး ပွဲများကို ပြည်သူများ သိရှိနိုင်စေရန်၊ ၂၄နာရီ ကုမ္ပဏီ၏ ဝက်ဆိုဒ်တွင် (၂)ပတ်ခန့်ကြိုတင်၍ ကြေညာခဲ့ပါသည်။

ဆွေးနွေးပွဲများမပြုလုပ်မီ သက်ဆိုင်သူများထံမှ ဝေဖန် အကြံပြုချက် များရယူနိုင်ရန်အတွက် အစီရင်ခံစာ အကျဉ်း ချုပ် ကို အများပြည်သူနှင့် ဆွေးနွေး တိုင်ပင်ခြင်းမပြုမီ ၇ ရက်ကြိုတင်၍ ထုတ်ဖော်ကြေညာခဲ့ပါသည်။ အများ

ပြည်သူများပါဝင်တက်ရောက်ရန် ဖိတ်စာများပေးပို့ခြင်း၊ အများပိုင်နေရာများတွင် အသိပေး စာစောင်များကပ်ခြင်း၊ စီမံကိန်းနေရာ တွင်နံရံကပ် စာစောင် များကပ်ခြင်းများကိုလည်း ပြုလုပ် ခဲ့ပါသည်။

တွေ့ဆုံဆွေးနွေးပွဲများတွင် ရှင်းလင်းတင်ပြချက်များ နှင့် လက်ကမ်း စာစောင်များအား မြန်မာဘာသာဖြင့် ဖြန့်ဝေခဲ့ပါသည်။ တက်ရောက်သူများထံ မှ ထင်မြင်ယူဆချက် များနှင့် အကြံပြုချက်များကို အမေးအဖြေကဏ္ဍတွင် လက်ခံရရှိခဲ့ပါသည်။ အစည်းဝေးတက် ရောက်လာ သူများမှ ၎င်းတို့၏ ထင်မြင်ချက် များ နှင့် အကြံပြုလွှာများကို သေချာစွာပြောပြနိုင်စေရန် သဘောထား မှတ်ချက်ဖြည့်ရန် ဖောင်များ ပြင်ဆင်ထောက်ပံ့ ပေးခဲ့ပါသည်။

၁၁၁၀၁၆။ EIA အဆင့် တွေ့ဆုံ ဆွေးနွေးပွဲများ၏ တွေ့ရှိချက်များ အကျဉ်းချုပ်

၁။ မြိတ် ခရိုင်အဆင့် အစိုးရ ဌာနဆိုင်ရာများနှင့် ဆွေးနွေးပွဲ

မြိတ်ခရိုင်အဆင့် ဌာနဆိုင်ရာ ဝန်ထမ်းများနှင့် တွေ့ဆုံပွဲကို မြိတ်မြို့၊ ဂရမ်းဂျိတ် ဟိုတယ်တွင် (၅.၉.၂၀၂၃) နေ့တွင် ကျင်းပခဲ့ပါသည်။ ဌာနဆိုင်ရာ ဝန်ထမ်းများ ၁၆ ဦး (ကျား ၁၂ + မ ၄) တက်ရောက်ခဲ့ပါသည်။

အစည်းအဝေးကို ခရိုင်ဦးစီးမှူး (အထွေထွေ အုပ်ချုပ်ရေး ဦးစီးဌာန) မှ အဖွင့် အမှာ စကား ပြောကြားပြီး စီမံကိန်းဆိုင်ရာများ အကြံပေး ပြောကြားခဲ့ပါသည်။ ၂၄ နာရီ ကုမ္ပဏီ အနေဖြင့် မိုင်းလုပ်ငန်း ဆိုင်ရာ ဥပဒေများ နှင့် နည်းဥပဒေများကို အတိအကျ လိုက်နာရန် လိုအပ်ကြောင်း၊ လုပ်ငန်းခွင် အလုပ်သမားများ၏ ကျန်းမာရေးကို ရေရှည်တွင် ထိခိုက်နိုင်သဖြင့် လေထု၊ ရေထုနှင့် ဆူညံသံထွက်ရှိမှုများ ကိုစနစ်တကျ လုပ်ဆောင်ရန်နှင့် အလုပ်သမားများကို တကိုယ်ရည် ကာကွယ်ရေးဝတ်စုံများ အမြဲတမ်း ဝတ်ဆင်ကြစေရန် စသည်ဖြင့် ဆွေးနွေးပြောကြားခဲ့ပါသည်။

မြိတ်တက္ကသိုလ် ဘာသာရပ်ဆိုင်ရာ (ဘူမိဗေဒ၊ သတ္တဗေဒ၊ ပထဝီဝင် စသည်တို့) ပါမောက္ခများမှ ဖြစ်နိုင်ခြေ ရှိသော သဘာဝ ပတ်ဝန်းကျင် ဇီဝမျိုးစုံ မျိုးကွဲများ ၏ ထိခိုက်နိုင်မှုများကို ဆွေးနွေးခဲ့ကြပါသည်။ EIA အဖွဲ့မှ ရေးဆွဲထားသော ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် အကျဉ်းချုပ်ကို တင်ပြ၍ ထိခိုက်မှု လျော့နည်းစေနိုင်မည့် နည်းလမ်း များကို ပြန်လည် တင်ပြခဲ့ပါသည်။ သစ်တော ဦးစီးဌာန နှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန၊ စိုက်ပျိုးရေး ဦးစီးဌာန နှင့် ကျန်းမာရေး ဦးစီးဌာန တို့၏ အကြံပြုချက်များနှင့် မေးခွန်းများ အပေါ်တွင် ၂၄ နာရီ ကုမ္ပဏီမှ တာဝန်ခံ အရာရှိမှ လည်းကောင်း၊ EIA အဖွဲ့များမှ လည်းကောင်း ဝိုင်းဝန်း ဆွေးနွေးခဲ့ကြပါသည်။ ၂၄နာရီ ကုမ္ပဏီမှ ၎င်းတို့ အနေဖြင့် ရေးဆွဲထားသော ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် အတိုင်း ထိခိုက်မှု လျော့နည်းစေရန်တာဝန်ယူ လုပ်ဆောင် ပေးမည်ဖြစ်ကြောင်း ပြန်လည်ဖြေကြား ခဲ့ပါသည်။ ဒေသခံ ပြည်သူများ၏ အလုပ်အကိုင် အခွင့်အလမ်းများ နှင့် ဒေသ ဖွံ့ဖြိုးရေး အတွက် ပံ့ပိုးပေးနိုင်မှုများကို ပြန်လည် ပြောကြား ဆွေးနွေး ခဲ့ပါသည်။ ထုံးကျောက်မိုင်း အကောင်အထည်ဖော်သည့် ကာလတလျောက်လုံးတွင် အလုပ်သမားများ ဒေသခံပြည်သူများအတွက် နစ်နာမှု ဖြေရှင်းပေးရေး

လုပ်ငန်းစဉ်တစ်ခုလည်း ပါဝင်မည်ဖြစ်ကြောင်း ပြောကြား ဆွေးနွေး ခဲ့ပါသည်။ အစည်းအဝေး ပြီးနောက် တက်ရောက် လာကြသူများ မှ “အကြံပြုလွှာ” ပုံစံများကို ဖြည့်စွက် အကြံပြုခဲ့ ကြပါသည်။

၂။ ကျေးရွာ အဆင့် ပြည်သူလူထုနှင့် တွေ့ဆုံဆွေးနွေးပွဲ

ကျေးရွာအဆင့် အစည်းအဝေးများကို ရေဖြူရွာ၊ ချောင်းနောက်ပြန်ရွာ နှင့် ခဲချောင်းရွာ တို့တွင်စက်တင်ဘာလ ၆ ၊ ၇ ၊ ၈ ရက်နေ့များတွင် အသီးသီးကျင်းပခဲ့ပြီး စုစုပေါင်း တက်ရောက်သူဦးရေ ၅၉ ဦး (ကျား ၃၇ + မ ၂၂) ဖြစ်ပါသည်။ တွေ့ဆုံ ဆွေးနွေးပွဲများ ကို နယ်မြေခရီးသွားလာရေး ကန့်သတ်ချက် များအရ EIA အဖွဲ့ဝင်များက ကိုယ်တိုင် မသွားရောက်နိုင်ဘဲ ဇွန်း (zoom) အစည်းအဝေးကို online စနစ်ဖြင့် ကျင်းပခဲ့ပါသည်။ ၂၄ နာရီ ကုမ္ပဏီဝန်ထမ်း ပရောဂျက် မန်နေဂျာ ဦးခင်ဇော်ဟိန်း နှင့် ပရောဂျက် အင်ဂျင်နီယာ ဦးကျော်ဇင်လတ် တို့မှ ကြီးမှူး၍ အခန်းအနားကို ရွာ (၃) ရွာတွင် ကျင်းပပြုလုပ်ခဲ့ပြီး EIA အဖွဲ့ဝင်များက ဂရမ်းဂျိတ် ဟိုတယ်မှနေ၍ ရှင်းလင်းဆွေးနွေး ခဲ့ကြပါသည်။ မေးခွန်းများနှင့် ပရောဂျက်နှင့်သက်ဆိုင်သော အဖြေများကို ပရောဂျက် မန်နေဂျာမှ ကိုယ်တိုင် ရှင်းလင်းခြင်းနှင့် EIA နှင့်သက်ဆိုင်သော ပတ်ဝန်းကျင် လူမှုရေး ဆိုင်ရာ ထိခိုက်နိုင်ခြေ ရှိမှုများလျှော့ ချရေးနည်းလမ်းများကို EIA အဖွဲ့က ဗိုက်ဘာ/ တယ်လီဖုန်း ဆက်သွယ်ရေး စနစ်များ အသုံးပြု၍ ပြန်လည် ဆွေးနွေး ခဲ့ကြပါသည်။ အစည်းအဝေး တက်ရောက်သူများ စာရင်းနှင့် ဆွေးနွေးတင်ပြချက်များ၊ မှတ်တမ်း ဓာတ်ပုံများ နှင့် ဗီဒီယိုမှတ်တမ်းများကို ဤအစီရင်ခံစာ၏ အခန်း (၁၀) တွင် အသေးစိတ် ဖော်ပြထားပါသည်။

အစည်းအဝေး တက်ရောက် လာကြသည့် ဒေသခံ ပြည်သူများ၏ တင်ပြချက်များမှာ - အများစုသော ဒေသခံ ပြည်သူ များ က အလုပ်အကိုင် အခွင့်အလမ်းများ ပိုမိုရရှိလာစေရန် တောင်းဆိုခဲ့ကြပါသည်။ စီမံကိန်း နှင့် ပတ် သတ် သည့် ဒေသခံပြည်သူ များ၏ စိုးရိမ် ပူပန်မှုမှာ ငဝန်ချောင်းရေ ထိခိုက်ပျက်စီးမှုမရှိစေရန် ကုမ္ပဏီကတာဝန် ယူဆောင် ရွက် ပေးစေလိုကြောင်း တင်ပြကြပါသည်။ အစည်းအဝေး တက်ရောက် လာကြသူများသည် အလုပ် အကိုင် အခွင့်အလမ်း များ ရရှိနိုင်မှု ကျောင်း၊ ကျန်းမာရေး ဆေးခန်း၊ သာသနာရေးစသည့် ပံ့ပိုးကူညီမှုများ တောင်း ဆိုခဲ့ ကြပါသည်။

အခမ်းအနားသို့ တက်ရောက်လာသူများက၏ စီမံကိန်းနှင့် ပတ်သတ်၍ သဘောထားအမြင်များကို ပိုမိုသဘော ပေါက် နားလည်စေရန်အတွက် အကြံပြုချက်ပုံစံ (Comment forms) ဝေငှပေး၍ ထင်မြင်ချက်များ၊ အကြံပြုချက် များ ရေးသားပေးရန်တောင်းခံခဲ့ပါသည်။ ၎င်းတို့၏သဘောထား မှတ်ချက်များ ထင်မြင်ချက်များ ၊ အကြံပြုချက်များကို ဖြည့်စွက် ချက်များအရ အောက်ပါ အချက်များကို အကျဉ်းချုပ်အားဖြင့် တွေ့ရှိခဲ့ပါသည်။

- ၁. စီမံကိန်း နှင့် ပတ်သတ်သော အလုပ်အကိုင် (နေ့စား၊ ကျွမ်းကျင်) များတွင် ဌာနေ ရပ်ရွာများကို ဦးစားပေးရန်

- ၂. ဒေသခံ ဘွဲ့ရလူငယ်များ နှင့် ပညာတတ်များကို လုပ်ငန်းခွင်သင်တန်း များ တက်ရောက်စေပြီး စီမံကိန်း တွင် ခန့်ထားရန်
 - ၃. စီမံကိန်းအတွက် ကန်ထရိုက်တာများ ခေါ်ရာတွင် ဒေသခံများကို ဦးစားပေးရန်
 - ၄. CSR အစီစဉ်ဖြင့် ကုမ္ပဏီမှ ပညာရေး နှင့် ကျန်းမာရေး ပံ့ပိုးမှုများ/ ဝန်ဆောင်မှု များ ပေးရန်
 - ၅. စိုးရိမ်မှုများ အနေဖြင့် ထုံးကျောက် တူးဖော်ရေး လုပ်ငန်းကြောင့် ရေထု (ငဝန်ချောင်းရေ) ညစ်ညမ်းမှု မှ ဂရုတစိုက် ကာကွယ်စေရန်
 - ၆. စီမံကိန်းကြောင့် လမ်းနှင့်နီးသော စိုက်ခင်းများ နှင့် ဥယျာဉ်ခြံများ ပျက်စီး ဆုံးရှုံးမှုများ ရှိခဲ့ပါက လျော်ကြေးငွေ ပေးရန် စသည်တို့ ဖြစ်ပါသည်။
- ၂၄နာရီ ကုမ္ပဏီမှ ၎င်းတို့ အနေဖြင့် တာဝန်ယူ လုပ်ဆောင် ပေးနိုင်သည့် အလုပ်အကိုင် အခွင့်အလမ်းများ နှင့် ဒေသ ဖွံ့ဖြိုးရေး အတွက် ပံ့ပိုးမှုများကို ပြန်လည် ပြောကြား ဆွေးနွေး ခဲ့ပါသည်။
- နောက်ဆုံးအနေဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအပြည့်အစုံ (အင်္ဂလိပ်ဘာသာဖြင့်) နှင့် “အကျဉ်းချုပ်အစီရင်ခံစာ (မြန်မာဘာသာဖြင့်)” ကို စီမံကိန်းအဆိုပြုသူ၏ ဝက်ဘ်ဆိုဒ် www.24hourgroup.com.mm တွင် ထုတ်ဖော်သွားပါမည်ဖြစ်ပါသည်။

၁၁၀၁ ဂ။ ဒေသခံပြည်သူများ ချိတ်ဆက်ပါဝင်ခြင်းစီမံချက် နှင့် ဒေသဖွံ့ဖြိုးရေးစီမံချက်

ဒေသခံပြည်သူများ ချိတ်ဆက်ပါဝင်ခြင်းစီမံချက်တွင် တိုင်ပင်ဆွေးနွေးခြင်း လုပ်ငန်းများကို စီမံကိန်းကြောင့် တိုက်ရိုက်ထိခိုက်ခံရနိုင်သည့် ဒေသခံများ ပါဝင်ရပါမည်။ ၎င်းအပြင် ဒေသဖွံ့ဖြိုးရေးစီမံချက်ကြောင့် အကျိုးကျေးဇူးရရှိမည့် ပြည်သူများလည်း ပါဝင်ရပါမည်။

ဒေသဖွံ့ဖြိုးရေးစီမံချက်တွင် ပါဝင်သော အထောက်အပံ့များမှာ -

- ပညာရေး၊ ကျန်းမာရေးစောင့်ရှောက်မှု၊ အခြေခံအဆောက်အအုံတိုးတက်စေခြင်း၊ လူမှုဖူလုံရေး၊ ဒေသခံများကိုအလုပ်ခန့်ထားရေးနှင့် ဒေသတွင်းမှ ပစ္စည်းဝယ်ယူရေး အစီအစဉ်လုပ်ငန်းများ ပါဝင်ပါသည်။

၁၂ ၁၁။ စီမံကိန်း ထုံးကျောက်မိုင်း ပိတ်သိမ်းခြင်း အစီအစဉ်

၂၄နာရီ ကုမ္ပဏီသည် ၎င်း၏ သဘာဝ ပတ်ဝန်းကျင်၊ ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာ မူဝါဒနှင့်အညီ ထုံးကျောက်မိုင်း ပိတ်သိမ်းခြင်း အစီအစဉ်ကို ပတ်ဝန်းကျင်နှင့် လိုက်လျောညီထွေ ဖြစ်ပြီး ဒေသခံများ၏ လူမှုရေးအရ လက်ခံနိုင်သော နည်းလမ်းများဖြင့် လုပ်ဆောင်ပါမည်။

ပြန်လည်ပြုပြင်ရေးနှင့် စိမ်းလန်းစိုပြေရေး လုပ်ငန်းများ - ထုံးကျောက်မိုင်း တူးဖော်ထုတ်လုပ်ရေး အတွက် ရှင်းလင်းဆောင်ရွက်ခဲ့သော မြေဧရိယာများ ၊ ထိခိုက်မှု ရှိသော ဧရိယာများ၏ ဂေဟစနစ် (အပင် ဂေဟစနစ်၊ ကုန်းနေ ရေနေ သတ္တဝါများတို့၏ ဇီဝမျိုးစုံ မျိုးကွဲများ) စသည်တို့ကို ပြန်လည်

ထူထောင် ပေးရန် ဖြစ်သည်။ မိုင်းပိတ်သိမ်းခြင်း နှင့် ပြန်လည် ထူထောင်ရေး လုပ်ငန်းတို့၏ ရည်ရွယ်ချက် များမှာ ထိခိုက်မှု ဖြစ်ပွားခဲ့သော ဧရိယာ အားလုံးတွင် ရေရှည် တည်ငြိမ်မှု ရစေရန်နှင့် မြေ ရေတိုက်စားမှုများကို ကာကွယ်ရန်၊ ထုံးကျောက်မိုင်းဟောင်း နေရာများ၏ အမြင် ပသာဒ၊ ရှုမြော်ခင်းများ ပြန်လည် ကောင်းမွန်စေရန်၊ ရပ်ရွာ လူထု၏ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေးကို မထိခိုက်စေရန်၊ မိုင်း ပိတ်သိမ်းရာတွင် အကြီးမြန်သစ်ပင်များ ဒေသရင်းမျိုးစိတ် များကို ပြန်လည်စိုက်ပျိုးပါမည်။

မိုင်းပိတ်သိမ်းခြင်း နှင့် ပြန်လည်ထူထောင်ရေး လုပ်ငန်းစဉ်များ (အဆောက် အဦးများ ဖြိုချဖျက်စီးခြင်း၊ လွန်တွင်းများ တူးဖော်သည့် လုပ်ကွက်များ၊ ဆင်ခြေလျှော များ နှင့် ချိုင့်တွင်းကြီးများ အားပြန်လည် ထူထောင်ခြင်းတို့တွင် စနစ်ကျသော စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု စနစ်ကို လုပ်ဆောင်ပါမည်။ ဤအဆင့်တွင် ဖြစ်နိုင်ချေရှိသော ပတ်ဝန်းကျင် ဆိုးကျိုး (လေထု၊ ရေထု ညစ်ညမ်းမှု နှင့် ဆူညံသံများစသည်) တို့နှင့် လုပ်ငန်းခွင် ဘေးအန္တရာယ် တို့ကို အနည်းဆုံးဖြစ်စေရန် စီမံဆောင်ရွက်ပါမည်။

၁၁၂။ ပတ်ဝန်းကျင် နှင့် လူမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် (Environmental Management Plan: EMP)

၂၄နာရီကုမ္ပဏီသည် အဆိုပြုထားသောထုံးကျောက် ထုတ်လုပ်မှု နှင့် စပ်လျဉ်း၍ မိုင်းစတင်ခြင်း၊ လုပ်ငန်းဆောင်ရွက်ခြင်း၊ မိုင်းပိတ်သိမ်းခြင်း ဆောင်ရွက်ရာတွင် ဖြစ်ပေါ်လာနိုင်သော ဆိုးကျိုးများကို လျော့ချရန်နှင့် ကောင်းကျိုးများကို တိုးမြှင့်ရန် လုံလောက်သင့်လျော်သော ဆောင်ရွက်ချက်တစ်ခု ဖြစ်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် ရေးဆွဲခြင်းနှင့် ၎င်းအစီအစဉ် အတိုင်း အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်းဖြင့် အဆိုပြုထားသော စီမံကိန်းဧရိယာ၏ ပတ်ဝန်းကျင်ကို ထိခိုက်ပျက်စီးမှု မရှိစေရန် ဆောင်ရွက်ပါမည်။

ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်ကို ရေးဆွဲထားပါသည်။ EMP ပတ်ဝန်းကျင် စီမံခန့်ခွဲခြင်း နှင့် စောင့်ကြပ် ကြည့်ရှုခြင်း လုပ်ငန်းစဉ်တို့၏ အဓိက ရည်ရွယ်ချက်မှာ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာသော ကောင်းသော သက်ရောက်မှုများကို တိုးမြှင့်ရန် နှင့် ဆိုးကျိုး သက်ရောက်မှုများကို လျော့ချရန် တို့အတွက် ရေးဆွဲထားသည့် သက်ရောက်မှုလျော့ချရေး နည်းလမ်းများအား အကောင်အထည် ဖော်ဆောင်ရန် ဖြစ်ပါသည်။ ၂၄နာရီကုမ္ပဏီသည် ၎င်း၏အောက်ဖော်ပြပါ “ပတ်ဝန်းကျင်၊ လူမှုဝန်းကျင်၊ ကျန်းမာရေးဆိုင်ရာမူဝါဒ” ကိုအကောင်အထည်ဖော်ဆောင်ရွက်မည်ဖြစ်ပါသည်။

- အလုပ်သမားများ၊ ဧည့်သည်များ၊ ပြည်သူများ သေဆုံးမှု “သုည”ဖြစ်စေရန်
- အလုပ်သမားများ၊ ဧည့်သည်များ၊ ပြည်သူများ ထိခိုက်မှု၊ မတော်တဆဖြစ်မှု “သုည” ဖြစ်စေရန်
- အန္တရာယ်ဖြစ်စေနိုင်သော၊ ထိခိုက်နိုင်ခြေရှိစေသော အခြေအနေများ “သုည”ဖြစ်စေရန်
- ပတ်ဝန်းကျင် နှင့် သက်ဆိုင်သည့် မမျှော်လင့်သော အန္တရာယ်ဖြစ်ရပ်များ၊ ဆိုးကျိုး သက်ရောက်မှုများ “သုည”ဖြစ်စေရန်
- ပရောဂျက် ဆိုဒ်အတွင်း ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းလုံခြုံရေးတို့တွင် စဉ်ဆက်မပြတ် တိုးတက်စေရန်

၁၁၂၁။ ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာစီမံခန့်ခွဲမှုစနစ် (ESMS)

၂၄ နာရီ ကုမ္ပဏီသည် ထုံးကျောက်မိုင်း လုပ်ငန်းခွင်အဆင့်တွင် ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာစီမံခန့်ခွဲမှုစနစ်တစ်ခု ကိုဖွဲ့စည်းတည်ထောင်ထားရှိပြီး ၎င်း ESMS တွင် အောက်ပါတို့ ပါဝင်ပါသည်။

- (၁) ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာစီမံခန့်ခွဲမှု မူဝါဒ
- (၂) ကိစ္စအားလုံးကို တာဝန်ယူဆောင်ရွက်မည့် ဝန်ထမ်းများ တာဝန်ပေးခန့်အပ်ခြင်း
- (၃) ESMS စီမံခန့်ခွဲမှုအတွက် လုပ်ထုံးလုပ်နည်းများ
- (၄) ဆောင်ရွက်ချက်များကို အစီရင်ခံစာ ရေးဆွဲတင်ခြင်း

ESMS၏ အဓိကလုပ်ဆောင်ချက်မှာ - ပတ်ဝန်းကျင်နှင့် လူမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်(ESMP) ကို အကောင် အထည်ဖော်ခြင်း၊ ESMP အကောင်အထည်ဖော်ခြင်းကို ကြီးကြပ်ခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း၊ ဒေသခံပြည်သူများနှင့် ချိတ်ဆက်ပါဝင်စေခြင်း နှင့် ဒေသဖွံ့ဖြိုးရေးစီမံချက် တို့ကို ရေးဆွဲရန် ဖြစ်ပါသည်။

ESMS ရေးဆွဲခြင်း--- ရေးဆွဲရာတွင် အောက်ပါအခြေခံစည်းမျဉ်းများ ပါဝင်ပါသည်။

- (၁) ထိခိုက်မှုများကို ရှောင်ရှားရန်၊ အနိမ့်ဆုံးဖြစ်စေရန်၊ ပြန်လည်ထူထောင်ပေးရန်၊ အခြားနေရာတွင် အစားထိုးထူထောင်ပေးရန်နှင့် ကောင်းကျိုးသက်ရောက်မှုများကို တိုးတက်အောင်ဆောင်ရွက်ရန်
- (၂) ESMS ကိုအကောင်အထည်ဖော်၍ ယင်းအစီအစဉ်၏ ထိရောက်မှုကို စောင့်ကြပ်ကြည့်ရှုရန်

ဒေသဖွံ့ဖြိုးရေးအတွက် ရင်းနှီးမြှုပ်နှံမှု လာရောက်လုပ်ကိုင်သော ကုမ္ပဏီတစ်ခုက ဒေသခံများ၏ လူမှုဆိုင်ရာ စီးပွားရေးဆိုင်ရာနှင့် အဖွဲ့အစည်းဆိုင်ရာ ဖွံ့ဖြိုးတိုးတက်ရေးတို့ကို ဆောင်ရွက်ပေးရန် လိုအပ်သည်။ သို့မှသာ ထုံးကျောက်တွင်း လုပ်ငန်း၊ ရင်းနှီးမြှုပ်နှံမှုမှ ဖွံ့ဖြိုးရေးကောင်းကျိုးများ ရရှိနိုင်ပါမည်။

၁၁၂၂။ အရေးပေါ် တုန့်ပြန်ရေး အစီအစဉ်

၂၄နာရီ ကုမ္ပဏီမှ ရေးဆွဲထားသော အရေးပေါ် တုန့်ပြန်ရေး အစီအစဉ်တွင် စီမံခန့်ခွဲမှု အတွက် အောက်ဖော်ပြပါ အချက်များပါဝင်ပါသည်။

- ၁. အရေးပေါ် အခြေအနေ တစ်ရပ်ကို စီမံခန့်ခွဲရန် တာဝန်ရှိ ပုဂ္ဂိုလ်များ ခန့်အပ်ခြင်း၊ ရာထူးတာဝန်များ ပေးအပ်ခြင်း
- ၂. မီးလောင်မှု၊ ပေါက်ကွဲမှု ၊ ဆီယိုဖိတ်မှု နှင့် အခြားသော သဘာဝ ဘေးအန္တရာယ်များ (ရေကြီးခြင်း၊ ငလျင်၊ မုန်တိုင်း စသည်) တို့ ဖြစ်ပေါ် လာပါက အလုပ်သမားများကို ဘေးလွတ်ရာ နေရာသို့ ရွှေ့ပြောင်းရန်၊ အခြား အဓိက ဖြစ်ရပ်များ ဖြစ်နိုင်ခြေ ရှိမှု နှင့် ကယ်ဆယ်ရေးနှင့် ကြိုတင်ကာကွယ်ရေး လုပ်ငန်းများလုပ်ဆောင်ရန်
- ၃. အရေးပေါ် အခြေအနေတွင် သတင်းပို့ခြင်း၊ ဆက်သွယ်ခြင်းစနစ်နှင့် တုန့်ပြန်ဆောင်ရွက်မှု များအတွက် လုပ်ထုံးလုပ်နည်းစနစ်များ

၄. တုန့်ပြန်မှု နည်းလမ်းစနစ်များကို လေ့ကျင့်ခြင်း၊ တယ်လီဖုန်း နံပါတ်များ၊ ဆက်သွယ်ရမည့် တာဝန်ရှိ ပုဂ္ဂိုလ်များ၏ မြို့နယ် အထွေထွေ အုပ်ချုပ်ရေးမှူး ၊ တနင်္သာရီ မြို့နယ် ဆေးရုံ ဆေးခန်းများ ၏ ဖုန်းနံပါတ်များကို ကြော်ငြာ သင်ပုန်း တွင် ရေးဆွဲ ထားရှိခြင်း

အရေးပေါ်တုန့်ပြန်မှုများအတွက် အောက်ပါ သဘာဝဘေးအန္တရာယ်များကို ထည့်သွင်း ပြင်ဆင်ထားပါသည်။

(၁) မီးဘေးအန္တရာယ်၊ (၂) မုန်တိုင်းနှင့် ရေကြီးခြင်း၊ (၃) ငလျင်အန္တရာယ်၊ (၄) လုပ်ငန်းခွင်တွင် မတော်တဆ ထိခိုက်မှုနှင့် ရုတ်တရက် ကျန်းမာရေး ဆိုင်ရာ ဖြစ်ပျက်မှုများ နှင့် (၅) ရာသီဥတု ပြောင်းလဲမှု အန္တရာယ်များတို့ဖြစ်ပါသည်။ လုပ်ငန်းအစဉ် များကို ရေးဆွဲ ဖော်ပြထားရာတွင် အောက်ပါအချက်များ ပါဝင်ပါသည်။ - ကယ်ဆယ်ရေး နှင့် ဆေးဘက်ဆိုင်ရာ ဝန်ထမ်းများ ခန့်ထားခြင်း၊ အရေးပေါ် ပစ္စည်း ကိရိယာများ ပံ့ပိုးထားရှိခြင်း၊ သတိပေး စနစ်များ တပ်ဆင်ခြင်း၊ စောင့်ကြည့် စစ်ဆေးခြင်းနှင့် စမ်းသပ်ခြင်း နှင့် ပြုပြင်ထိန်းသိမ်းခြင်း တို့ ပါဝင်ပါသည်။

၁၁၂၃။ ပတ်ဝန်းကျင်စောင့်ကြည့်လေ့လာသည့်အစီအစဉ် (Environmental Monitoring Plan: EMoP)

ဆိုးကျိုးသက်ရောက်မှုရှိသောအမျိုးအစားများအတွက် သက်ရောက်မှု လျော့နည်းစေသော နည်းလမ်းများကို စီမံကိန်း မိုင်းဖွင့်ခြင်း ကာလ၊ ထုံးကျောက် တူးဖော်ထုတ်လုပ်ခြင်း၊ လုပ်ငန်းလည်ပတ်စဉ် ကာလနှင့် စီမံကိန်း၏ ကာလပတ်လုံး တို့အတွက် ပတ်ဝန်းကျင်စောင့်ကြည့်မှု အစီအစဉ်ကိုဖော်ပြထားပါသည်။ ၎င်းတွင် တည်ဆောက်နေစဉ်နှင့် လုပ်ငန်းလည်ပတ်နေစဉ်အတွင်း လေ့လာ စောင့်ကြည့် ရန်အချက်များ၊ စောင့်ကြည့် ရမည့်နေရာ၊ စောင့်ကြည့်မည့်နည်းလမ်းနှင့် အကြိမ်အရေအတွက် ပါဝင်သော ဇယားကို အောက်တွင် ဖော်ပြထားပါသည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ် ကြည့်ရှုမှု အစီအစဉ် ကုန်ကျစရိတ်များကို စီမံကိန်း၏ ဘတ်ဂျက်တွင် ထည့်သွင်းရေးဆွဲထားပြီး မူလခန့်မှန်းထားသည့် ကုန်ကျစရိတ်နှင့် လုံလောက်မှု မရှိပါက ရန်ပုံငွေထပ်မံဖြည့် တင်းသွားမည် ဖြစ်ပါသည်။ ESMP အကောင်အထည်ပေါ်ရေးအတွက် အဖွဲ့အစည်းဖြစ် ပေါ်နိုင်သော ပတ်ဝန်းကျင် နှင့် လူမှုဆိုင်ရာ ထိခိုက်မှုများအကျဉ်းချုပ် လျော့ပါးစေရေးနည်းလမ်းများ၊ ESMP အတွက် စီမံချက်ငယ်များ၊ နစ်နာမှု ဖြေရှင်းပေးရေး လုပ်ငန်းစဉ်၊ သင်တန်းအစီအစဉ်များ၊ အချိန်ဇယား၊ ခန့်မှန်း ကုန်ကျစရိတ်စသည်တို့ကိုအခန်း ၁၂ တွင် အသေးစိတ် ဖော်ပြထားပါသည်။

၂၄ နာရီ ကုမ္ပဏီသည် EMP ကို အကောင်အထည်ဖော် ဆောင်ရွက်ရန် တာဝန်ရှိသော အဓိကအဖွဲ့များကို ဖွဲ့စည်းထားပြီး ၎င်းတို့သည်ပတ်ဝန်းကျင်ဆိုင်ရာ ထည့်သွင်း စဉ်းစား ရမည့် ရှုထောင့်များ အပါအဝင် စီမံကိန်း ကြီးကြပ်ခြင်း နှင့် အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်း တို့ တွင် တာဝန်ရှိပါသည်။ ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီရင်ခံစာကို သယ်ဇာတနှင့်

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) သို့ (၆)လတစ်ကြိမ် တင်သွင်း ရပါမည်။

ဇယား ၉။ ပတ်ဝန်းကျင်စောင့်ကြည့်လေ့လာသည့်အစီအစဉ် အကျဉ်းချုပ် (EMoP)

အကြောင်းအရာ	ကောက်ယူမည့်နေရာ	အကြိမ်အရေအတွက်	အဖွဲ့အစည်း
မိုင်းဖွင့်ခြင်း			
ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အကောင်အထည်ဖော်ခြင်းအား စောင့်ကြည့်ကြည့်ရှုခြင်း - လျှော့ပါးရေးအစီအမံများ - စွမ်းရည်မြှင့်ဆောင်ရွက်မှုများ - အရေးပေါ်ကိစ္စ - လျော်ကြေးကိစ္စရပ် များ	စီမံကိန်းဧရိယာနှင့်အနီးဆုံး နေရာ	နေ့စဉ် စောင့်ကြည့် ကြည့်ရှုခြင်း၊ မှတ်တမ်းတင်ခြင်းနှင့် ဥလတစ်ကြိမ် အစီရင်ခံခြင်း	(Environmental Health and Safety) EHS ကော်မတီ (၂၄ နာရီ ကုမ္ပဏီ)
လေထုအရည်အသွေး	၂ နေရာ (စီမံကိန်းနေရာ နှင့် အနီးဆုံး ကျေးရွာ)	၂ ကြိမ် (ခြောက်သွေ့ရာ သီနှင့် စိုစွတ်ရာသီ)	တတိယ အဖွဲ့အစည်း
ဆူညံသံအဆင့်	၂ နေရာ (စီမံကိန်းနေရာနှင့် အနီးဆုံး ကျေးရွာ)	၂ ကြိမ် (ခြောက်သွေ့ရာ သီနှင့် စိုစွတ်ရာသီ)	တတိယ အဖွဲ့အစည်း
စွန့်ပစ်ပစ္စည်းထွက်ရှိမှု - ထုံးကျောက်တူးဖော်ထုတ်လုပ်ခြင်း လုပ်ငန်းမှ - လူသုံးစွန့်ပစ်ပစ္စည်း များ မှ	စီမံကိန်းဧရိယာနှင့် အလုပ်သမား တန်းလျား	ဥလ တစ်ကြိမ်	EHS ကော်မတီ
လုပ်ငန်းခွင်စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် ဆူညံသံစီမံခန့်ခွဲမှု အစီအစဉ် အကောင်အထည်ဖော်ဆောင်ခြင်း	စီမံကိန်းဧရိယာအတွင်း	နေ့စဉ် စောင့်ကြည့် ကြည့်ရှုခြင်း၊ မှတ်တမ်းတင်ခြင်းနှင့် ဥလတစ်ကြိမ် အစီရင်ခံခြင်း	EHS ကော်မတီ
မိုင်းလုပ်ငန်းလည်ပတ်သည့်အဆင့်			
လေထုအရည်အသွေး (NO ₂ , SO ₂ , Co, PM ₂ , PM ₁₀)	၂ နေရာ (စီမံကိန်းနေရာနှင့် အနီးဆုံး ကျေးရွာ)	၂ ကြိမ် (ခြောက်သွေ့ရာ သီနှင့် စိုစွတ်ရာသီ)	တတိယ အဖွဲ့အစည်း
ဆူညံသံအဆင့်	၂ နေရာ (စီမံကိန်းနေရာနှင့် အနီးဆုံး ကျေးရွာ)	၂ ကြိမ်	တတိယ အဖွဲ့အစည်း
လေထုအရည်အသွေးစီမံခန့်ခွဲမှု အစီအစဉ်၊ လုပ်ငန်းခွင် စွန့်ပစ် ပစ္စည်း စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် ဆူညံသံစီမံ ခန့်ခွဲမှုအစီအစဉ် အကောင်အထည် ဖော်ဆောင်ခြင်း	စီမံကိန်း ဧရိယာအတွင်း	နေ့စဉ်စောင့်ကြည့် ကြည့်ရှုခြင်း၊ နှင့် ဥလ တစ်ကြိမ် အစီရင် ခံ ခြင်း	EHS ကော်မတီ
ရေအရည်အသွေးစောင့်ကြည့်ကြည့်ရှုခြင်း (DO, BOD, COD, Heavy metal, pH, salinity, Total hardness, etc.)	၄ နေရာ (စီမံကိန်းဧရိယာအတွင်း ၂ နေရာ နှင့် အနီးဆုံးကျေးရွာ ၂ ရွာ)	နှစ်စဉ်	တတိယ အဖွဲ့အစည်း
အပင်နှင့်သတ္တဝါ စီမံခန့်ခွဲမှု အစီအစဉ် အကောင်အထည်ဖော်ဆောင်ခြင်း	စီမံကိန်းဧရိယာအတွင်း	ပုံမှန်စောင့်ကြည့်ကြည့် ရှုခြင်းနှင့် နှစ်စဉ်	EHS ကော်မတီ /

အကြောင်းအရာ	ကောက်ယူမည့်နေရာ	အကြိမ်အရေအတွက်	အဖွဲ့အစည်း
		အစီရင်ခံခြင်း	တတိယ အဖွဲ့အစည်း
လူထုနှင့် အလုပ်သမားများ ကျန်းမာရေး အန္တရာယ် ခံစားရမှု	စီမံကိန်းနှင့် အနီးဝန်းကျင်	၃လတစ်ကြိမ်	EHS ကော်မတီ
မကျေနပ်မှုများ/ ထိခိုက် ခံစားရမှု များအား တိုင်တန်းခြင်း အစီအစဉ် (GRM)		နေ့စဉ်စောင့်ကြပ် ကြည့်ရှုခြင်းနှင့် မှတ်တမ်းတင်ခြင်း	EHS ကော်မတီ

မူရင်း။ EIA လေ့လာရေးအဖွဲ့

၁၁၃။ နိဂုံး

ဤအစီရင်ခံစာတွင် ဖော်ပြထားသည့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုလျော့နည်းရေး အစီအစဉ်များကို ၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် မှ တိကျစွာ လိုက်နာ၍ ကောင်းမွန်မှန်ကန်စွာ အကောင်အထည် ဖော်ပါမည်။ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုဆန်းစစ်ခြင်း EIA အစီရင်ခံစာ မှုကြမ်းပြင်ဆင်ရေးဆွဲသည့် အဆင့်တွင် ပတ်ဝန်းကျင်ဆိုင်ရာ အဓိကသက်ရောက်မှုများဖြစ်သော လေထု၊ ရေအရည်အသွေး၊ ဆူညံသံ၊ စွန့်ပစ်ပစ္စည်း၊ လုပ်ငန်းခွင်နှင့် ပြည်သူများကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး၊ အရေးပေါ်အန္တရာယ် စသည်တို့အား စစ်တမ်းကောက်ယူ ဆန်းစစ် လေ့လာခဲ့ပါသည်။ ရရှိသောအဖြေများကို တင်ပြထားပါသည်။ ဤအစီရင်ခံစာသည် အဆိုပြု ထားသော စီမံကိန်း၏ ပတ်ဝန်းကျင် နှင့်လူမှုရေးအပေါ်တွင် ကောင်းကျိုး သို့မဟုတ် ဆိုးကျိုး သက်ရောက်နိုင်မှုများကို သေချာစွာ ဆန်းစစ်၍ တင်ပြထားပါသည်။

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်သည် အဆိုပြုထားသော ထုံးကျောက် ထုတ် လုပ်မှု နှင့် စပ်လျဉ်း၍ မိုင်းစတင်ခြင်း၊ လုပ်ငန်းဆောင်ရွက်ခြင်း၊ မိုင်းပိတ်သိမ်းခြင်းတို့ ဆောင်ရွက်ရာတွင် ဖြစ်ပေါ်လာနိုင်သော ဆိုးကျိုး များကို လျော့ချရန်နှင့် ကောင်းကျိုးများကို တိုးမြှင့်ရန် လုံလောက်သင့်လျော်သော ဆောင်ရွက် ချက်တစ်ခုဖြစ်သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ရေးဆွဲခြင်းနှင့် အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်းဖြင့် အဆိုပြုထားသော စီမံကိန်းဧရိယာ၏ ပတ်ဝန်းကျင်ကို အပြည့်အဝကာကွယ်ရန် ကတိကဝတ် ပြုထားပြီးဖြစ် ပါသည်။ ၂၄နာရီ ကုမ္ပဏီ၏ ကတိဝန်ခံချက်များကို ဤအစီရင်ခံစာတွင် ပူးတွဲဖော်ပြ ထားပါသည်။ ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ (Scoping report) အဆင့်တွင် ပြည်သူလူထုနှင့် အသိပေးဖော်ထုတ်ပွဲတွင် သက်ဆိုင်သူများကို စီမံကိန်းအကြောင်း အသိပေးခြင်းနှင့် ၎င်းတို့၏ အမြင်နှင့် အကြံပြုချက်များကိုပြန်လည် ရရှိခဲ့ပါသည်။ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ (အချောသပ် EIA)အဆင့် တွင် အများ ပြည်သူတွေ့ဆုံဆွေးနွေးပွဲကို ကျင်းပပြီး တွေ့ဆုံဆွေးနွေးပွဲများမှရရှိသော အကြံပြု ချက်များအား ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အပြီးသပ်အစီရင်ခံစာတွင် ထည့်သွင်းဆောင်ရွက်ပြီး ဖြစ်ပါသည်။

ထုံးကျောက်စီမံကိန်းကြောင့် ထုံးကျောက်တောင်များ ပျောက်ကွယ်သွားနိုင်သော်လည်း၊ ယင်းစီမံကိန်းမှာ ဒေသခံများ အတွက်အကျိုး ရရှိနိုင်စေမည့် စီးပွားရေး ရင်းနှီးမြုပ်နှံမှု တစ်ခု ဖြစ်ပါသည်။ ထို့ပြင် ယင်းစီမံကိန်းနေရာသည် အခြားဖွံ့ဖြိုးမှု အစီအစဉ်များ၊ စက်မှုလက်မှု

လုပ်ငန်းများ၊ မရှိသေးသည့် မဖွံ့ဖြိုးသေးသည့် ဝေးလံသည့် ကျေးလက်ဒေသတစ်ခုဖြစ်ပါသည်။ မြေဩဇာကောင်းမွန်သည့် စိုက်ပျိုးမှု ထုတ်လုပ်နိုင်သည့် မြေနေရာလည်း မဟုတ်သကဲ့သို့ ထိုနေရာတစ်ဝိုက်တွင် တိရစ္ဆာန် မွေးမြူရေးခြံများလည်း မရှိပါ။ ဤတောင်ကြီးတစ်ခုလုံးသည် သက်မဲ့သဘာဝအရင်းအမြစ်ဖြစ်သော ထုံးကျောက်များသာ ထုတ်လုပ်နိုင်ပါသည်။ ယခု အဆိုပြုစီမံကိန်းအားဖြင့် ဒေသနေ လူငယ်များကို အလုပ်အကိုင်အခွင့်အလမ်း ရရှိစေခြင်း ဖြင့် ပိုမိုဖွံ့ဖြိုးတိုးတက်လာမည် ဖြစ်ပါသည်။ ထို့ကြောင့် ဒေသဖွံ့ဖြိုးရေးကို များစွာ အထောက်အကူပြုသော ဤထုံးကျောက်ထုတ်လုပ်ရေး လုပ်ငန်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှုကို အတတ်နိုင်ဆုံး လျော့နည်းစေသည့် နည်းလမ်းများဖြင့် ဆောင်ရွက်မည်ဆိုပါက ရေရှည်တွင် ဒေသတွင်းဖွံ့ဖြိုးရေးကို များစွာ အထောက်အကူပြုသောစီမံကိန်းဖြစ်ပါသည်။ နိဂုံးချုပ်သုံးသပ်ချက်မှာ ဤအဆိုပြု ထုံးကျောက် စီမံကိန်းသည် ပတ်ဝန်းကျင် နှင့် လူမှုဆိုင်ရာ သိသာထင်ရှား သော ထိခိုက်မှုများ ကို မဖြစ်ပေါ်စေဘဲ ဒေသဖွံ့ဖြိုးရေးတိုးတက်အောင်မြင်မှု ကို ဆောင်ရွက်နိုင်မည့် အလားအလာ ကောင်းသည့် စီမံကိန်းတစ်ခု ဖြစ်ပါသည်။

CHAPTER 1:

EXECUTIVE SUMMARY

CHAPTER 2:
INTRODUCTION

2.1 Project Context

Myanmar is endowed with world-class mineral resources including copper, gold, lead, zinc, silver, tin and nickel. Major minerals produced and exported are cathode copper, refined lead, refined silver, zinc concentrate, refined tin, tin concentrates, tin-wolfram mixed concentrates and coal while gold, iron and steel, limestone and industrial minerals and barites are produced for domestic consumption. Gemstones such as rubies, sapphire, colored gemstone and jade are also exported. Although minerals have long been exploited in Myanmar, the sector is characterized by limited access to technical capacity, human resources and financial investment. Both the government and companies working in this sector were found to lack the capacity to effectively monitor and address the adverse impacts of mining projects and activities.

The significance of extractive sector is not much appreciable to the Myanmar economy. Total revenue collected from the extractive companies amounted to MMK 1,935,945 million for the fiscal year 2017-2018. The revenue stream from the extractive sector is made up of 72.19% of revenues from the Oil and Gas sub-sector while mining sector represent 27.81%. According to the Central Statistical Organization (CSO), the Gross Domestic Product (GDP) contribution from the extractive sector for 2017-2018 amounted to approximately MMK 4,324,810 million or 4.78% of the Country's GDP. From the data collected from companies, State-owned Enterprises (SOEs) and Government Agencies, the extractive sector employment represented 0.25% of the country's 2017-2018 total labour force in Myanmar (EITI Report 2017-2018). Since the mining sector has much potential to bring the country improved and developed in near future, this sector should be given priority for the higher investment and constraints to be well addressed.

Two types of limestone are produced in Myanmar depending on the physical properties. Limestone which is high in calcium with no outstanding physical appearance is fed as a raw material for cement production while limestone with inclusions giving rise to beautiful texture and colour is used as decoration limestone, known as dimension stones. Generally, limestone production is sufficient for the local cement industry. The State-Owned No. 1 Mining Enterprise (ME 1) is responsible for the production and supply of industrial raw minerals such as bauxite, bentonite, gypsum, limestone, dolomite, clay, manganese and coals.

2.2 Project Background

The 24-Hour Mining and Industry Company Limited (24-Hour) has identified the good quality limestone resources in the *Paung Ni Kyauk Taung* Region, Thein-Khunn Village Tract, Tanintharyi Township, Myeik District, Tanintharyi Region in the South East of Myanmar. The 24-Hour was awarded a grant (No.0008/ 2013) from the Department of Mines (DOM), under the Ministry of Mine (presently MONREC) for the 2,880 acres of limestone quarry on 1st October 2013 (the grant was presented in the [Attachment 1.1](#)).

A contract on product - sharing between No.1 Mining Enterprise (ME-1) and the 24-Hour was signed on 21st October 2013 ([Attachment 1.2](#)). The grant was designated for a period of ten (10) years starting from 16 September, 2013 to 15 September, 2023. The contract is extendable for twice with a period of ten (10) years each. The permitted extraction method is the open cast or underground mining and methods as agreed and permitted by ME-1 and in accord with 2(J) of Myanmar Mines Law. The grant included three mining concessions, totaling 2,880 acres (11.6552 km²). The Project mining areas are located at approximately 115 km SW of Myeik and 70 km SW of Tanintharyi Town.

Regarding the project, the 24-Hour submitted an EIA (Environmental Impact Assessment (EIA) report on 3rd Nov., 2016 to the Environmental Conservation Department (ECD), under the Ministry of Natural Resource and Environmental Conservation (MONREC). As a consultanting firm of the 24-Hour, the Green Growth Generation Co., Ltd (GGG) prepared and resubmitted the "Scoping Report" as a first step of EIA process, which was approved by the ECD on 30 Sept., 2022. In response to this, the GGG has been endeavouring in order to uphold a standard EIA report for the proposed limestone mining project, and the EIA Report (Final – Draft) was prepared.

The scoping process identified key issues and concerns raised by stakeholders during the public consultations for consideration in the development of the ESIA study; and it identified resource areas that have the potential to be impacted and environmental issues that may require further studies in the EIA. A continuation of the Scoping phase, the EIA identified in detail the possible environmental and social impacts caused by the proposed project and their mitigation measures. The approach also includes the Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP), Monitoring and Reporting during the project.

Through the implementation of the limestone mining project, the 24-Hour is setting up the following objectives:

- (i) to increase limestone supply not only to the Tanintharyi Region but across the country,
- (ii) to become a country with self-sufficient limestone as industrial raw materials,
- (iii) to reduce cement import and use of foreign currency,
- (iv) to create the inflow of foreign investment into Myanmar mining sector,
- (v) to improve industrial and social infrastructure and long-term interests of Myanmar and its people,
- (vi) to contribute to poverty reduction through rural industrial development.

2.3 Project Investment

Total initial investment for capital is estimated as USD 5.8 million which includes the machinery investment, mobilization cost for crusher and total capital investment required as shown in the following [Table 2.1](#).

Table 2.1 Project Investment

Sr.	Particular	Cost (Million USD)
1	Machinery investment for project	4.99
2	Mobilization cost for crusher	0.11
3	Total capital investment required for initial project development	0.7
	Total initial investment for capital	5.80

2.4 Type of Project and EMP/IEE/EIA Requirement

The Project Proponent needs to submit and request for approval from the Ministry of Natural Resources and Environmental Conservation (MONREC) about the EIA report in accordance with the EIA Procedure (2015).

The following table shows the categorization of economic activities specified under Environmental Impact Assessment Procedure (2015) and the screening result classifies the proposed limestone mining project as “EIA Type Project”.

Table 2.2 Screening Results of IEE/EIA Requirement

Type of Investment Projects	Size of Project which require IEE	Size of Project which require EIA	Size of the Proposed Project
Extraction of raw materials for construction (limestone, slate, sand, gravel, clay, sandstone)	Production area is less than 200 acres and production are less than 100,000 tons per year	Production area 200 acres and above and annual production of 100,000 tons or more	100,000 tons of lime production per year

Source: EIA Procedure (2015)

2.5 Project Proponent / Project Implementation Organization

24-Hour Mining and Industry Co., Ltd.

Address : No.88, Pyi Road, 6.5 Mile, Hlaing Township,
International Business Center (IBC), Yangon;

Tel : +95- 9 424224245 / 9 457155789

E-mail : 24hourcoltd@gmail.com

Contact Person : U Aung Aung Zaw, Managing Director

Address : No. 116, Yeikthar (3) Street, Waizayanta Garden Housing, Michaungkan (1),
Thingankyun Township, Yangon

Project Manager : U Khin Zaw Hein, Project Manager

Address : Limestone Project Office, Khe Chaung Village, Mandaing Sub-Township,
Bokepyin Township, Tanintharyi Region

The executive and administrative bodies of the 24-Hour is shown in [Table 2.3](#) below.

Table 2.3 Executive and administrative body of 24-Hour Mining and Industry Co., Ltd

Name	Nationality and National Registration Card No.	Address of residence	Designation
U Aung Zaw Zaw	12/ Ma Ga Ta(N)035530	Address: No. 116, Yeikthar (3) Street, Waizayanta Garden Housing, Michaungkan (1), Thingankyun Township, Yangon	Managing Director
U Yar Zar Phyto WaiTun	12/U Ka Ta (N) 138744	No.109, Sayar Tin (10) Street, New Dagon Eastern Township, Yangon	Director (1)
U Bo Bo Zaw	12/U Ka Ma (N) 178841	No.51, May Dar Wi (8) Street, North Okekalarpa Township, Yangon	Director (2)
U Khin Zaw Hein	8/ Kha Ma Na(N) 139937	Address: Limestone Production Project Office, Khe Chaung Village, Mandaing Sub-Township, Bokepyin Township, Tanintharyi Region	Project Manager

2.6 Consultant Firm / EIA Team

The Green Growth Generation Co., Ltd. officially registered in 2014 as a limited company (a consultant/service company) at the Ministry of National Planning and Economic Development. The company has a Certificate of Incorporation (Temporary) No. 4508 of 2012-2013 under the Myanmar Companies Act. The Transitional Consultant Registration for Organization has yet to be approved by the ECD, MONREC.

Contact person : Dr. Khin Lay Swe (Director)

Company Name : Green Growth Generation Co., Ltd.

Company Address : No.129, Corner of 19 – 87 Street, Zatila Quarter, Aungmyaytharzan Township, Mandalay

Table 2.4: Executive and administrative body of GGG Co., Ltd

Name	Nationality & National Registration Card No./ pass port No.	Address of residence and contact	Designation
U Khin Maung Oo	9/Pa Ma Na (N) 083712	No.243/25, 38 Street, 72 -73 Road, Mahaangmyay Township, Mandalay; Email: maung.koo@gmail.com; Mobile: 0943129308	Director (Production)
Dr. Khin Lay Swe	9/Pa Ma Na (N) 083713	No.243/25, 38 Street, 72 -73 Road, Mahaangmyay Township, Mandalay; Email: khinlays2010@gmail.com Mobile: 09 2051028	Director (International relation) Environmental Specialist
U Htay Myint	1/ Ma Ka Na(G)001371	Mingalar Mandalay Building, Ocean Center, 73 Road Chanayethazan Township, Mandalay Mobile: 092042478	Director (HR)
U Soe Linn Tun	9/ Ma Ya Ta (N) 128616	<u>No.6, 81 – 44 Street, Mahaangmyae Township, Mandalay</u> Email: soelintunsg@gmail.com ; Mobile: 09 976014033	Director (Marketing)
Daw Nay Chi Htwe	9/Ma Na Ma (N) 121726	<u>No.129, Corner of 19 – 87 Street, Zatila Quarter, Aungmyaytharzan Township, Mandalay</u> Email: naychihtwe79@gmail.com ; Mobile: 09 2030120	Managing Director

2.6.1 Details of EIA Study Team

Through the “Letter No. 027/EIA/24-Hour/ Hta La -2/2020”, dated on 8th January, 2020, the GGG was approved by the ECD as a third party to prepare the EIA report for the limestone mining project of the 24-Hour.

The EIA team of the GGG Co., Ltd is composed of the members with extensive experiences in process technology and environmental impact assessment of various fields of studies. The team has rich ESIA working experiences with international lenders / projects of the World Bank, ADB, LIFT and etc. The project experiences covered the environmental issues on the various sectors such as agriculture, irrigation; power plants, transport sector and etc. Many of the IEE/EIA consultants are GGG company’s part time members and they are involved in the preparation of the reports as an ad hoc basis.

Most of them are botanists, zoologists, ornithologists, ecologists, aquatic ecologists and social scientists and etc. The key members of EIA Team working for the Scoping study conducted a field survey and public consultation meetings in Tanintharyi and Mandaing Sub-Townships in December 2021. The list of the EIA team members responsible for the overall project was presented in *Table 2.5*, and the details were shown in *Attachment 2.1*.

Table 2.5: Key member list of EIA Team of the project

Sr.	Name	Qualification (Degree/ Graduation year)	Email / Mobile	Responsibility
1	Dr. Khin Lay Swe (EIA Team Leader) Personal Registration (TCR) No.: 0062	Ph. D (Environmental Plant Physiology), 2004; M. Ag, Kyoto University, Japan, 1985; B. Ag, Institute of Agriculture, Mandalay, 1972	Email: khinlays2010@gmail.com ; Mobile: 092051028	Report writing; Compilation and environmental and social impacts assessment and mitigation measures

2	U Aung Min Thu (Co-team leader) Personal Regist. (TCR) No. 0172; Organization Regist. No. 0057	B. Sc (Physics, 2005)	E mail: aungminthu.myanmar@gmail.com ; Mobile 09254190543	Leader for data collection of physical resources: air, water, soil, etc
3	Daw Theiant Theiant Aung	MSc, Master of environmental development study, Environmental Science, Yangon University in 2003; B. Ag. YAU, 1986,	theiantaung09@gmail.com ; Mobile: 095181293	Leader, Social and economic impact assessment:
4	U Hsan Wynn Personal Registration (TCR): 10017	DAG (Engineering Geology), 2002; MSc (Geology) 2004 Yangon University	greenapexenv@gmail.com ; hsanwynn@gmail.com : Mobile:095108547	Team leader, Physical environment assessment (air, water, soil, etc.)
5	Daw Phyto Khing Zar Wint, Personal TCR No. 0171	BE, 2013, Dip in Environmental Management (2018)	phyoekhaingzarwint@gmail.com Mobile: 09979509638	Team member; data collection of physical resources-
6	Dr. Yamin Thant	Ph.D. (Tropical Forest Resources and Environments), Japan, 2011; M.Sc. Kyoto Uni., 2008; B.Sc. (Forestry), University of Forestry, 2005; Diploma in GIS YU, 2019	thant.yamin@gmail.com ; 09 971588330	Team leader for Biodiversity assessment (flora)
7	U Kyaw Thet Naing	BSc (Forestry), University of Forestry, 2012	Kyawthetnaing.2014forestry@gmail.com ; Mobile:09961222289	Team member for Biodiversity assessment (flora.)
8	Dr. Khin Swe Oo	Ph. D (Zoology), Yangon University	khinsweoo71@gmail.com ; 09974913691	Biodiversity Expert (Fauna)
9	Daw Zin Mar Win	M.Sc (Zoology), Yangon University	zinmartintun011@gmail.com ; 09951153180	Biodiversity Expert (Fauna)

2.6.2 Declaration of EIA Experts

GGG Co., Ltd. hereby state that the EIA – Scoping Study has been carried out according to the Environmental Conservation Law (2012), Environmental Conservation Rules and Environmental Impact Assessment Procedure (2015) and EIA Guidelines for the Mining Sector (2018). To our knowledge, all information contained in this report is accurate and a truthful representation of all findings as relating to the Project.

2.6.3 Statement of Commitment

The 24- hour Mining and Industry Co., Ltd will at all times comply fully with the commitments, mitigation measures, and plans that have been presented in this EIA – Scoping Report. It shall fully implement the EIA, all project commitments, and conditions, and is liable to ensure that all contractors and subcontractors of the Project comply fully with all applicable laws, including the Environmental Conservation Law (2012), Environmental Conservation Rules and Environmental Impact Assessment Procedure (2015), EIA Guidelines for the Mining Sector (2018), as well as the EIA - Project commitments and conditions.

The 24- hr. Mining and Industry Co., Ltd and GGG Co., Ltd hereby confirm that –

1. The EIA – Scoping Report is accurate, consolidated and complete,
2. The EIA – Scoping Report has been conducted in accordance with relevant laws, including the EIA Procedure (2015).
3. The Project will fully follow the commitments, mitigation measures and plans set out in this EIA Report.

CHAPTER 3:

**OVERVIEW OF THE POLICY, LEGAL AND
INSTITUTIONAL FRAMEWO**

3.1 Government Institutional Framework

Myanmar has 25 ministries under the President Office as of January 2022. The leading department responsible for environmental and social considerations is the ECD under the MONREC, which was reorganized with the former Ministry of Environmental Conservation and Forestry (MOECAF) and Ministry of Mines in March 2016. The MONREC is acting as a main ministry for the preparation of environmental related laws/rules/procedures/ policies/guidance, the management of environmental issues, and the development of environment-friendly businesses and sustainable projects in Myanmar. The ECD administers the environmental impact assessment process and has responsibility for developing EIA regulations, guidelines, and procedures. It reviews environmental assessment documents and has responsibility for supervision and monitoring compliance with environmental management plans given in environmental impact assessments. There are regional level ECDs for Yangon, Bago and Kyaukse. It is understood that IEE's and EIAs are reviewed at the Federal Level. However, the regional level ECDs will be involved in the monitoring of the implementation of the environmental management plan for the project.

The Forest Department (FD) under the MONREC is mainly a mandated to enhance sustainability of natural resources such as ecosystems and biodiversity, and to communicate the Paris Agreement and Sustainable Development Goals (SDG). FD it has been striving to conserve and restore the natural habitats of fauna and flora while the ECD is mandated to address climate change and environmental conservation.

Concerning with mining sector, the Ministry includes - Department of Mines (DOM), Department of Geological Survey and Mineral Exploration, No. 1 Mining Enterprise and No. 2 Mining Enterprise (ME). DOM is responsible for administration of mineral policy and planning mineral legislation, mine inspection and safety, mineral conservation and environmental conservation. The policy is not to make new investment on its own, but to encourage foreign and local investors to invest in the mining sector. Myanmar practices the production sharing contract (P.S.C) system.

3.2 Overview of National Policy and Legal Framework

The primary investments in Myanmar are in tourism, mining, gems and infrastructure development. The Government of Myanmar (GoM) is striving for the right balance between economic and social development, and environmental protection and sustainability. Firmly aligned with SDGs and the 12 Point - Economic Policy of the Union of Myanmar was launched in 2016. It aims at establishment of an economic framework based on the just balancing of sustainable natural resource mobilization and allocation across the States and Regions. The Myanmar Sustainable Development Plan (2018 – 2030) (MSDP) was developed in 2018.

Among different sectors in Myanmar, there are over sixty policy tools (policy, law, rule, guidelines) in the context of environmental conservation. The national economic objectives stand as the policy framework in the mineral sector where it is stipulated to invite participation in terms of technical know-how and investment from sources inside the country and abroad. It is the policy in the mineral sector to boost up present production, to fulfill the growing domestic demand and to increase foreign exchange earnings. Mineral-wise emphasis is given for development of copper, gold, lead, zinc, iron and steel, coal, nickel and construction related industrial minerals such as cement making materials, dimension stones and aggregates.

3.3 Corporate Environmental and Social Policies

The 24-Hour. is committed to the sustained protection of the environmental in parallel with economic growth and social progress in the Project region. It also has the integrated environment management system based on the following principles:

(1) Avoiding of negative environmental effects,

- (2) Reduction of negative environmental impacts,
- (3) Recycling of materials and substances, and
- (4) Disposal of unavoidable residuals.

3.4 Fundamental Laws and Regulations Related to Environmental and Social Considerations

The Project Proponent has committed to follow all the concerned laws and regulations in Myanmar and also the standards (Water, Air, Sound, and Vibration) which are mentioned in this Chapter of Policy, Legal and Institutional Framework. The Project Proponent has also committed to follow strictly environmental protection law of Myanmar and will not cause any action that may lead to contamination of air, water, soil, ground water and affect public health as well as other socio-economic activities in surrounding areas. Moreover, The Project Proponent has committed to take care of all responsibility under current law, guidelines for any disturbance as well as National Environmental Quality Guidelines (emission) and International standard guidelines. Myanmar Laws and Regulations related to environmental and social considerations, health issues in sector -wise are listed as follows.

Environmental Sector

1. The National Environmental Policy (2019)
2. The Climate Change Policy (2019)
3. Myanmar Agenda 21 (1997)
4. National Sustainable Development Strategy (2009)
5. The Environmental Conservation Law (2012)
6. The Environmental Conservation Rule (2014)
7. EIA Procedures (2015)
8. National Environmental Quality (Emission) Guidelines (2015)
9. Draft Guideline on Public Participation in Myanmar's EIA Processes (2017)

Mining Sector

1. Myanmar Mining Law 2015
2. Myanmar Mining Rules 2018
3. The Prevention of Hazard from Chemicals and Related Substances Law (2013)
4. The Prevention of Hazard from Chemicals and Related Substances Rules (2016)
5. The Occupational Explosive Materials Law (2018)
6. The Private Industrial Enterprise Law (1990)
7. The Explosive Substances Act (1908)

Forestry/Biodiversity/Agriculture Sector

1. The Pesticide Law (2016)
2. The Forest Law (2018)
3. The Forest Rules (1995)
4. The Plant Pest Quarantine Law (1993)
5. The Conservation of Biodiversity and Protected Areas Law (2018)
6. The Animal Health and Development Law (2010)
7. The Fertilizer Law (2002)

Land Use Sector

1. The Land Acquisition, Resettlement and Rehabilitation Law (2019)
2. The Farmland Law (2012)
3. The Farmland Rules (2012)
4. The Vacant, Fallow and Virgin Lands Management Law (2018)
5. The Vacant, Fallow and Virgin Lands Management Rules (2012)
6. Procedures Conferring the Right to Cultivated Land (1998)
7. Land Acquisition Act (1954)
8. Nation Land Use Policy (2016)

Cultural Heritage Sector

1. The Protection of Preservation of Cultural Heritage Region Law (2019)
2. Protection and Preservation of Antique Object Law (2015)
3. Protection and Preservation of Antique Monument Law (2015)

Public Health Sector

1. The Penal Code of Offences Affecting the Public Health, Safety Convenience, Decency and Morals (1961)
2. The Public Health Law (1972)
3. The National Drug Law (1992)
4. The Narcotic Drugs and Psychotropic Substances Law (1993)
5. The Prevention and Control of Communicable Diseases Law (2011)
6. The Traditional Drug Law (1996)
7. The National Food Law (1997)
8. The Control of Smoking and Consumption of Tobacco Product Law (2006)
9. The Law related to Private Health Care Services (2013)
10. The Automobile Law (2015)

Working Environment

1. The Workmen Compensation Act (1951)
2. The Leave and Holiday Law (2014)
3. The Labor Organization Law (2011)
4. The Social Security Law (2012)
5. The Labor Organization Rule (2012)
6. The Labor Dispute Settlement Law (2019)
7. The Employment and Skill Development Law (2013)
8. The Minimum Wage Law/Rules (2013)
9. The Social Security Rules (2014)
10. The Payment of Wages Law (2016)
11. The Occupational Health and Safety Law (2019)
12. The Factory Act (2016)
13. The Business for Ozone Depleting Substances: Notification No.37/2014
14. The Business for Ozone Depleting Substances: Notification No.37/2014

Infrastructure/Economic Development/ Administration

1. The Towns Act (1907)
2. The Village Act (1907)
3. Myanmar Insurance Law (1993)
4. Myanmar Investment Law (2016)
5. Myanmar Investment Rule (2011)
6. Investment Notification (2013)
7. The Constitution of the Union of Myanmar (2008)
8. The Ward or Village Tracts Administration Law (2016)
9. The Road Law (2000)
10. The Electricity Law (2014)
11. The Myanmar Citizen Investment Law (2015)

Emergency

1. The Natural Disaster Management Law (2013)
2. The Myanmar Fire-brigade Law (2015)

Social

1. Children Rights Law (2019)
2. Ethnic Rights Protection Law (2015)

Transportation Sector

1. The Highways Law, 2000
2. Conservation of Water Resources and River Law, 2006
3. The Defile Traffic Act, 1907
4. Ports Act, 1908
5. The Inland Steam Vessels Act, 1917
6. The Motor Vehicles Law, 1964

3.4.1 Key Laws and Regulations for Environmental Impact Assessment in Myanmar

The Myanmar Environmental Policy, Legal and Administrative Framework is based on several laws, rules, procedures and standards. The Environmental Conservation Law was issued in March 2012. The Ministry of Environmental Conservation and Forestry (MOECAAF) promulgated the Environmental Conservation Rules in 2014, followed by Environmental Impact Assessment (EIA) Procedures and Environmental Quality Standards issued in 2015. The following are summaries of the key laws related to the natural, social environment and environmental impact assessment in Myanmar that will likely be relevant to the proposed Project.

i) National Environmental Policy of Myanmar (2019)

Myanmar National Environmental Policy was enacted on 5th July 2019 with the vision of a clean environment, with healthy and functioning ecosystems, that ensures inclusive development and wellbeing for all people in Myanmar. The policy intends to establish national environmental policy principles for guiding environmental protection and sustainable development and for mainstreaming environmental considerations into all policies, laws, regulations, plans, strategies, programmes and projects in Myanmar.

ii) The Environmental Conservation Law (ECL) (2012) and Environmental Conservation Rules (ECRs) (2014)

The Environmental Conservation Law (ECL) was enacted in March 2012. This law is the fundamental law of environmental management and environmental conservation in Myanmar prepared by MOECAAF. Subsequently, the Environmental Conservation Rules (ECRs) were enacted in June 2014 as the detailed enforcement regulations for ECL. ECL stipulates MOECAAF's responsibility for environmental policy and administration, formulation of environmental management plan, implementation of environmental monitoring, setting of environmental standards, management of hazardous waste, and formulation and implementation of EIA, among others. ECRs stipulate the basic policy and concept of EIA application for the development of projects (Article 55).

- To prepare the environment impact assessment system and submit to the Ministry (Article 55 (a) in ECRs); and
- To implement and carry out environmental management plan within the time stipulated by the Ministry and submit the performance situation to the Ministry (Article 55 (b) in ECRs).

iii) The Conservation of Water Resources and Rivers Law (2017)

The aims of this law are as follows: (a) to conserve and protect the water resources and river system for the beneficial utilization of the public; (b) to enable smooth and safe waterways navigation along rivers and creeks; (c) to contribute to the development of the state economy through improving water resources and river system; and (d) to protect environmental impact. According to this law, Section 5 (c), Directorate of Water Resources and Improvement of River Systems (DWIR) is responsible for cooperation with relevant department to extract river water for the purpose of drinking water or irrigation.

However, this law is under the jurisdiction of the Ministry of Transport and Communications (MOTC). This law focuses on transportation safety and its development.

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

The objectives of this law are to implement policy and strategy for biodiversity, to implement government policy for protected areas, to carry out in accordance with the relevant International Conventions concerning with protection of seasonal migrated animal, wildlife and wild plant and ecosystem, to control commerce of wildlife and wild plant and their any part, souvenir produced from any part of wildlife and wild plant, to protect and preserve their endangered species of wildlife and wild plant and their natural habitats, to contribute for the development of research on natural science and awareness, and to protect wildlife by the establishment of zoological/botanical gardens. It prescribes the formation of the committee for protection of wildlife and natural areas with its function and duties and the determination of natural areas and endangered species of wild animal which are to be protected.

v) The EIA Procedure (2015)

The Myanmar Environmental Impact Assessment Procedure was approved on 29 December 2015. Under the Procedure, the MOECAAF, now MONREC has the responsibility and authority to, define conduct and rule on all environmental assessment matters, as well as impose conditions on all proponents. Further, MONREC can also enforce the implementation of mitigation measures and apply penalties as needed. It provides the procedures for environmental screening, scoping, preparation of an Initial Environmental Examination (IEE), preparation of EIA and preparation of an Environmental Compliance Certificate (ECC). The procedures also delineate responsibilities for monitoring compliance with Environmental Management Plans (EMPs) and ECCs. Responsibility for all adverse Impacts, monitoring, monitoring and inspection by the ministry, relevant government departments and organizations, strategic environmental assessment and administrative punishment were stipulated in the EIA procedure. In addition, IEE/EIA types of projects are categorized based on the type and size of the project.

vi) Environmental Impact Assessment Approval Process

Steps for undertaking an EIA are defined in the EIA Procedures. The EIA process as stipulated in the laws is as follows:

- a. All development projects in Myanmar are subject to an environmental screening process through which projects will be judged to determine if they require any environmental review and, if so, at which level (i.e. IEE or EIA).
- b. EIA includes an environmental management plan and a social impact assessment report.
- c. Public participation is required, when deemed necessary, for the Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA), and preparation of an Environmental Management Plan (EMP).
- d. The project's executing agency forms an EIA Review Committee, which gives recommendations to the Minister on whether to approve the EIA reports or not. The Minister makes the final decision based on this recommendation. The review period is 60 days for IEE and 90 days for EIA.
- e. Members of the EIA Review Committee will be selected by the Minister of MONREC and will include persons from the industry, academia and civil society, as well as government officials.
- f. Involuntary resettlement is carried out under the responsibility of respective regional governments and hence will not be included in the EIA Procedures.
- g. Costs involved in conducting EIA are to be covered by the project proponent.
- (viii) EIA can be carried out in Myanmar only by firms that are registered under ECD/MONREC (previously MOECAAF)

vii) Environmental Screening of the Project

The mandatory list of mining projects requiring an IEE and EIA as stated by the EIA Procedure 2015 is shown as below.

Table 3.1 IEE/EIA Project List for Mining Project

	Type of Economic Activity	Criteria for IEE Type Economic Activities	Criteria for EIA Type Economic Activities
Mining			
	Extraction of Rock, Gravel or Sand from a River or Marine Waters	≥ 1,000 m ³ /a but < 50,000 m ³ /a	≥ 50,000 m ³ /a
	Construction, Building and Ceramic Minerals Extraction (aggregates, limestone, slates, clay, gypsum, feldspar, silica sands, granite, kaolin, bentonite, marble, and quartzite)	< 200 acre and < 100,000 t/a	≥ 200 acre or ≥ 100,000 t/a
	Extraction and Refining of Industrial Minerals (barite, fluorite, phosphate, potash, salt, soda ash, asbestos)	< 200 acre and < 100,000 t/a ore	≥ 200 acre or ≥ 100,000 t/a ore
	Extraction of Ferrous, Non-Ferrous Metal and Precious Metal Ore Except Gold (iron, manganese, silver, copper, tin, antimony, lead, nickel, zinc, chromium, bauxite), and Precious Stone	< 50 acre and < 50,000 t/a	≥ 200 acre or ≥ 50,000 t/a
	Coal Mining (underground and surface)	< 100,000 t/a coal	≥ 100,000 t/a coal

Source: MONREC EIA Procedure 2015

Per Myanmar's EIA Procedure (2015), the proposed limestone mining project classifies as "EIA Type Project". Scoping Reports which define the TOR for the EIAs in accordance with Myanmar standards and procedures have been submitted to ECD.

viii) The National Environmental Quality (Emission) Guidelines (2015)

MONREC formulated the National Environmental Quality (Emission) Guidelines (NEQG) in coordination with ADB in December 2015. The NEQG determines the guideline values for general emission such as air emissions, wastewater, noise levels, odor, and those for sector-specific emission such as emission from forestry, agribusiness/food production, chemicals, oil and gas, infrastructure, general manufacturing, mining, and power.

ix) Myanmar Mines Law (2015) and Myanmar Mining Rules – Notification No.125/96 (replacing Mining Law 1994)

The Union of Myanmar Mines Law was promulgated in September 1994 and rules relating the law followed after in December 1996. The objectives of the Myanmar Mines Law include –

- (a) to implement the Mineral Resources Policy of the Government;
- (b) to fulfill the domestic requirements and to increase export by producing more mineral products;
- (c) to promote development of local and foreign investment in respect of mineral resources;
- (f) to protect the environmental conservation works that may have detrimental effect due to mining operation. The mining law was updated in 2015, replacing the 1994 Law. There have been the following amendments:
 - Minerals- Gemstones administered under different law.
 - Types of Permits- corresponding to type of business activity.
 - Regional Authorities- Authority delegation for some types of permits.

x) **Environmental Impact Assessment Guidance for the Mining Sector, 2018**

Environmental impact assessment guidance for the mining sector includes the following.

- Mining Exploration: Guidelines for Preparation of an Environmental Management Plan
- Mining Guidelines for Environmental Impact Assessment
- Technical Guidance for Environmental Impact Assessment of Mining
- Guide for Review of Environmental Assessment Documentation
- Guide for Preparing an Environmental Compliance Certificate for a Mining Project
- Guide for Environmental Compliance Monitoring and Inspection

When conducting the assessment of impacts, the more detailed *Technical Guidance for Environmental Impact Assessment of Mining* should be used as a reference. ECD staff responsible for compliance monitoring and environmental and social staff of mining companies should refer to *Guide for Environmental Compliance Monitoring and Inspection*.

The purpose of the document is to describe the environmental requirements for preparation of a stand-alone environmental management plans for the prospecting, exploration, and feasibility study stage on the mining life cycle. It also prescribes the required set of environment mitigation measures and rehabilitation requirements that must be followed by all projects. Because the nature of activities involved in prospecting and exploration have become standardized, the environmental impacts of prospecting and exploration are well understood. Site specific environmental management plans can be developed from these environment codes of practice.

xi) **The Protection and Preservation of Cultural Heritage Region Law (2019)**

This law prescribes the determination of cultural heritage regions for protection and preservation so as not to deteriorate due to natural disaster or man-made destruction. According to Section 21 (a) under this law, applying for prior permission, scrutinizing and issuing to operate constructing building, clearing natural epidemic tree species, excavation and land filling in cultural heritage site or within ancient site zone or ancient monumental zone shall be carried out.

xii) **The Public Health Law (1972)**

The law is concerned with protection of people's health by controlling the quality and cleanliness of food, drugs, environmental sanitation, epidemic diseases and regulation of private clinics. The Law stipulates that the Government shall carry out measures to advise, inspect, supervise, amend and prohibit for the protection from pollution due to dangerous gases, smells, fumes, noises and rays to prevent impacts to public health.

xiii) **Workplace Safety and Health Law, 2017**

The law is for implementation for workplace safety and health regulations for all industries. It stipulate obligations of the relevant stakeholders to reduce and eliminate workplace accidents and occupational diseases, ensure the early prevention of workplace hazards arising from Myanmar's economic development, raise productivity and establish safe and healthy workplaces in accordance with regional and international standards. The law is applicable construction and engineering projects. The Workplace Safety and Health Law 2017 sets out duties and responsibilities of employers and employee, the National Workplace Safety and Health Council and administrative penalties and appeals.

xiv) **The Prevention and Control of Communicable Diseases Law (1995, revised in 2011)**

This law describes functions and responsibilities of health personnel and citizens in relation to prevention and control of communicable diseases. It also describes measures to be taken in relation to environmental sanitation, reporting and control of outbreaks of epidemics and penalties for those failing to comply. The law also authorizes the Ministry of Health to issue rules and procedures, when necessary, with approval of the government.

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

The Prevention of Hazard from Chemical and Related Substances Law, the central law of chemicals management in Myanmar enacted in 2013, stipulates that when chemicals and related substances is to be transferred, stored, used, or disposed, operating approval certificate should be obtained in accordance with the regulations based on the international treaties.

xvi) Prevention from Danger of Chemical and Associated Material Law (Pyidaungsu Hluttaw Law No 28/2013)

The objectives of this law are:

- a) to prevent damage to environmental resources and living organisms due to chemicals and associated materials,
- b) to provide for the systematic control of businesses using chemicals and associated materials in accordance with government approvals,
- c) to carry out data gathering and to undertake education and research regarding the safe and systematic utilization of chemicals and associated materials,
- d) to achieve continuous improvements in worksite safety, health and environmental conservation

xvii) The Occupational Health and Safety Law (2019):

(Pyidaungsu Hluttaw Law No 8 of 2019), 15 March 2019

A new Occupational Health and Safety Law is officially issued in 2019 by the Ministry of Labor, Immigration and Population with the participation of representatives of the various regulatory agencies pertaining to Occupational Health and Safety as well as the participation of the private sector. According to Section 12, the employer shall 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 or business. The employers are responsible for improving occupational safety and health, planning for emergency, incurring the expense for occupational safety and health matters.

Chapter VIII: Responsibilities of Employers and Workers -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); ©SCM Legal Limited. SCM Legal Limited is a limited company registered in Myanmar
- e. 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;
- f. In every factory wherein more than two hundred and fifty workers are employed there shall be provided and maintained a first-aid room or dispensary of the prescribed dimension, containing the prescribed equipment, and shall be kept under the supervision of such medical officer and nursing staff as may be prescribed.

xviii) The Factory Act (1951) (amended in 2016)

A first-aid box or a cupboard equipped with the prescribed contents must be readily accessible during working hours for every hundred workers.

- A person must be responsible for the first aid supplies who has been trained in first-aid treatment and available during working hours.
- In every factory with more than 250 workers medical clinic must be provided under the supervision of a medical officer and nursing staff as may be prescribed

xix) The Natural Disaster Management Law (2013)

The Natural Disaster Management Law was enacted to implement natural disaster management programs systematically and expeditiously in order to reduce disaster risks; to form the National Committee and Local Bodies in order to implement natural disaster management programs systematically and expeditiously; to coordinate with national and international government departments and organizations, social organizations, other non-government organizations or international organizations and regional organizations in carrying out natural disaster management activities; to conserve and restore the environment affected by natural disasters; to provide health, education, social and livelihood programs in order to bring about better living conditions for victims.

3.5 International Guidelines on Health and Safety

In accordance with ADB's Safeguard Policy Statement (2009), the project is required to adhere to international Environmental and Health and Safety standards whenever these are more stringent than national standards or where national standards are missing. The following standards are generally considered in the EIA:

- I. IFC/World Bank Group, 2007. Environmental Health and Safety Guidelines, General Guidelines. Wash. DC.,
- II. IFC/World Bank Group, 2007. Environmental Health and Safety Guidelines, Industry Sector Guidelines, Infrastructure (Water and Sanitation), Wash. DC.

As the introduction to the EHS Guidelines, these guidelines are technical reference documents with general and industry-specific examples of good international industry practice. For the proposed CPO and refinery mill, relevant EHS Guidelines are given below:

a) The EHS General Guidelines

These guidelines are designed to be used together with the relevant Industry Sector Guidelines. The chapter on environment addresses air emissions and ambient air quality, energy conservation, waste water and ambient water quality, water conservation, hazardous materials management, waste management, noise and contaminated land. The chapter on occupational health and safety provides guidance and examples of reasonable precautions to be implemented in managing principal risks to workers. The community health and safety chapter complement the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities taking place outside of the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis. The Guidelines also cover construction and decommissioning.

b) Environment & Social Safeguard Policies

The World Bank's environmental and social safeguard policies are a cornerstone of its support for programmes aimed at sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for lenders (including banks) and borrower staff in the identification, preparation, and implementation of programmes and projects. Safeguard policies have often provided a platform for the participation of stakeholders in the project design, and have been an important instrument for building a sense of project "ownership" among local populations.

The WB has ten (plus one) environmental and social policies which are known as safeguard policies. The safeguard policies which may be generally applicable to the ESIA project are:

- OP/BP 4.01 for Environmental Assessment
- OP/BP 4.04 for Natural Habitats
- OP/BP 4.12 for Involuntary Resettlement
- OP/BP 4.10 for Indigenous People

- OP/BP 4.11 for Physical Cultural Resources
As the proposed limestone mining project has no acquisition of land or no significant disturbance of natural habitat. None of the historical structures is located near the project mining site and there is no risk of any cultural properties being affected. Therefore, the above said OP/BP are not triggered.

3.6 Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: Construction and Decommissioning, World Bank Group, 2007

In addition to the above-mentioned environmental impact assessment and mitigation measures, the project will follow the General EHS Guidelines: Construction and Decommissioning, which provide additional, specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities. During these activities, the environmental impacts may occur such as “Noise and vibration, Soil erosion, Air quality, Disturbance to water bodies, Solid waste and Hazardous materials, and etc.

Regarding the “Occupational Health and Safety” the guidelines describe the potential common causes of injuries in construction and decommissioning site and recommendations for their prevention and control. Similarly, for the “Community Health and Safety”, there will be issues on “General site hazards, Disease prevention and Traffic safety”. The Project will implement risk management strategies to protect the community, training of workers, implementing administrative controls into work processes and so on. For all these potential impacts, the preventive measure and recommendations described in the EHS Guidelines will be strictly followed by the Project Proponent.

3.7 International Conventions, Treaties and Agreements

The Union of Myanmar is a party to relevant international environmental conventions, treaties and agreements on the principles and actions necessary for sustainable development and environmental protection. It ratified in 1994 both the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change. These international conventions explicitly reference the application of environmental assessment to address the effects of human activities. Myanmar has signed several “International Agreements and Treaties” and the following are some examples (*Table 3.2*).

Table 3.2 International Agreements and Treaties

International Agreements and Treaties	Year Ratified
ASEAN Agreement on the Conservation of Nature and Natural Resources (1985)	1997
World Heritage Convention (UNESCO), 1972	1994
Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, D.C., 1973; and this convention as amended in Bonn, Germany, 1979	1997
Vienna Convention for the Protection of the Ozone Layer, 1985	1993
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989	2015
Montreal Protocol on Substances that Deplete the Ozone Layer, 1989	1993
London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990	1993
United Nations Framework Convention on Climate Change (UNFCCC), New York, 1992	1994
United Nations Convention on Biological Diversity, Rio de Janeiro, 1992	1994
Kyoto Protocol, 1997	2005

International Agreements and Treaties	Year Ratified
Stockholm Convention on Persistent Organic Pollutants (POPs), 2001	2004
Ramsar Convention (Convention on Wetlands of International Importance Especially as Waterfowl Habitat), 1971	2005
Intended Nationally Determined Contribution (INDC) to the UNFCCC	2015
Agreement between International Union for Conservation of Nature (IUCN), and the government of Myanmar to establish an IUCN Office in Myanmar for future collaboration on addressing challenges and maximizing opportunities related to biodiversity conservation and sustainable development in the country.	2016

Source: General Environmental Impact Assessment Guideline September 2017 (Version 3), MONREC

The Convention on Biological Diversity, in particular, promotes the use of appropriate procedures requiring environmental impact assessment of proposed projects that are likely to have adverse effects on biological diversity. The Basel Convention regulates the trans-boundary movements of hazardous wastes and provides obligations to its parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. In Addition, United Nations Framework Convention on Climate Change 1992 (UNFCCC) and Kyoto Protocol, 1997 provide a framework for intergovernmental efforts to tackle climate change. Myanmar recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. As a signatory member country, Myanmar has committed the guidelines and enthusiastically participated in a considerable number of international programs and activities. Myanmar submitted the Intended Nationally Determined Contribution (INDC) to the UNFCCC in 2015. Moreover, to meet its commitment to the UNFCCC and support the implementation of Paris Agreement's 1.5 °C goal, Myanmar's Nationally Determined Contribution (NDC) was submitted to the UNFCCC in 2021.

3.8 National Guidelines and Standards

According to Article 10 of the Environmental Impact Assessment Procedure, MONREC issued the following environmental quality standards for quarry projects under 2.3.6, Manufacture of Construction Materials and 2.3.6.1 Cement and Lime Manufacturing of National Environmental Quality (Emission) Guidelines NEQG (2015). The emission guidelines and target values of ambient air quality, air emission, wastewater, and noise levels were set in NEQG, while other standards have not been set yet by MONREC. In this Project, the Project Proponent basically apply the NEQG and in case of no quantitative target values in NEQG, the quantitative target value of other country and international organization are referring to the target values. Each quantitative target value to be applied is described below.

3.8.1 Air Quality

Myanmar: National Environmental Quality (Emission) Guidelines has set the ambient air quality in Myanmar as shown in the following [Table 3.3](#).

Table 3.3 Ambient Air Quality Standards of Myanmar

Item	Average Period	Myanmar (NEQG)
SO ₂	10 mins	0.5 mg/m ³
	24-Hours	0.02 mg/m ³
NO ₂	1 hour	0.2 mg/m ³
	1 year	0.04 mg/m ³
PM ₁₀	24-Hours	0.05 mg/m ³
	1 year	0.02 mg/m ³
PM _{2.5}	24-Hours	0.025 mg/m ³
	1 year	0.01 mg/m ³
Ozone	8-hour daily maximum	0.1 mg/m ³

Source: Myanmar: National Environmental Quality (Emission) Guidelines (December, 2015).

3.8.2 Air Emission Levels (for lime manufacturing)

Air Emission Levels (for lime manufacturing) of National Environmental Quality (Emission) Guidelines NEQG (2015) is as follow.

Table 3.4 Air Emission Levels (for lime manufacturing)

Parameter	Unit	Guideline Value
Dust	mg/Nm ^{3a}	50
Sulfur dioxide	mg/Nm ³	400
Nitrogen oxides	mg/Nm ³	500
Hydrogen chloride	mg/Nm ³	10

^a Milligrams per normal cubic meter at specified temperature and pressure

Source: Myanmar: National Environmental Quality (Emission) Guidelines (December, 2015)

Air Blasting: The maximum level for air blasting is 115 dB Linear. The level of 115 dB Linear may be exceeded on up to 5% of the total number of blasts over a period of 12 months; however, the level should not exceed 120 dB Linear at any time. Blasting is only permitted during daylight hours. The recommended maximum level for ground vibration is 5 mm/s (peak particle velocity ppv). The ppv level of 5 mm/s may be exceeded on up to 5% of the total number of blasts over a period of 12 months. The level should not exceed 10 mm/s at any time. (Source: Environmental Impact Assessment Guidelines for the Mining Sector, 2018)

3.8.3 Effluent Levels

(1) Effluent Levels for Construction Materials Extraction

Section 2.7.1 Construction Materials Extraction of The NEQG guideline applies to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite, as well as extraction of dimension stone. It addresses stand-alone projects and extraction activities supporting construction, civil works, and cement projects.

Construction materials extraction operations do not typically generate point sources or effluents or emissions with the exception of dewatering effluents which may contain suspended solids. Effluent and storm water flows should be managed so as to achieve the following effluent levels. The principal sources of air emission are fugitive dust from earth works and materials handling and transport facilities. Prevention and control of air emissions should be sufficient to achieve the general air emission guideline for ambient air quality (*Table 3.5*).

Table 3.5 Effluent Levels for Construction Materials Extraction

Parameter	Unit	Maximum Concentration
Biological oxygen demand	mg/l	30
Chemical oxygen demand	mg/l	125
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

^aStandard unit; Source: Myanmar: National Environmental Quality (Emission) Guidelines (December, 2015).

(2) Effluent Limit Values for Exploration and Mining Sites

The following standards apply to all mining activities including runoff and discharges from drill sites, sumps, pit, trenches, bulk sampling, underground exploration mining and waste rock. The standards also apply to runoff and discharges from roads, construction work sites and temporary sedimentation ponds.

Table 3.6: Effluent Limit Values for Exploration and Mining Sites

Parameter	Unit	Guideline Value
Arsenic	mg/l	0.1
Cadmium	mg/l	0.05
Chemical oxygen demand	mg/l	150
Chromium (hexavalent)	mg/l	0.1
Copper	mg/l	0.3
Cyanide	mg/l	1
Cyanide (free)	mg/l	0.1
Cyanide (weak acid dissociable)	mg/l	0.5
Iron (total)	mg/l	2
Lead	mg/l	0.2
Mercury	mg/l	0.002
Nickel	mg/l	0.5
pH	S.U. ^a	6-9
Temperature		<3 degree differential
Total suspended solids	mg/l	50
Zinc	mg/l	0.5

^aStandard unit; Source: Myanmar: National Environmental Quality (Emission) Guidelines (December, 2015).

(3) Effluent Standards for Work Camps, Sanitary Facilities, Domestic Wastewater

The following standards apply to domestic wastewater, and discharges, drainage and runoff from work camps, sanitation facilities and landfills.

Table 3.7 Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges

Parameter	Unit	Guideline Value
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1

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

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

3.8.4 Noise and Vibration Level

The target noise level is set at the most sensitive point of reception as shown in according to Myanmar National Environmental Quality (Emission) Guidelines (2015). Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive point of reception. Noise impacts should not exceed the levels shown below (*Table 3.8*), or result in a maximum increase in background levels of 3 dBA at the nearest receptor location off-site according to the NEQG (2015).

Table 3.8 Tentative Target Noise Level during Operation Phase

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

Note: Evaluation point is at boundary of locator's property; Equivalent continuous sound level in decibels
Source: National Environmental Quality (Emission) Guideline (December 2015)

3.9 Environment, Health and Safety (EHS) Policy Statement

The statement of policy on environment, health and safety sets out the commitment of the 24-Hour Mining and Industry Co., Ltd to manage environmental, health and safety requirements effectively. Management commitment to EHS performance is one of the most important critical elements for the success of an EHS -MS and for the development of a strong safety culture within the Company. Therefore, this EHS document establishes a management commitment with a performance goals. This commitment includes the following:

- *Establish methods to use energy more efficiently, reduce waste, and prevent accidents.*
- *Comply with laws, regulations, and organizational requirements applicable to their operations.*
- *Improve EHS performance continually.*
- *Conduct periodic assessments to verify and validate EHS performance.*

The EHS policy statement defines what shall be achieved by the 24-Hour and the staff team members working at proposed limestone project station and being responsible to operate the proposed project according to the EHS policy objectives.

All involved parties are committed to protect the fundamental rights of all appointed workers and the public and obliged to create a sound work- management relationship as a key ingredient in a sustainable project operation. All involved parties from the upper management of the project down to every single worker should take responsibility for all required EHS procedures but in the same way. All staff members need to be aware of their responsibilities to comply with the EHS Policy. The following requirements are mandatory for the Company and each worker for the implementation of the project -

- *being involved in the workplace EHS system;*
- *sticking to correct procedures and equipment;*
- *wearing protective clothing and equipment as and when required;*
- *ensuring all accidents and incidents are reported;*
- *telling the responsible Managers immediately of any EHS concerns;*
- *keeping the work place tidy to minimise the risk of any trips and falls.*

The EHS Policy Statement is implemented to achieve the following goals -

- *Zero fatalities of workers, visitors or the public;*
- *Zero accidents and incidents of workers, visitors or the public;*
- *Zero harmful, hazardous or dangerous situations or occurrences;*
- *Zero environmental concerns, risks or impacts;*
- *Continuous improvement of the health & safety performance at site under practical conditions.*

The following [Fig. 3.1](#) described the EHS Policy Statement” of 24-HourCompany.

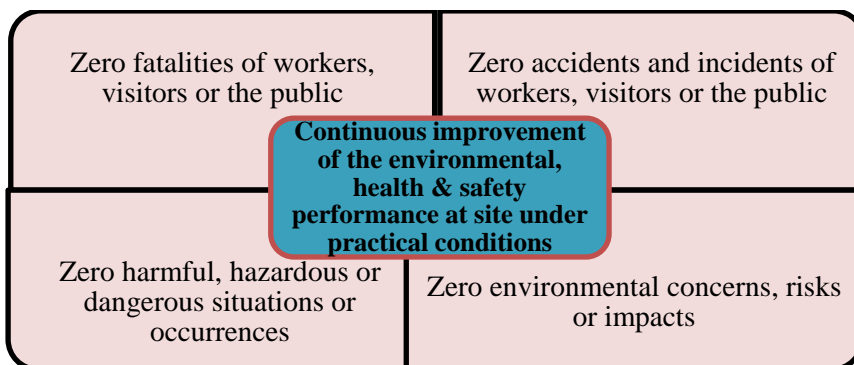


Figure 3. 1 Environmental, Health and Safety Policy Statement of 24-Hour.

3.10 Commitment to the National and International Legal Background

A statement of commitment was undertaken by the 24-Hour Mining and Industry Co., Ltd that, besides the above-mentioned laws, rules, regulations and guidelines, the Company will strictly follow the rules and regulations of business licenses obtained ([Attachment 3.1](#)).

The Government of Myanmar has introduced several legislations, rules and procedures for the undertaking of projects in the country. The 24-Hour will follow the Myanmar Mines Law (2015) and Myanmar Mining Rules (1994), EIA Guidelines for the Mining Sector, 2018. The 24-Hour will also comply with the legislations in relation to environmental and social issues for the projects described in the Environmental Conservation Law of 2012, Environmental Conservation Rules of 2014 and National Environmental Quality (Emission) Guidelines (EQEG), 2015. The 24-Hour shall minimize impacts by ensuring that emissions do not result in concentrations that reach or exceed national quality guidelines and standards, provided there is any potential produced by the project for significant impacts on ambient air quality, soil, noise water and quality.

It will also follow the Occupational Health and Safety Law (2019), International Guidelines on Health and Safety requirement on occupational health and a safe working environment. In addition, the 24-Hour Co., Ltd. will follow the “International Directives, Guidelines and Standards” such as World Bank EHS Safeguards, EHS Guidelines of International Finance Corporation (IFC).

Standard operating procedures (SOPs) were written instructions intended to document how to perform a routine activity. The 24-Hour will rely on standard operating procedures to help ensure consistency and quality in their products and in the execution of tasks and works.

3.11 Commitments the EIA by the 24-Hour Co., Ltd

Through the Project development, the 24-Hour Co., Ltd has made commitments to ensure appropriate environmental and social performance. The 24-Hour has made the following commitments:

- Ensure the accuracy of this EIA.
- Confirm the EIA is in strict compliance with applicable Environmental Conservation Law, Rules and Procedures; and
- Confirm and commit to mitigation measures stipulated in the EMP of EIA Report

The 24-Hr.Co., Ltd. will conduct the following practices which will comply with its EIA commitments.

- For stakeholder engagement, knowledge and information should be disseminated to employees and local people regularly during operations.
- Training programs should be done for factory workers and staff to meet the environmental performance.
- 24-Hour will need to monitor every 6 months, the air and noise emissions and water discharges from the Project to ensure these align with the National Environmental Quality (Emissions) Guidelines. The monitoring proposed in this EMP should also be conducted on a regular basis to ensure the impacts to the environment and people are reduced.
- 24-Hour will complete an Environmental Monitoring Report to record the environmental and social performance of the Project. It is understood that MONREC are entitled to audit should they see fit.
- As per 24-Hour’s commitment and the requirements of the EIA Procedure; an “Incident Report” will be submitted to MONREC within 24-Hours after the event (serious impacts) or seven (7) days for any other incident considered as minor impact.

CHAPTER 4:
PROJECT DESCRIPTION

4.1 Project Location

The 24-Hour Mining and Industry Co., Ltd. was granted a license to mine the concessions of 2,880 acres (11.6552 km²) in Tanintharyi Township, Tanintharyi Region in South East of Myanmar. The general coordinates of the field areas are 0526000E, 1278000N of the UTM map sheet No. 1199-02 & 06, and the sites are between the 24 & 30 of the easting grid lines and 72 & 90 of the northing grid lines of UTM map. The mining concessions include Block-1 (A- 350 645, B- 360 645, C- 360 600, D- 350 600, E- 350 545, F-340 545, G- 340 615, H- 350 615) for 2200 acres; Block-2 (I- 322 652, J- 327 652, K- 327 635, L- 322 635) for 200 acres; and Block-3 (M- 325 530, N- 322 530, O- 322 504, P- 325 504) for 480 acres in one inch one mile scale map sheet No. 96 M/2&6. The detailed map reference of each concession was also described in the Mine Production Permit of The Ministry of Mineral Resources and Environmental Conservation Department. (*Attachments*)

The google map of three quarry sites were shown in *Fig. 4.1* below. The quarry sites are situated at *Paung Ni Kyauk Taung*, lie near the eastern side of the upstream of *Nga Wun Stream*, also known as the Little Tanintharyi River. It flows from south to north and enters into the Tanintharyi River. The nearest point from Block-2 to the stream is about 300 meters away, while those from Block-1 and Block-3 are 1840 meters and 650 meters, respectively. Distance from Ma Noe Yone / Khae Chaung, the nearest village to the Block-3 project-quarry site is 27 kms. The transport road (for the construction materials and workers) to the quarry sites is 27 km away from Khae Chaung village (Ma Noe Yone Village Tract). The location of three concessions and the transport road from project office at Khae Chaung village were described in the *Fig.4.2*.



Figure 4-1 Locations of Limestone Quarry Sites in Tanintharyi Township

Map showing Transportation Road of Manoron-Ke' chaung village to Limestone Mine

Map Ref ; UTM Map sheet 1199 06

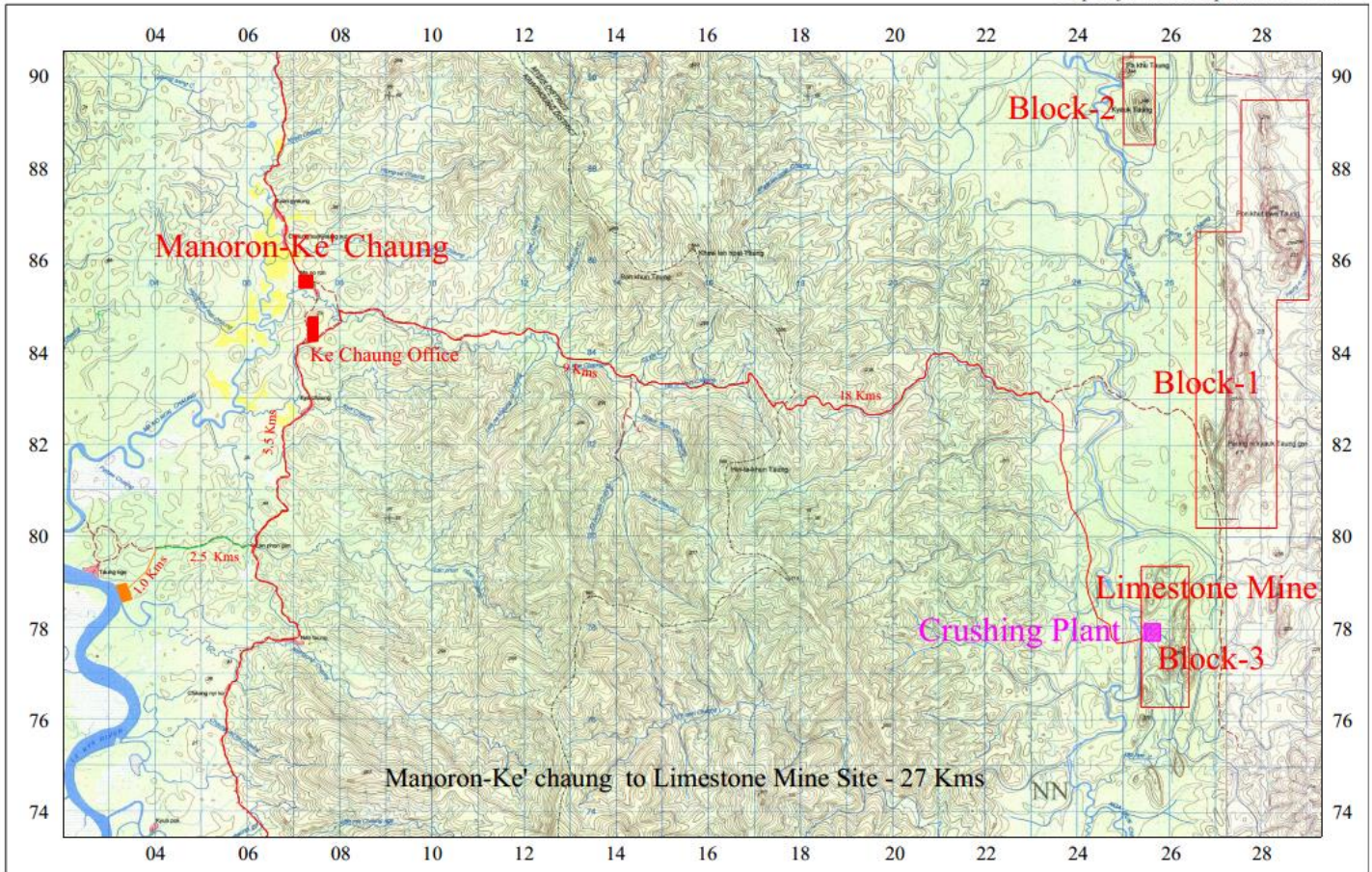


Figure 4-2 Limestone Quarry sites and transport road from Project office at Khae Chaung village (Ma Noe Yone Village Tract), Bokpyin Township

4.2 Project components, mine life and mine boundary

In the *Paung Ni Kyauk Taung*, the isolated limestone hills are orderly and widespread trending approximately from south to north. The 24-Hour will start mining from the Block-3A. According to the mining design of Paung Ni Kyauk Taung Limestone extraction, the “Open Cut mining system” will be applied. The production capacity was estimated to be 2,250,000 metric tons per year of limestone crushed rock. The key information of the project was shown in the following [Table 4.1](#).

Table 4.1 Facts and Data for proposed Limestone Quarry Project

Construction Phase duration	2 years
Operation Phase	Over 50 years
Land lease duration	10 years and extendable
Production capacity	2,250,000 metric tons per year
Products	Limestone crushed rock (CaCO ₃)
Size	0 - 5 mm, 5 - 50 mm
Monthly fuel requirement	Diesel 70,000 gallons

Monthly electricity consumption (for Year 1 and Year 2 - only)	1,958,400 units (Electricity will be generated from own generators)
Ground water	Ground water will not be used in limestone mining. The water from the <i>Nga Wun Chaung</i> /Stream will be applied for domestic uses and dust suppression, and washing machines, vehicles and etc.
Daily water consumption (maximum)	2000 gal/day; 630,000 gal/year
Staffs/ employees	Manpower – 173 employees (monthly salaries range from Ks.122,640,000 (1226.4 Lakh MMK per month) The annual total salary amount is estimated 1,471,680,000 Kyat/ Year.
Number of Staffs (full strength)	There will be 173 staff within Year 1 to over 30 years, Local workers (depending on their skills) will be given priority when employing the staff for quarry production. In addition, the locals will be hired on piece work -contract basis from time to time
Working hours	8 Hours x 2 shifts /day; 6 days in a week

4.3 Detail geological exploration and ore reserve estimation

The following figure shows the location of surface samples for Ore Reserve Estimation. In addition, the *Figure 4.3* shows the locations of surface samples while exploration of the quarry sites.

Drilling results for Block-3A were as follows -

Drilling Result for Block-3A

<u>Sr. No</u>	<u>Drill-hole No.</u>	<u>Easting</u>	<u>Northing</u>	<u>Elevation</u>	<u>Depth(m)</u>
1	DH 1	0525593.22	1278251.07	56.33	79.4
2	DH 2	0525738.56	1278558.02	77.12	94.5
3	DH 3	0525906.02	1278827.82	94.24	85.34
4	DH 4	0526027.59	1279082.17	86.08	9.14
5	DH 4A	0526066.00	1279133.00	92	10
5	DH 5	0526300.13	1279310.77	75.77	58
6	DH 6	0526030.27	1279302.26	69	51.36
7	DH 7	0525685.00	1279193.00	66.73	12.19
8	DH 8	0525531.00	1278430.00	67.13	51.82
				TOTAL	451.75

Map showing location of surface samples, Paung Ni Kyauk Taung Limestone

Map Ref; UTM Map Sheet 1199 02 & 06

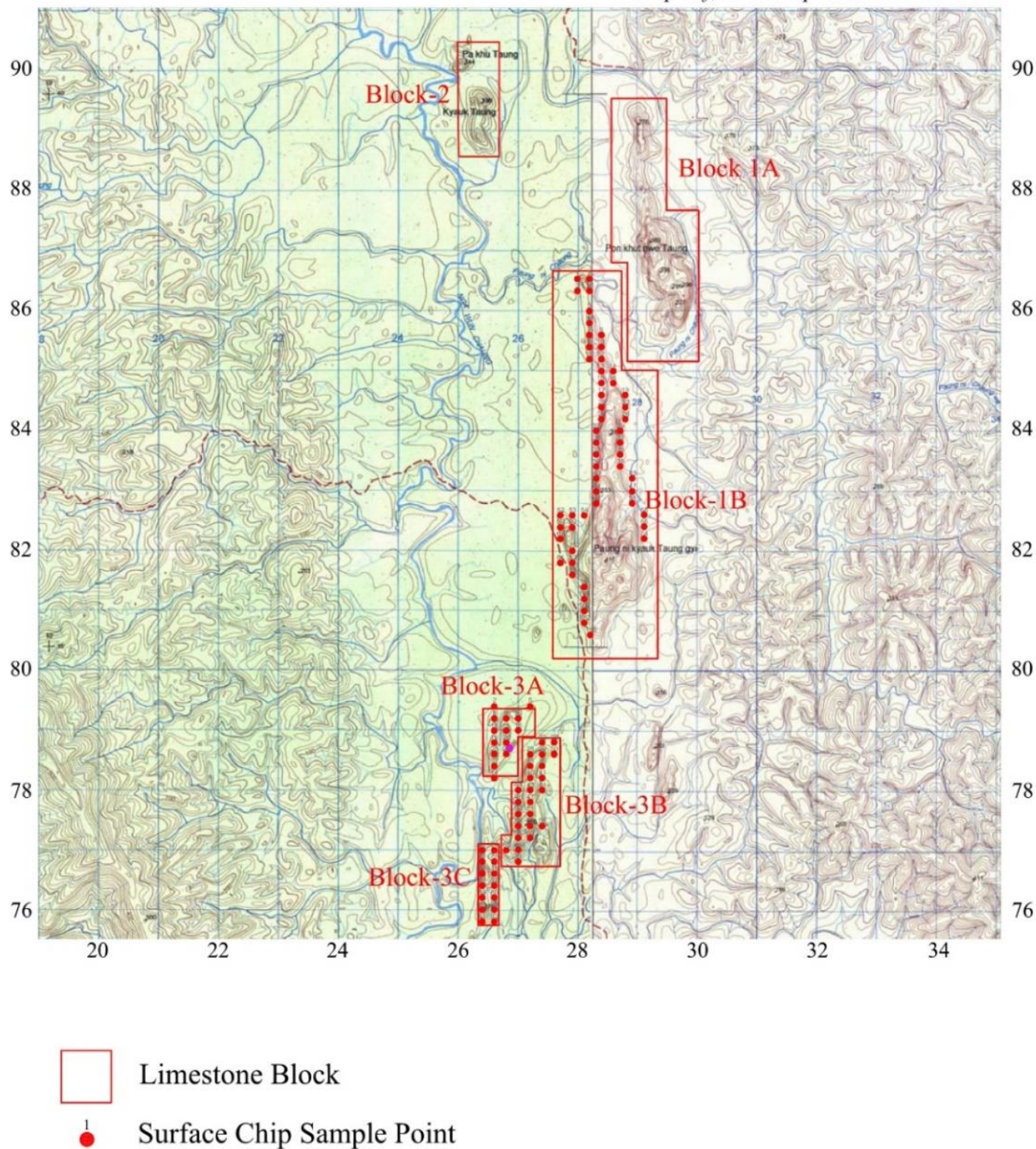


Figure 4.3 Map showing location of surface samples

4.4 Ore reserve estimation for Block 1, 2 and 3

The Geological Ore Reserved (P2-Probable Ore Reserve) showed that the Block-3A will produce 73.5 million tons total production within the mine life of 30 years with the production rate of 2,250,000 ton/ yr. Ore reserve calculated boundary area for Block-3A is about 61 acres with 8 drill holes and the geologists calculated the extractable limestone amounts based on the above 40-meter level, which is ground level. The data were described as follows:

a. Block 1A	= 329.34 Million tons	(P3 = Possible ore reserve)
b. Block 1B	= 660.02 Million tons	(P3 = Possible ore reserve)
c. Block 2	= 23.12 Million tons	(P3 = Possible ore reserve)
d. Block 3C	= 71.26 Million tons	(P3 = Possible ore reserve)
Total	= 1083.74 Million tons	(P3 = Possible ore reserve)
e. Block 3A	= 73 Million tons	(P2 = Probable ore reserve)

The detailed measurement and drawing of Mine Boundary and Quarry area of Block-3A are presented in the following maps. The detailed Topographic and Drill Hole Plan Map of Block-3A was shown in *Figure 4.4* and the Design Cross section line and Pit Boundary of mine area were described in *Figure 4.5* and *Figure 4.6*.

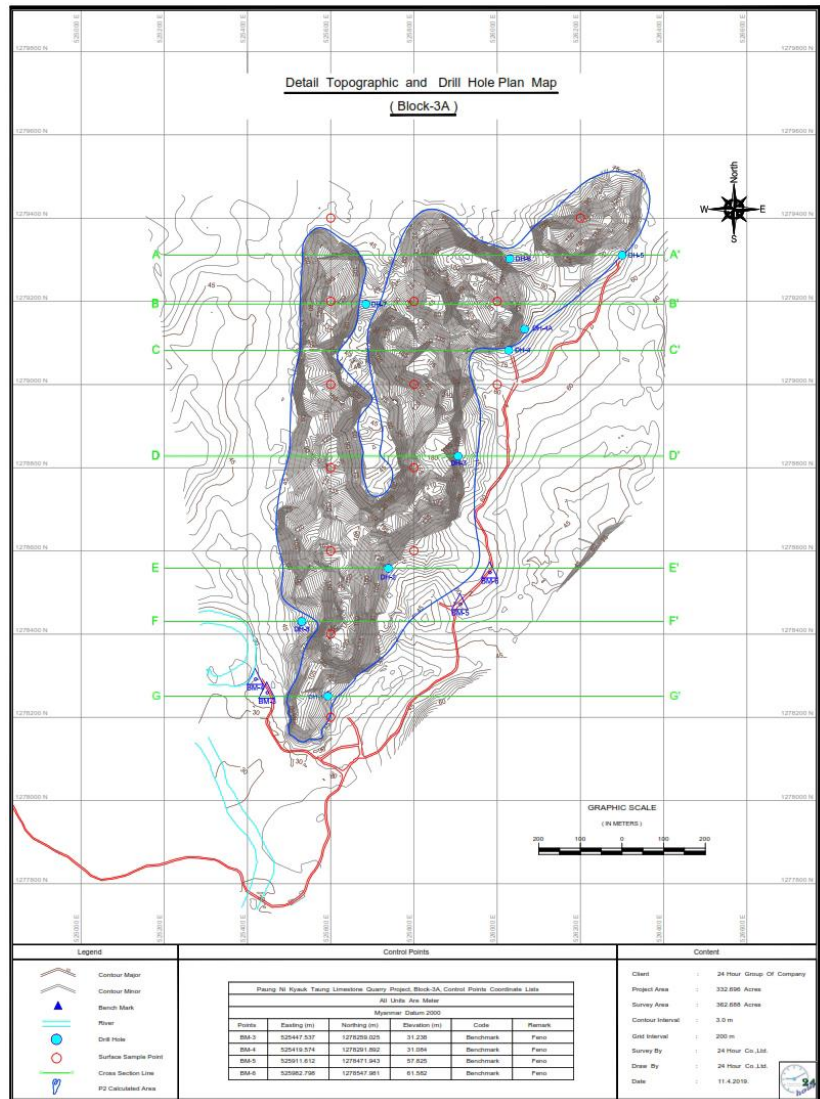


Figure 4.4 Detailed Topographic and Drill Hole Plan Map of Block-3A

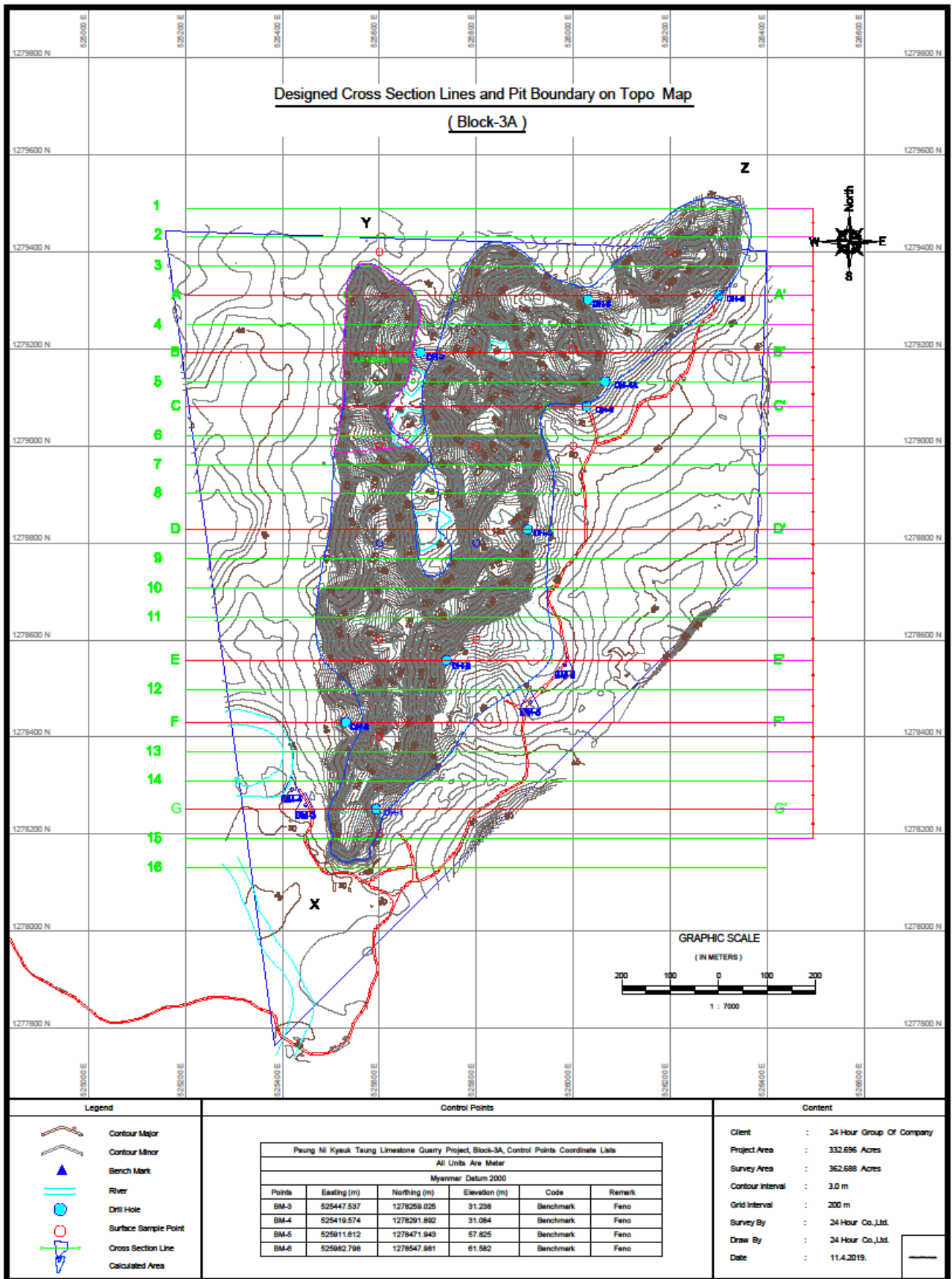
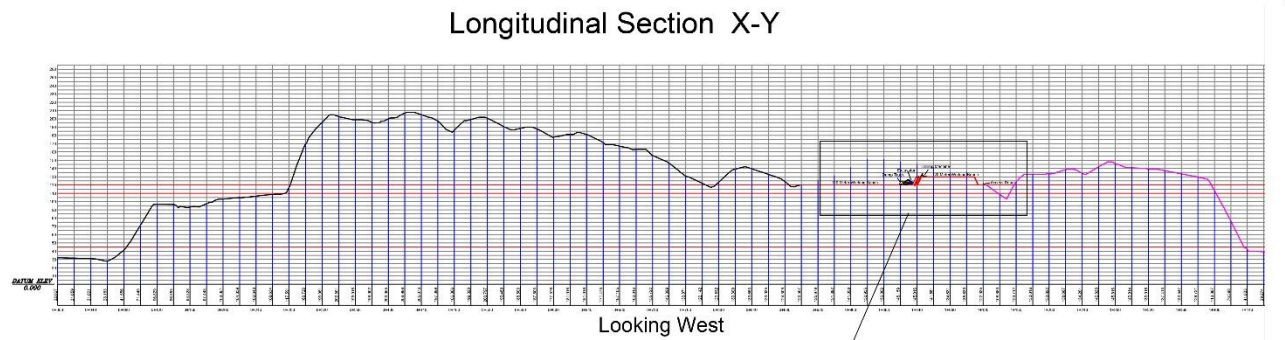
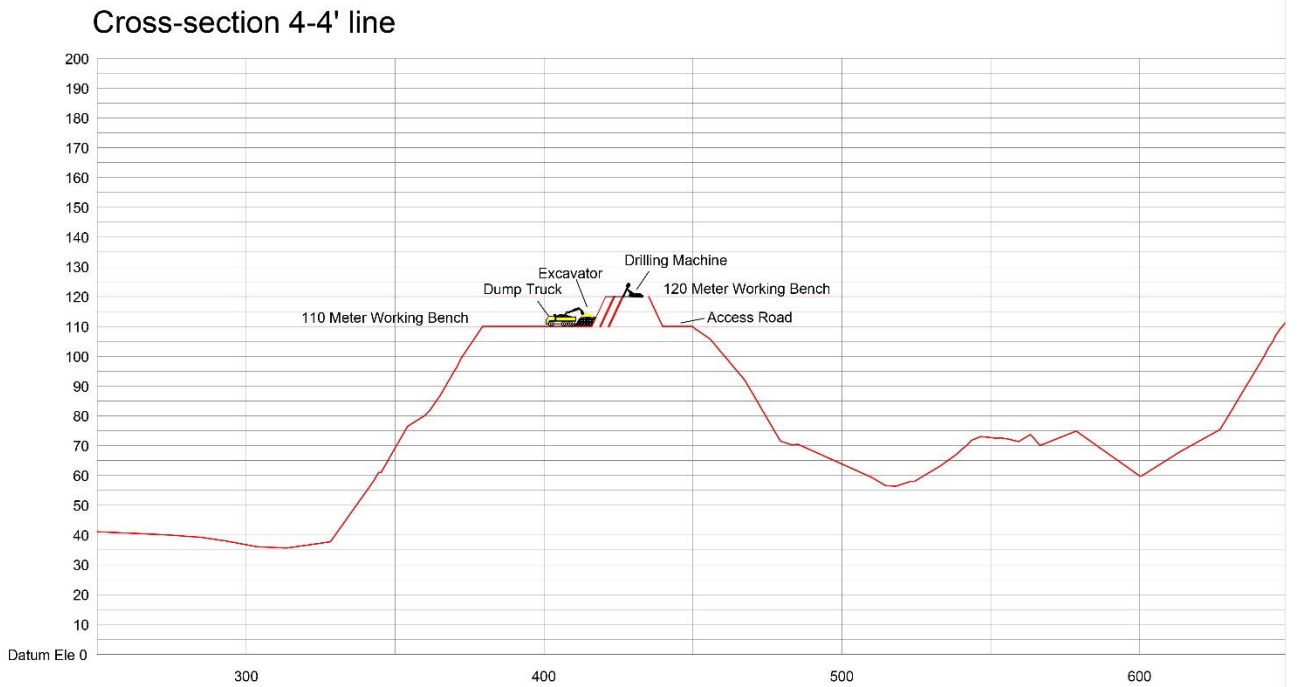


Figure 4.5 -Design Cross section lines and Pit Boundary of Block-3A

Drilling at 120 m Bench and Loading at 110 Meter Bench



Longitudinal Section X-Y (Close up View)

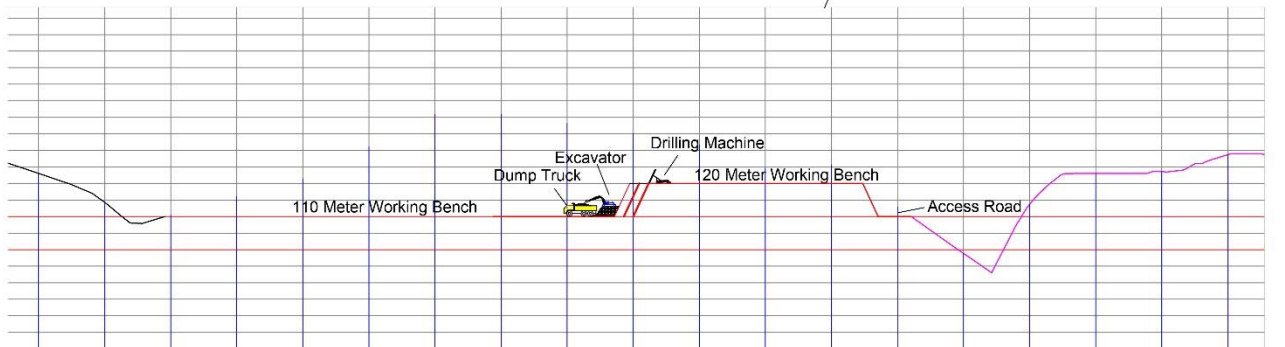


Figure 4. 6 Cross section and Longitudinal section of Block-3A

4.5 Project facilities and layout of limestone quarry

There will be two crusher plants with the crushing capacity of 1300 tons/ hour and constructed near the quarry site. The limestone production will be 10,321 tons per day. The land for the crusher plants and limestone temporary storage site will be allocated and cleared. The overall mining plot area will be 212 acres and 10 acres for crushers and storage for limestone of 50,000 tons, making the total area of 222 acres in the quarry site. The layout plan of crushing and screening plant (1300 tons/hour) and other buildings in the quarry site includes crushers, limestone piling area/ “Limestone Storage Yard”, “workshop”, “Car Parking site” and etc., (Fig. 4.7 and Fig. 4.8).

The buildings of staff quarters and administration will be constructed in 24-Hour project office compound, about 2 acres of land, in 24-Hour office compound in Khae Chung village, Ma Noe Yone Village Tract, Bokpyin Township, situated on the Tanintharyi-Kawthaung Highway. The layout plan for housing accommodation for Project staffs and workers in Khae Chung branch office was presented in Fig. 4.9 and Fig. 4.10.

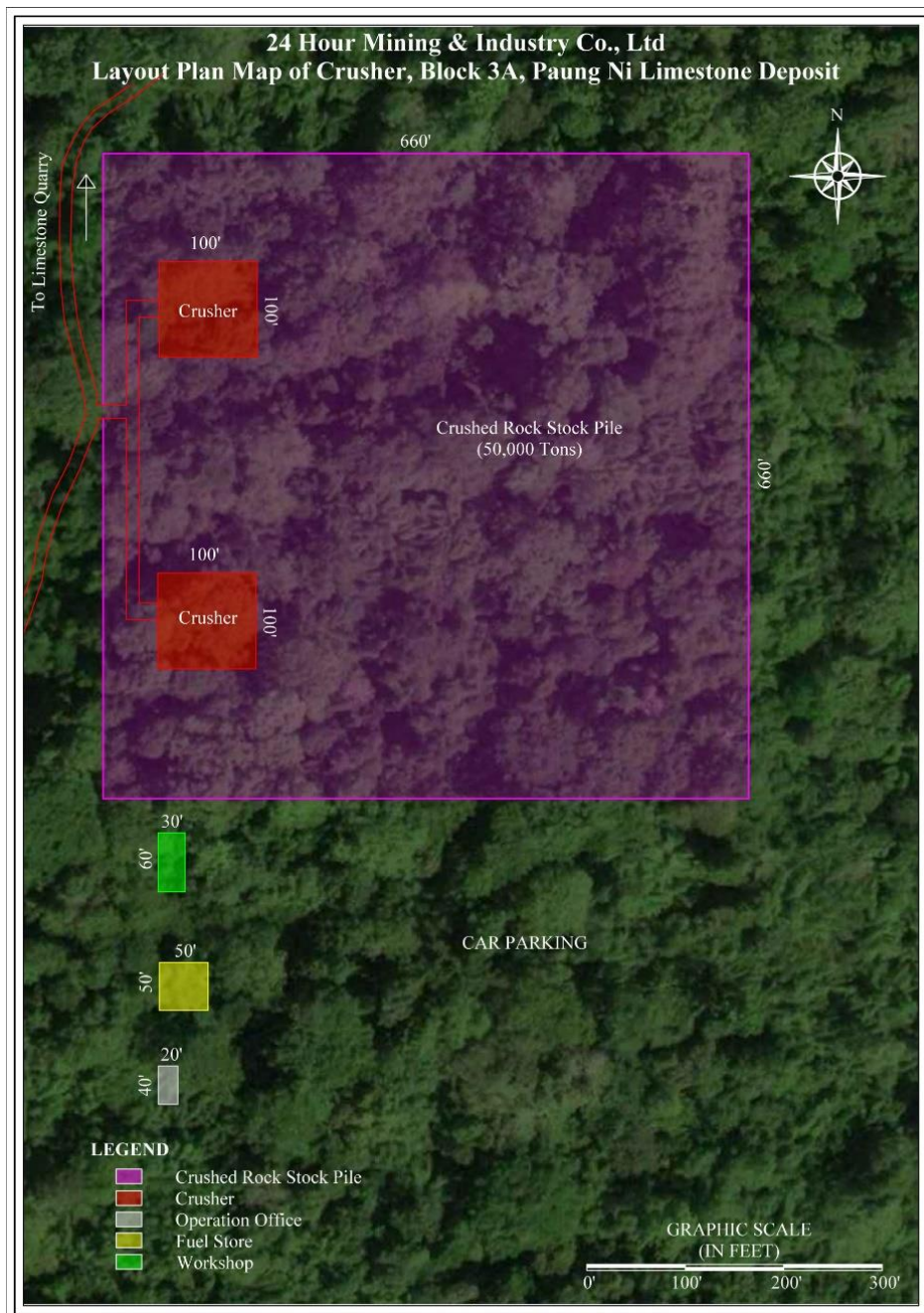


Figure 4. 7 - Site Map for Crusher site and Crushed rock stock pile.

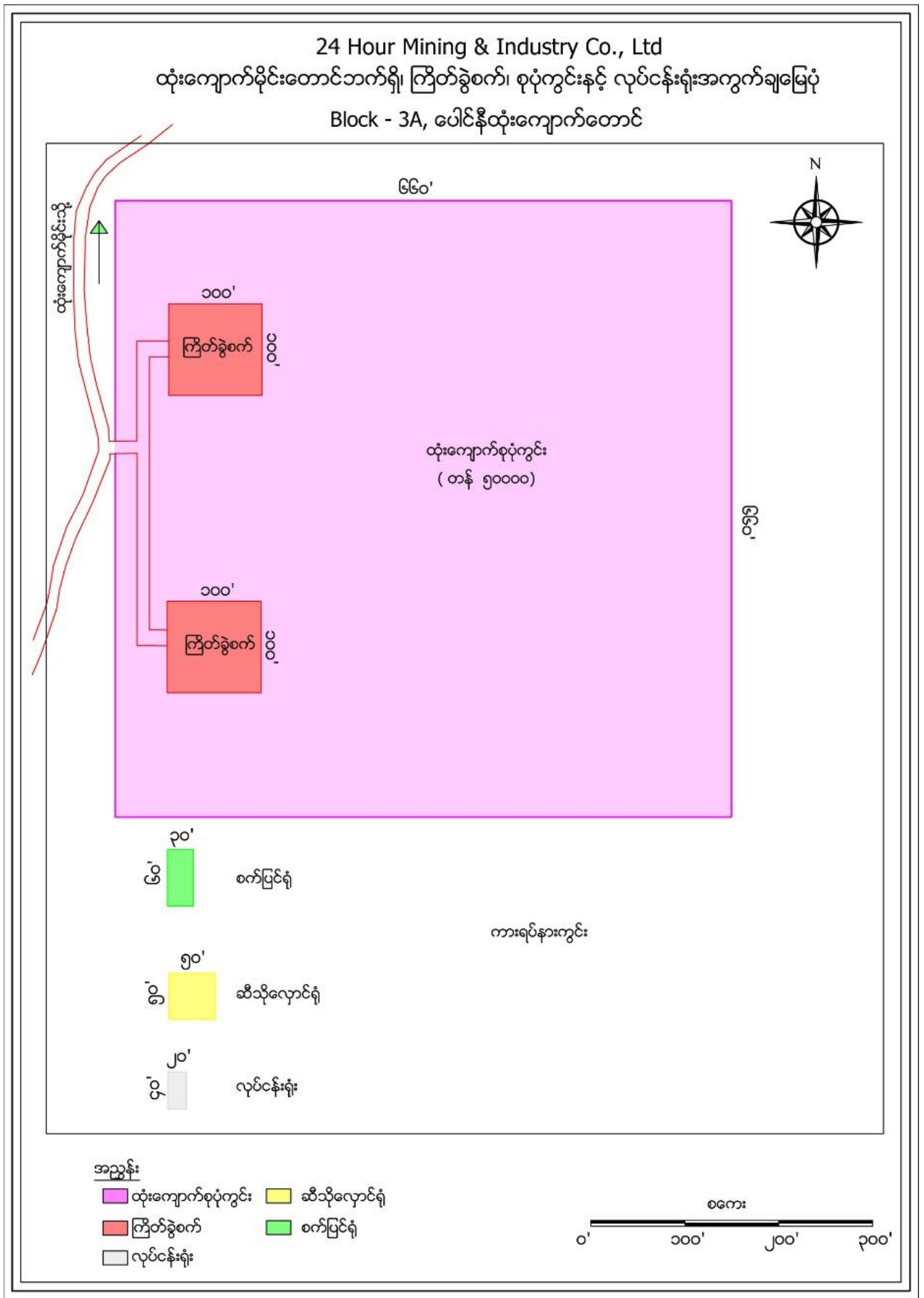


Figure 4. 8 - Site Layout Plan of Project Facilities in Quarry Site

**24 Hour Mining & Industry Co.,Ltd
Layout Plan of Housing Estate,
Limestone Project, Khel Chaung Village**

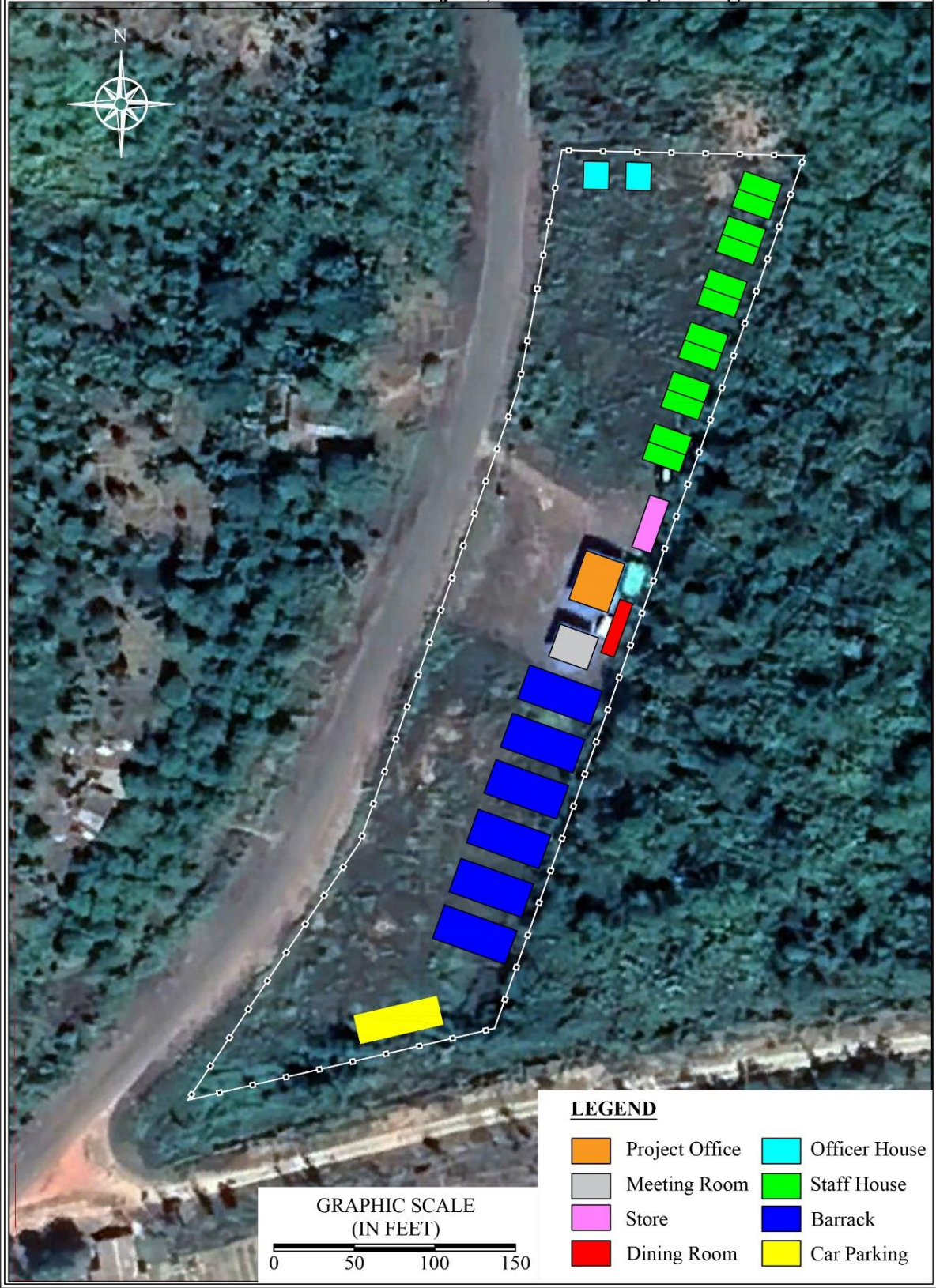


Figure 4.9 – Site Map for accommodation for Project staffs and workers

24 Hour Mining & Industry Co.,Ltd
 ထုံးကျောက် စီမံကိန်း ဝန်ထမ်းအိမ်ယာ အကွက်ချမြေပုံ၊
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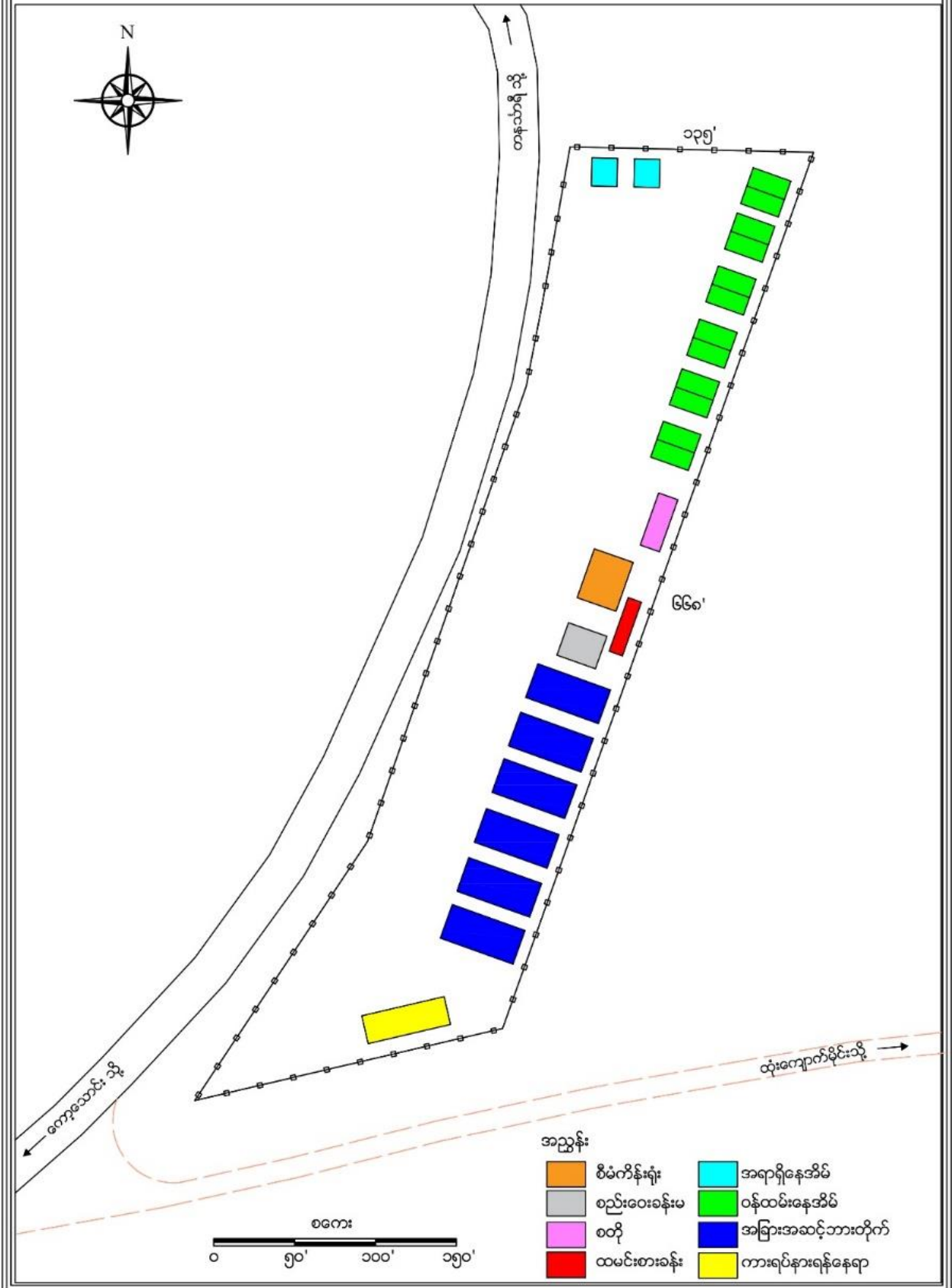


Figure 4. 10 – Site Layout Plan for accommodation for Project staffs and workers

There are 8 types of the project buildings, including a Project Office, Meeting room, Store, Dining room, Officer's House, Staff's House, Barrack and Car parking. No chemicals are used in this area. The total units are 19 numbers. The map of facilities, buildings, and associated infrastructural facilities for the limestone mining project was presented in *Figure 4.9* and *4.10*.

4.6 Machines and machinery requirement

The various machines, machinery and vehicles are required for the operation processes such as “Quarry development”, “Drilling and blasting”, “Loading at working face of quarry and unloading to crusher plant”, “Crushing” and “Piling up at stock pile”. To accomplish these operation processes, about 18 items of machines and vehicles are estimated to be employed. It includes Hydraulic Excavator 5 units, Dump Truck (20 Tons) 25 units, Hydraulic Crawler Drill 3 units, Hydraulic Breaker, Bulldozer and so on.

The estimated total costs of these items are USD 4.99 Million. For the limestone quarrying and crushing process, the lists of all machinery necessary for the limestone mining and their respective costs was described in *Table 4.2*.

Table 4.2 Machineries list and respective costs for the proposed limestone project

FE Investment for Machineries

(For Limestone Quarry Only)

Exchange Rate 2100 MMK/USD

Sr. No.	Machine	Model	Qty	Unit Price USD/Unit	Total Investment Cost (USD)	Remarks
1	Hydraulic Excavator (3M3)	LiuGong 933E	3 Units	175,000.00	525,000	Process for Mining and Crushing
2	Dump Truck (20 Tons)	Used	25 Units	23,809.52	595,238	
3	Hydraulic Crawler Drill	Zega, China	3 Units	155,000.00	465,000	
4	Hydraulic Excavator (for Breaker)	LiuGong 922E	2 Units	120,000.00	240,000	
5	Hydraulic Breaker	Hyundai	2 Units	14,000.00	28,000	
6	Bulldozer	LiuGong 230B	2 Units	170,000.00	340,000	
7	Wheel Loader, 3M3	LiuGong 855H	2 Units	70,000.00	140,000	for Crusher 2 units
8	1300 Tph Crushing Plant (China)	LIMING China	2 Units	930,600.00	1,861,200	
9	40 M3 Hopper		1 Units	40,000.00	40,000	
10	Power System (1500) PRIME KVA Genset	Cummins, KPA38G2	2 Units	200,000.00	400,000	
11	Service Light Truck (6 wheels)	JMC	1 Units	20,000.00	20,000	
12	Truck Crane (2 Tons)		1 Units	20,000.00	20,000	
13	Fuel Bowser (1400 gallons Capacity)	UD	2 Units	133,000.00	266,000	
14	4 x 4 Pick up Truck	Hilux	1 Unit	26,000.00	26,000	
15	Gen Set, 45 KVA	APP50 Silent	1 Units	12,000.00	12,000	Office used
16	Motorcycle		5 Units	600.00	3,000	
17	Blasting Machine	Kobla BL 500	2 Units	1,500.00	3,000	
18	Blasting Ohn Meter	Kobla AR1	2 Units	800.00	1,600	
Total					4,986,038	USD
					4.99	Million USD

4.7 Project staffs and workers

The full-strength number of employees in the project site is estimated to be 173 in total. There are 7 staff officers (Level-1) for administration and other levels of 166 persons. The mining and crushing operations will be employed with 123 workers while the Project Management Section will be recruited with 50 staffs.

The project employees include Project manager, Mining engineer, Assistant Mining engineer, Quarry supervisor, Crusher engineer, Operators of crusher, excavator and bulldozer, Drivers, Mechanics and etc. Monthly salary amount was estimated as USD 58,400 and the annual salary amount was USD 700,800 (1,471,680,000 Kyat/Year). The total staff and workers are 173 numbers with the monthly salary ranging from USD 300 to 1500. The detailed members of staff and employees and their respective monthly salaries were presented in *Table 4.3*.

Table 4.3 Staff and employees and their respective monthly salaries

Monthly Salary Statement						
Sr.	Name of Position to be appointed	Post	Basic	Allowance	Total Amount	Remark
			Salary (USD)		USD/Month	
1	Project Manager (Mining Engineer)	1	1500	0	1500	
2	Assistant Mining Engineer	1	1200	0	1200	
3	Quarry Supervisor	2	600	0	1200	
4	Crusher Engineer	1	1200	0	1200	
5	Crusher Supervisor	2	600	0	1200	
6	Crusher Operator	3	300	0	900	
7	Crusher Helper	12	200	0	2400	
8	Crusher Maintenance Helper	6	200	0	1200	
9	Blaster	1	500	0	500	
10	Blaster Helper	15	200	0	3000	
11	AdminClark (for 2 shifts)	2	300	0	600	
12	Accountant	1	600	0	600	
13	Service Engineer (Mech)	1	1200	0	1200	
14	Service Supervisor (Mech)	2	600	0	1200	
15	Service Foreman (Mech)	2	400		800	
16	Senior Mechanic	4	400	0	1600	
17	Junior Mechanic	8	350	0	2800	
18	Tyre Section Crew	6	300	0	1800	
19	CRH Incharge for Product Delivery	1	600	0	600	
20	Store Keeper IISD and Spare	4	400	0	1600	
21	Cook for Messing	5	300	0	1500	
22	Security	6	300	0	1800	
23	Crawler Drill Operator	6	400	0	2400	
24	Crawler Drill Helper	6	300	0	1800	
25	Operator (Excavator)	6	400	0	2400	
26	Breaker Operator	5	400	0	2000	
27	Driver (20Tons Dump Truck)	50	300	0	15000	
28	1500 KVA Gen Set Operator	2	300	0	600	
29	Bulldozer Operator	2	400	0	800	
30	Wheel Loader Operator	4	300	0	1200	
31	Service Light Truck 6 wheels	2	300	0	600	
32	Fuel Bowser (1200 gallons Capacity)	2	300	0	600	
33	Off Road Wagon	1	300	0	300	
34	4 x 4 Pick up Truck	1	300	0	300	
35	Gen Set (Lighting)	0				
	Total	173				
	Total	173				
Monthly Salary Amount					58,400	USD/month
Annual Salary Amount					700,800	USD/year
Annual Salary Amount					1,471,680,000	Ks/year

4.8 Working days

In general, there are about 125 days of national holidays and weekends in a year. Based on the data of Department of Meteorology and Hydrology (DMH), the 24-Hour Co. has estimated that there are 218 working days in a year. To meet the target of the limestone production of 2,250,000 tons per year, it needs to produce 10,321 ton per day for 218 days per year. The service life of the mine (Block-3A only) is about 30 years. The workers will work an eight-hour two shifts in a day. There will be 218 working days in a year and 6 working days in a week. The limestone production capacity is calculated as follows.

- Daily Production : 10,321 Metric tons
- Monthly Production : 105,000 ~ 260,000 Metric tons
- Annual Production : 2,250,000 Metric tons

4.9 Quarry Development and Mining Plan

According to the limestone mine occurrence status and the mining area topography condition, the method of limestone extraction is open cut mining (quarrying), using the top-down level of stratification. The target production plans for three stages are estimated as follows.

Stages	Duration (years)	Above from the sea level	Production amount (ton)
1 st Stage	1 – 10 years	Up to 156 meters	24 million
2 nd Stage	11– 20 years	Up to 102 meters	25 million
3 rd Stage	21 – 30 years	Up to 40-48 meters	24.5 million

The estimated total limestone production of three stages during 30 years will be about 73.5 million tons. Based on the requirement of cement production line with a capacity of 5,000 tons per day, mining plan is categorized into 3 phases as follows.

Phase 1 - Year 1 to 10, Level the northern area down to 156 meter above mean sea level with estimated production 24 million tons.

Phase 2 - Year 11 to 20, Level the northern and central area down to 102 meter above mean sea level with estimated production 25 million tons.

Phase 3 - Year 21 to 30, Level of the hole quarry area down to 40~48 meter above mean sea level with estimated production 24.5 million tons.

4.10 Limestone mining method and process

For the “Open Cut Mine system”, the sequence of the operation includes the following steps.

- (a) Opening up the deposit,
- (b) Overburden/Waste rock Removing,
- (c) Limestone Extraction – (1) Primary Drilling and Blasting, and (2) Secondary Breaking,
- (d) Loading,
- (e) Transportation,
- (f) Crushing and
- (g) Storage of Limestone.

The flow diagram for Limestone mining process was described in the following *Fig. 4.11* and the detailed process was shown in *Fig. 4.12* and drilling pattern in *Fig.4.13*.

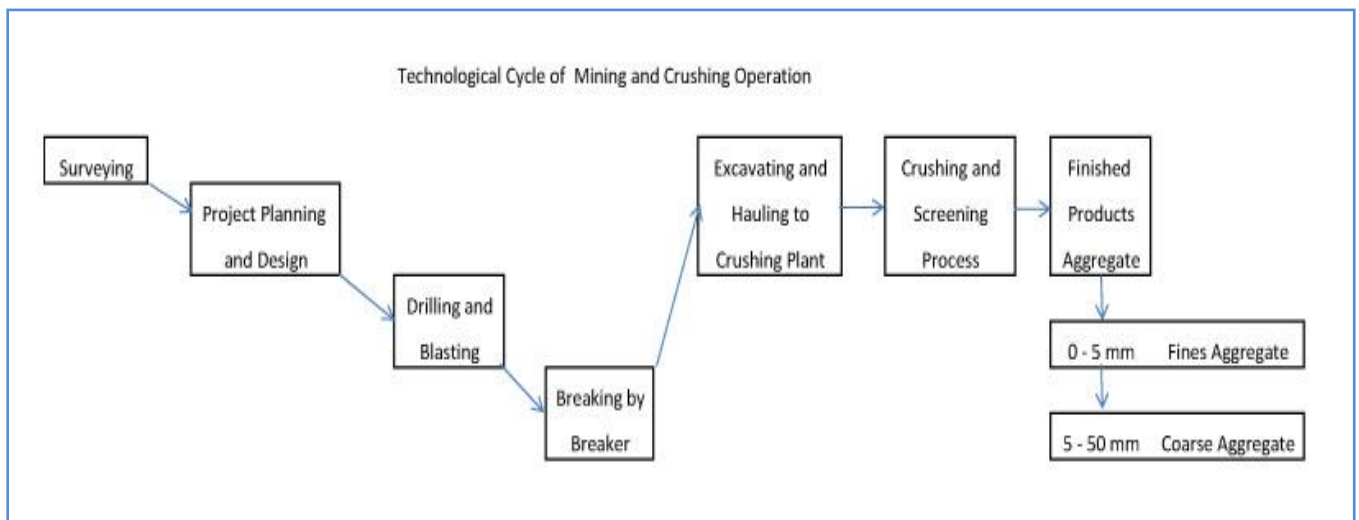


Figure 4. 11 Flow diagram for Limestone mining process

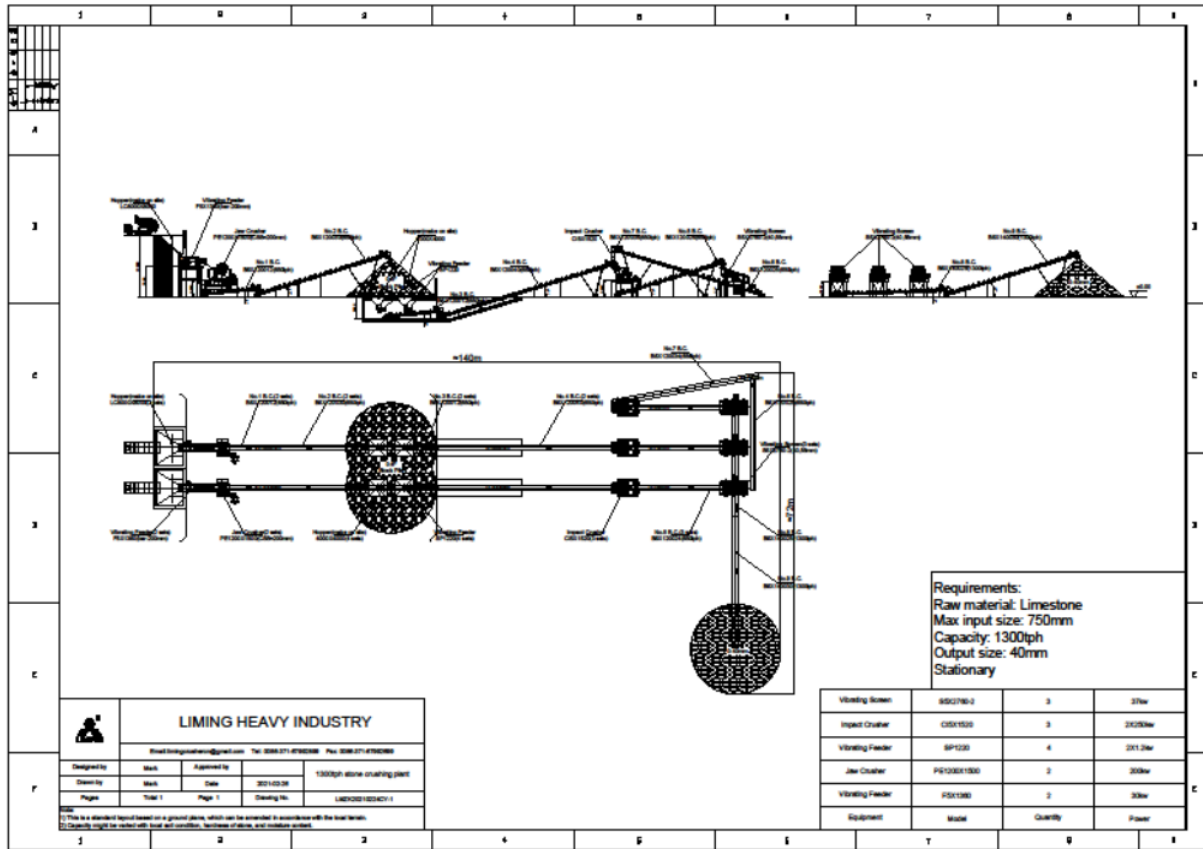


Figure 4. 12 Detailed flow diagram for Limestone mining process

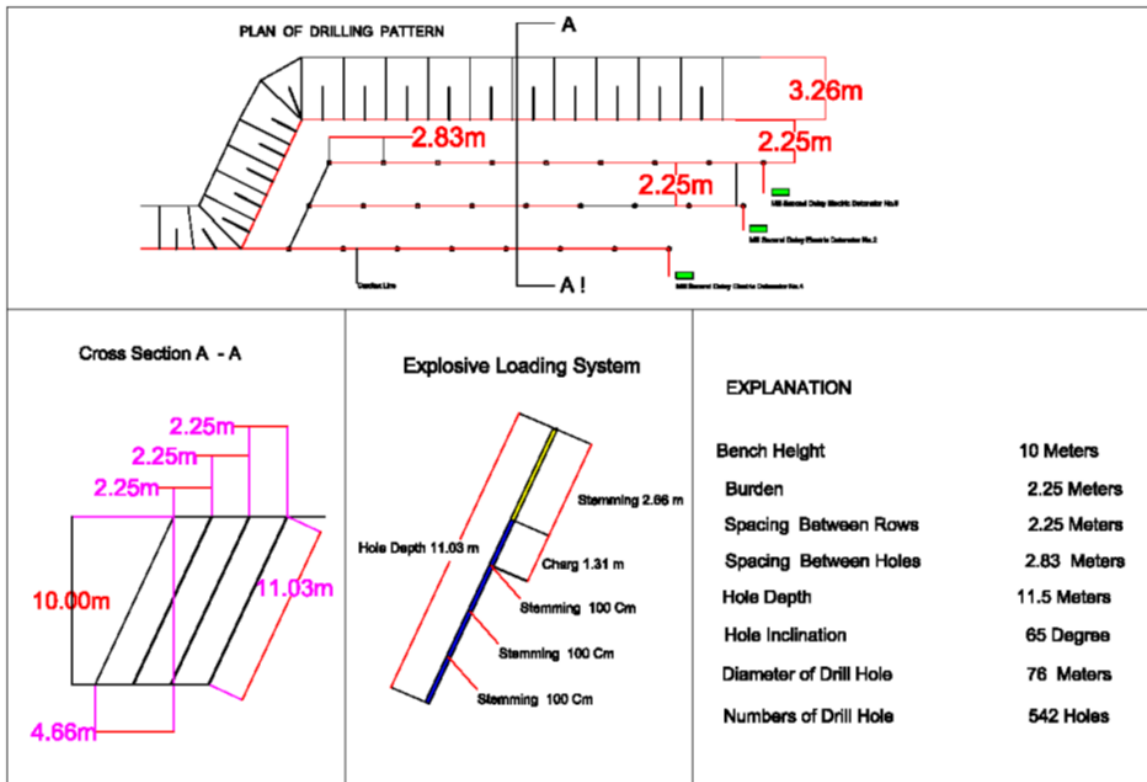


Figure 4. 13 Drilling Pattern for 10 M Bench Height

(a) **Drilling and Blasting**

There will be one time of blasting frequency in 5 day (a week) and the blasting period will be fixed to be 11:00 am to 12:00. It was noted that the blasting activities will not be carried out in special religious days. Total blasting will be 44 times in a year. Blast geometry was shown in [Table 4.2](#). Mining Engineer will use control blasting method. Most of the small particles and dust are get down in this place. But some can be blown 100 meters away.

High noise levels are inherent to blasting operations (100-120 dB (A) near the source). Machinery and equipment generally employed for mining activity generate noise levels typically of about 90 to 95 dB (A) (measured at 1-2 meters from source). The process of raw material crushing also generates high levels of noise (95 - 100 dB(A)). The blast geometry was described in [Table 4.4](#).

Table 4.4 Blast Geometry

Basic Data for One Round Drilling and Blasting for 5 Days/One Major Blasting		
Sr. No.	Description	Measurement/ Unit
1	Block Dimension to be blasted	73 m x 11.03 m x 5.7 m
2	Rock Volume to be blasted (BCM)	4589.58
3	Rock Tonnage for one Major Blast	11932.92
4	Total Blasting Rounds per year	44
5	Blasting Sequence	5 days
6	Bench Height (m)	10
7	Burden (m)	2.85
8	Spacing between Row (m)	2.85
9	Spacing between Holes (m)	3.03
10	Type of Holes	Incline
11	Inclination of Holes (Degree)	65
12	Diameter of Hole (mm)	76
13	Total Drill holes to be drilled (Nos)	250
14	Nos. of Row	2
15	Nos. of Drill Holes per Row	125
16	Depth of Drill Hole (m)	11.03
17	Over Drill (m)	1.03
18	Drilling Time for one Hole (minute)	45
19	Effective working hour a day (Hr)	16
20	Total Drilling Days for One Round (day)	5
22	Blasted Rock Recovery Tonnage/Round	10818.60

(b) **Shoveling**

According to the mine equipment requirements the advanced, flexible and efficient equipment will be used, applying 3 units of 3.0 m³ (LG 933E type) hydraulic excavator for shoveling limestone.

(c) **Crushing**

For the crushing system, 2 units of Crushing and Screening Plants capable of 1300 ton per hour production capacity will be set up near quarry base (about 2000 m away from the quarry site). The truck transportation system will be applied, and 25 units of 20 Ton-Dump Trucks will be accommodated. During the operation time, the truck number will be increased to meet the production requirement, and it will also depend on the vehicle's functioning condition. It is planned to operate the crushers in two shifts, and six days a week. Major sources of pollution from the crusher area include dust and noise. After crushing, the limestone will be transported to the storage area through a conveyor belt system of about 200-meter length.

The design of the pattern for the quarry development was shown as follows:

- Production work: 2.25 million ton/year
- Drill hole diameter: 76 mm
- Hole depth: 11.03 m (Bench height = 10 m)
- Burden distance: 2.85 m
- Spacing: 3.03 m
- Stemming: 2.65 m
- Blast hole: Approx. 11000 holes/year
- Design blasting: Approx. 250 holes (1.69 ton/blast)
- Use of Explosive per Round (5 Minor Blocks): 0.48 kg. of ANFO per ton
- Use of Explosive per Round (5 Minor Blocks): 0.16 kg. of Emulsion per ton
- Specific Charge (Blasting Ratio) for Major Blasting: 0.37 Kg per Bank Cubic Meter.

(d) Limestone Quarry (Operation Phase)

The blasted limestones are transported by trucks from quarry to crusher. There are 3 Excavators with a volume of 3m³, 2 Breakers, 2 Bulldozers with blade capacity 8.5 m³ in the limestone quarry. The Bulldozers are used for working face area cleaning and road cleaning, etc. The crushed limestones are transported by 100m length conveyor belt from crushing plant to Limestone stock pile. There are 2 Wheel Loaders with a capacity of 3m³, in the crushing plant site and stock pile. The loaders are used for cleaning at ground of crushing site and loading at stock yard. There are 25 Dump trucks for limestone transportation from quarry to crusher. By calculating, 8 -hour two shifts will be done at crusher site in a day.

4.11 Water use

Ground water will not be used in limestone mining. The water sourced from the *Nga Wun Stream* will be applied for domestic uses and for dust suppression and vehicles only. The daily water consumption (maximum) will be 2000 gal/day which means 630,000 gal/year. During the operation of limestone quarry, industrial water will be supplied from *Nga Wun Stream* situated at about 500 meters away from the limestone quarry. Three concrete water tanks (each with 1000 gal. capacity) will be constructed and filled with water pumped from *Nga Wun Stream*.

The 24 -Hour will always comply with the Mine Rules and Mine Laws and follow the “EIA guidelines for mining sector” set by the ECD, MONREC. In line with the Rules 150 and 151 of the 2018 Mines Rules, there was no residential dwelling house and agricultural land in the proximity of the limestone quarry site. In addition, the quarry site is generally more than 500 meters away from the riverbank of *Nga Wun Stream*.

Water requirement for the mine and its infrastructure will be met through the *Nga Wun Stream*. 24- Hour proposes to install a pump for meeting the water requirement, both for industrial and domestic usage. Overhead water storage tank with adequate capacity will be provided both at the mine site as well as in the project area. Outlet points for water in the proposed mining lease area will be provided at various places inside the mine office complex. One water sprinkler is also proposed for dust suppression as well as for supply of water to any off-site work. The raw water will also be treated to comply with the drinking water quality requirements before being supplied to the mine office and the housing colony.

4.12 Energy and fuel consumption

Fuel consumption for limestone production is 0.33 gal per one ton of limestone crushed rock (Aggregate). There are five 5 numbers of fuel tanks, each with the storage capacity of 6,400 gallons of diesel. Monthly diesel requirement is estimated to be 70,000 gallons to meet the fuel consumption of electricity and for the vehicles.

The national grid power sources are not available so power will be from on-site generators will be sufficient for the project site. The diesel generator will be used to allow continuous operation of the mine and rock processing. Electricity will be generated by own generators and the monthly electricity consumption (for Year 1 and 2 only) will be 1,958,400 units.

4.13 Explosive materials storage

24- Hour Co., Ltd. has planned to build 5 units of magazines (storehouse for the explosive and accessories) in the compound of No.558 Infantry Regiment at Kama Line village, Tanintharyi Township. One building has been constructed with the storage capacity 20 tons of explosive. The types of explosives and accessories are Emulsion, ANFO, Cordtex fuse and electric detonator.

4.14 Waste soil and waste dumping site

The 24-Hour will begin the limestone production from the Block-3A. Based on the “Mineable Ore Reserve” and “waste soil”, the Block-3A will produce 73.5 million tons in total. The “Overall Stripping Ratio” is estimated at about 1:20. After demarcation of the “Quarry Boundary”, the “Waste Dumping Site” and “Limestone Storage Yard” were fixed. Soil erosion and pollution was widespread causing adverse impacts on farmland with flow-on effects on livestock and people’s livelihoods. Topsoil management practices are essential to save the topsoil and reused when undertaking the activities to rehabilitate land.

The chemical waste and industrial effluents discharged into waterways untreated can cause damage to rivers and groundwater systems and aquatic life. However, the limestone mining process and methods used in this project will produce no discharge of chemical waste and industrial effluents to the environment. The waste water, if any, will be treated and kept in a sedimentation pond before release. The location map of two sedimentation ponds (75m x145m) were described in *Fig. 4.14* and *4.15*. The crusher and stock pile area were also shown in these *Figures - Fig. 4.14* and *4.15*.

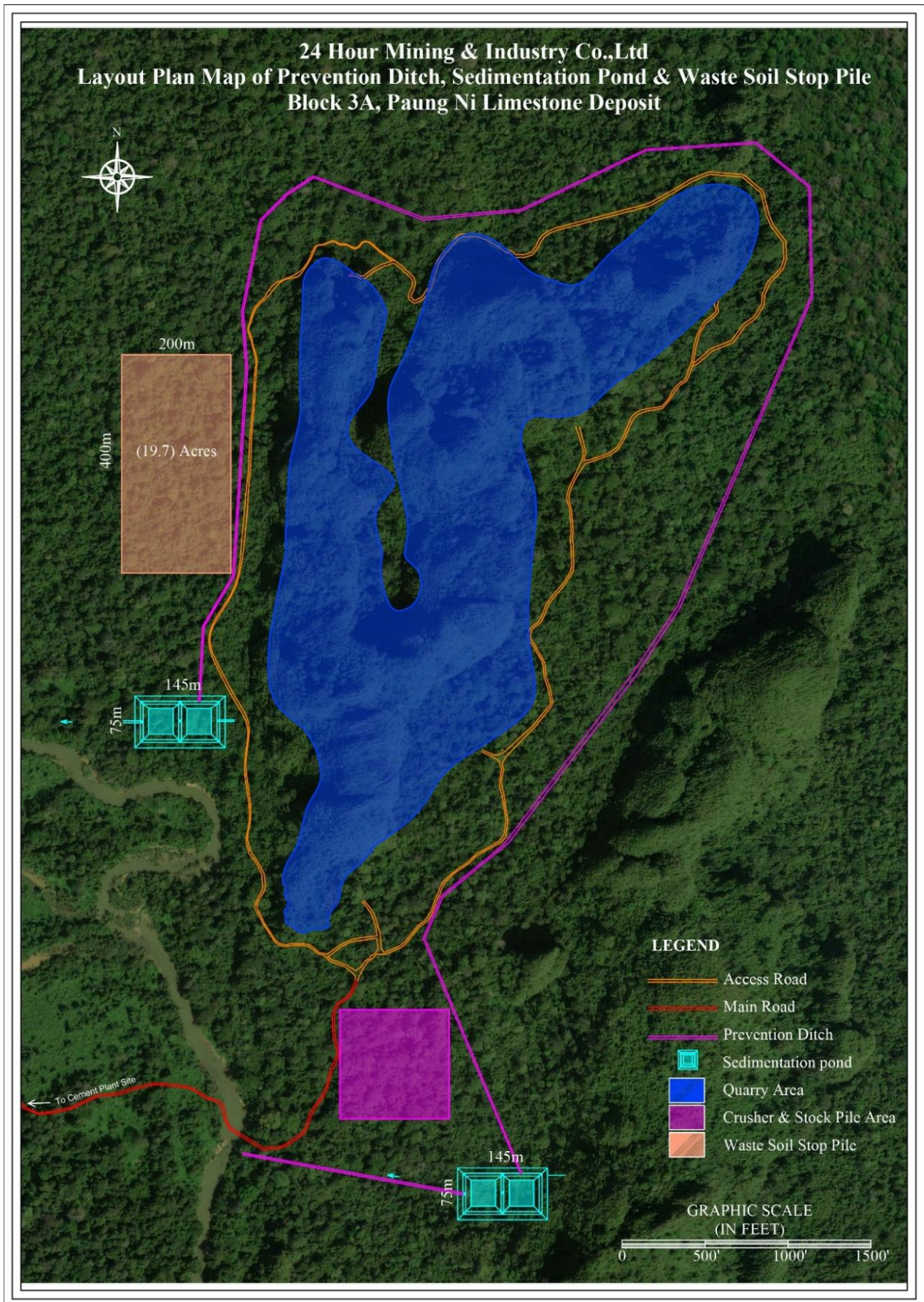


Figure 4. 14 Layout plan map of Quarry area, Prevention ditch line, Sedimentation Ponds and Crusher & stock pile site and Access Road of Limestone Mining Area.

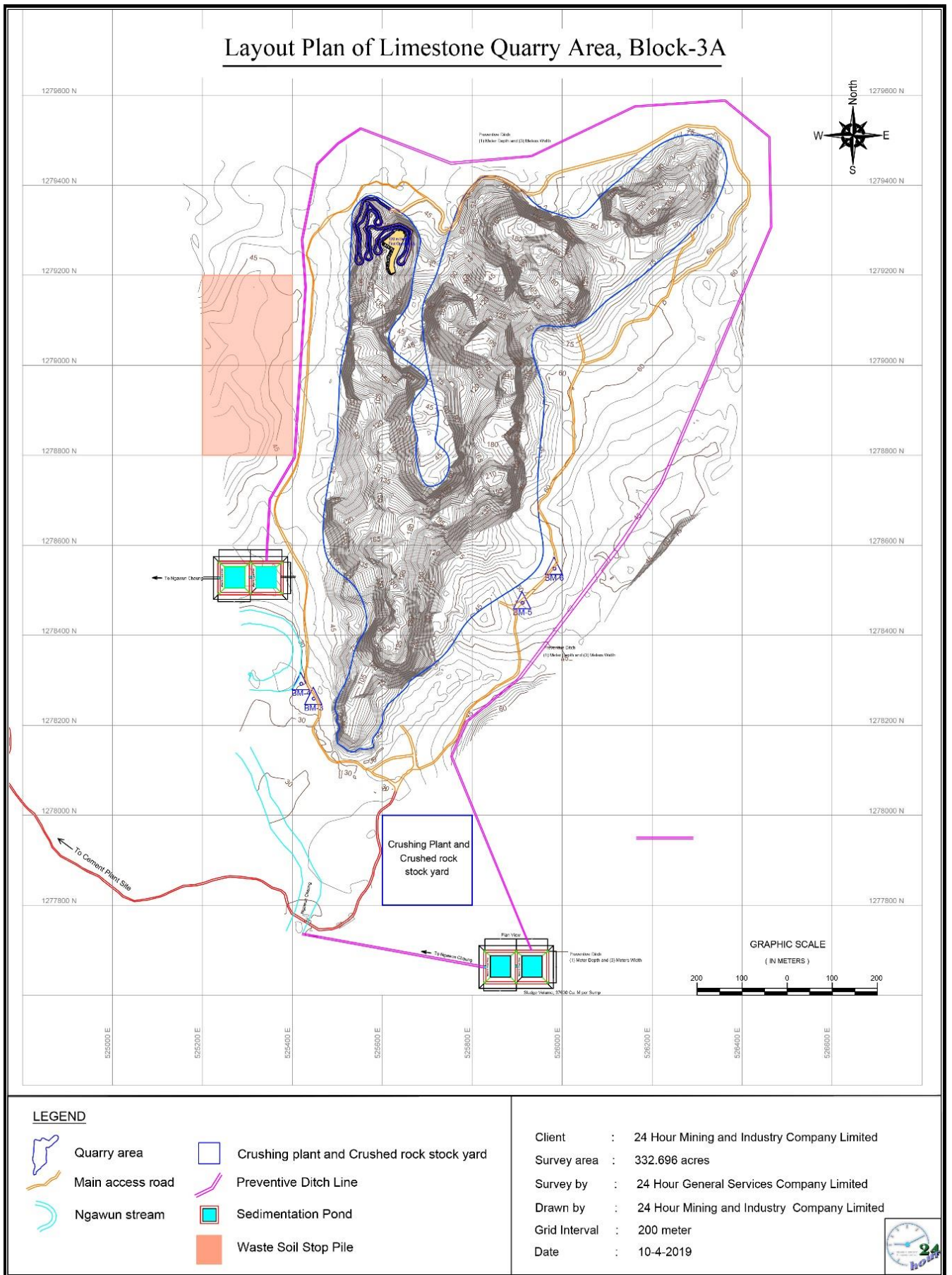


Figure 4. 15 Layout plan map of Quarry area, Prevention ditch line, Sedimentation Ponds, Crusher & stock pile site and Access Road of Limestone Mining Area.

4.15 Access Road to the project site

Travel to Myeik from Yangon is accessed by plane and car in all seasons. The project area is situated about 17 miles away from the Khae Chaung Village which is 95 miles away from Myeik and the access is travel by car. The road way from Khae Chaung Village to the limestone quarry sites was shown in the [Fig. 4.2](#). The main access road from the foot hill to the uphill quarry will be 2.8 miles with 30 ft. wide graveled road. It will be used for transport of blasted limestone to the Crusher site, the Access Road was included in [Fig. 4.14](#) and [4.15](#). Crusher plants and crushed rock will be placed at the foot hill of 200-meter square flat space. For the blasted rock transportation, the limestones are carried to the Crusher by using Backhoe excavators and 20-ton Dump Trucks. Some boulders which are bigger than the size of 600 mm x 800 mm will be crushed with a Hydraulic breaker. For the rock processing, two crushing and screening plants (with 1300 ton per hour production capacity) will be installed at the crusher site.

4.16 Road construction for transport of materials

The limestone produced will be sold at the stock yard with mine-gate price/current price. The project office and workers' camp are situated at Khe Chaung village (Manoe Yone Village Tract), about 17 miles (27 km) away from the quarry site Block-3 (as described in [Fig.4.2](#)).

Moreover, the transport road from the quarry site to the project office was renovated of former timber transport road, paved with gravels, 11 meter wide and it is accessible in all seasons. It was noted that the Myanmar Royal Timber Co. Ltd extracted timber from this area for about five years during 2007-2012 and a former timber road still remained. The 24-Hr company made a contract with San Thit Aung Co., Ltd. to upgrade the old road for transport of materials, fuel and staff and laborer from project office of Khae Chaung village to Mine site. Since the road is situated in remote and inaccessible region, there is no much traffic on the road. Therefore, the project is not anticipated to generate a significant amount of additional traffic or to significantly disrupt the traffic. The road repair and renovation also included the sediment control for erosion problems and maintenance system, such as culvert and drainage.

4.17 Project development and implementation schedule

The 24-Hour Co., was granted for quarrying in 2013 and signing a contract with the Forest Department for the land lease was conducted in 2018. Geological site testing and investigating the mining process was undertaken during 2018-2020. The detailed plan for estimated Project implementation schedule is presented in the following [Table 4.5](#). The permission for construction of explosive storage building in the compound of No.558 Infantry Regiment in Kama Line village was approved in 2022. The construction was under process and the submission of application of applying explosives and procurement will be conducted in 2024. The construction of a gravel road of 27 kms to the entrance of the quarry site (upgrading the old one) was completed in 2018 and 2019. The bridges and culverts construction will be completed during 2024 and some are under proceeding. The procurement of machinery and vehicles will be completed in April, 2024.

The Crushers will be transported to the quarry site and installation will be done in 2025. The mine development for the limestone production will begin in October, 2025 and test run for blasting and crushing will start in November, 2025. The commercial limestone production is expected to start in December, 2025.

4.18 Proposed Engineering Design

1. Whether a sand and gravel excavating operation or a major gold extraction mine, appropriate environmental practices for a mining operation begin application with an appropriated engineering design. Non-metal mine designs such as limestone quarry, gypsum quarry and granite aggregate quarry it will take into account- pit wall stability, river condition for dredging operation, erosion and sediment control, spill prevention and control, access road, topsoil and overburden removing, noise and vibration in blasting operation and final restoration. All geological information on ore body to be exploited provides necessary background for understanding the proposed mining and processing.
2. This information includes the following.
 - a. Geology of mine area
 - b. Cross-sections of mine area including soil horizon, spatial delineation of mineralized area (Ore Body) including depth to the top of the ore body, Isopach map of reserve.
 - c. Grade of ore by the region of ore body.
 - d. Type and quantities of ore that will be extracted and processes during different phases of the project.
 - e. Estimated quantities of final finished products to be produced, by product type and in ton, Kg and Ounce etc.
 - f. Estimated quantities of waste rock, top soil and overburden to be removed and disposed during different phases of the project.

For this proposed limestone project (Quarry), detail design information, including site plans should be provided. The type of information that included for surface of open cut is summarized in [Table 4.6](#).

Table 4. 6 Information included in the Proposed Engineering Design

Sr. No	Component	Surface of Open –Cut Mining
1	Mine Design	Benches size and year Slope Stability (Angle and Length, width) Area and Depth by year (Table and map) Map showing (sequence of mining) Typical mine pit Cross-section (showing stripping and benching) Transport/access ramps and in mine roads Mine out space backfilling sequence
2	Cleaning and Grubbing	Extraction area by year Mining method Topsoil and waste rock stockpiling Disposal or salvaging of debris
3	Excavation	Method Blasting program and schedule
4	Hauling	Haul road construction map and specification Estimated quantities by year Ore and Waste rock
5	Water and Dewatering	Water supply (need, quantity, source, treatment, storage and transport) Dewatering (how, quantity, predicted cone of depression, transport, treatment and disposal)
6	Mining Equipment	Machine type and quantities (Size, Capacity, fuel requirement for each activity) Cleaning, Excavation, Hauling, (Vehicle trip per day) Personal transport Dewatering Dust control
7	On site support facility	Office, storage, Machineries yard, repair shop, fuel station etc. (Design specification in mine facility section) Design of facility (containment and emergency response provisions Fuel, Explosive, Hazardred materials
8	Operation	Hours per day, Shift per day

9	Other	Lighting if nighttime operations are proposed (including source of energy) Health and safety Water and air quality monitoring
10	Associated Appendices	Slope Stability analysis

Detail explanation for all components above mentioned Engineering Design for Limestone Open-cut Mining (Quarry) are as follows: -

Component (1)

1.1 Benches size and year

In Paungni Kyauk Taung Limestone Mining (Quarry) project, Mining Project and Planning Engineer selects suitable Bench height (10) m and safety bank width (10) m according to typical angle of slope of working and non-working bank with respect to geological characteristic of soil and rock structure, (Rock in rock mass drained preliminary). Referred to Element of Open Cut Mining by Vladimir V. Rzhevsky and Viktor B. Dobretsov.

1.2 Slope Stability (Angle and Length, width)

Slope stability is essential consideration in all mining operation sector. Regarding the slope stability, engineering design referred to geological characteristic of soil, rock type and rock structure to be mined. At our local practices of limestone quarrying at 780 Mw Yeywa Hydroelectric Power Project, according to non-strong limestone (dolomatic) rock structure Engineering Design Bank slope, 75 – 80 Degree is for (working bank) and 70 – 75 Degree for (non-working bank) is stable. Because, rock type and structure are in 5th. categories of soil.

At Paungni Kyauk Taung limestone mining (Quarrying) it is the strong Calcitic Limestone, hardness more than dolomatic limestone. Therefore, Proposed Engineering Design is based on 65degree bank slope for working bank and 75-degree bank slope for non-working bank.

1.3 Area and Depth by year (Table and map)

At Paungni Kyauk Taung limestone quarry, total mining working level are (23) numbers of 10-meter bench steps. Highest working level will be mined at (206) meters altitude and lower working level will end at (40) meters above mean sea level. If Area and Depth by year (Table and map) is considered, engineering design calculation would be complicated. For simple Idea and Concept for that matter, engineering design are mentioned as three stages working area and depth by (10) years basic.

According to limestone mine occurrence status and the mining area topography condition, the method of limestone extraction is Open Cut Mining (Quarrying), applying top-down level of stratification. The target production plan for three stages is estimated as follows.

Stages	Duration (Yrs)	Above from sea level	Production Amount (ton)	Stage by stage Working area (Sq.m)
1 st . Stage	1 - 10 years	Up to 156 meters	24 million	74775
2 nd , Stage	11 - 20 years	Up to 102 meters	25 million	245193
3 rd Stage	20 – 30 years	Up to 40 meters	24.5 million	508212

Based on requirement of cement production line with a capacity of (5000) tons per day mining plan categorized into (3) phases as follows.

Phase 1- Year 1 to 10, level of the northern area bench by bench (10) meters height mining down to (156) meter above mean sea level with estimated production (24) million tons.

Phase 2- Year 11 to 20, level of the northern and central area bench by bench (10) meters height mining down to (102) meter above mean sea level with estimated production (25) million tons.

Phase 3- Year 21 to 30, level of the whole area bench by bench (10) meters height mining down to (40) meter above mean sea level with estimated production (24.5) million tons.

1. 4 Map showing (sequence of mining)

Proposed Engineering Design Map Drawing, showing Sequence / flow diagram of Mining is mentioned in *Figure 4.12*.

1. 5 Typical mine pit Cross-section (showing stripping and benching)

Typical mine pit Cross-section (Cross-Section and Profile Section, 3D Isometric) map are mentioned in *Figure 4.13*.

1. 6 Transport/access ramps and in mine roads

Transport/access ramps and in main haul roads' specification are mentioned in *Figure 4.11* and *Figure 4.14*, respectively.

1. 7 Mine out space backfilling sequence

Regarding the mine out space backfilling sequence, as per open cut mining principal, after downward benching by (27) benches sequence production work finished, the lower working level area (508212 Sq. M) will be occurred on (40) meter above mean sea level and all mine out space for backfills in flat condition. There are not cave and pit condition to be backfilled.

Component (2)

2.1 Extraction area by year

Regarding extraction area by year, from top working level 206 meter to 156 meters by 5 benches of 10 meters height. According to yearly production target 2250,000 tons of limestone, Specific Gravity 2.65 and 10 meter bench height, total volume of rock to be blasted per year are 849057 Bank Cu. M. and extraction area by year are 84.906 Square Meters. That is for required surface area for maximum essential drilling and blasting operation.

2. 2 Mining method

Mining method to be applied for limestone extraction of Paungni Kyauk Taung limestone deposit is Open Cut Mining Method. (Quarry)

2.3 Topsoil and waste rock stockpiling

At the limestone mine development work (quarry development) such as road Access Road Construction, in mine road, working face preparation etc. weathered rock and some top soils are cleaned by drilling and blasting method and stock piling are required. Therefore, most of waste rock and top soils are used as road materials for residential building communication and crushing plant access lanes.

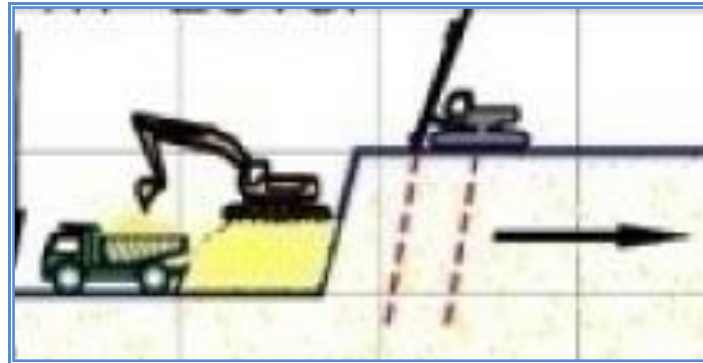
2.4 Disposal or salvaging of debris

In this regard, disposal or salvaging of debris matter will be planned systematically at nearby project environment away site. If need, it will be used for road construction work as filling materials.

Component (3)

3.1 Excavation Method

For the excavation method for limestone extraction, earth moving equipment such as Bulldozer (22 tons Class), Hydraulic Excavator (Bucket Capacity 3 Cu. M, 40 Tons class) and Dump Truck (20 tons class) will be applied.



Blast Holes Drilling by Crawler Drill on 156 Meter Working Level and Excavation by Excavator and Dump Truck.

Blasting program and schedule

According to annual production target (2250,000) tons and Drilling pattern, drilling work related to require drill holes per day and rock volume to be blasted for (4) times blasting program schedule, Hydraulic Crawler Drilling Rigs for primary drilling, Pneumatic Crawler Drill for short holes will be applied.

Ignition Method for Blasting

There are (2) ignition methods in rock blasting technique.

- 1). Electric Ignition Method by Exploder (Blasting Machine) for dry season
- 2). Detonating Cordtex, Plain detonators and safety fuse method for wet season.

3.2 Crushing Method For the Crushing

In order to crush and screen the blasted rock from quarry site Crushing and Screening Plant with the capacity of (1300) Tph Crushing will be installed and applied. Plant Process Flow is shown as follow: -

Final Product Size of Limestone Aggregate Requirement

Raw material	-	Limestone
Max Input Size	-	750 mm
Capacity	-	1300 Tph
Output Size	-	0 – 40 mm
Type of Plant	-	Stationary

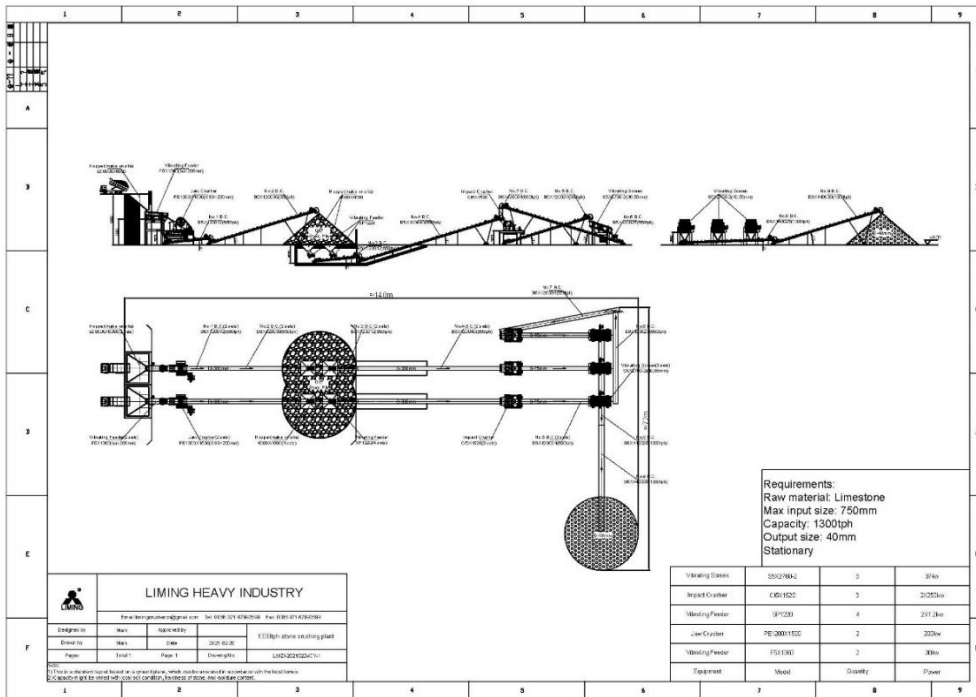


Figure 4. 16 Process Flow Diagram of 1300 Tph Crushing and Screening Plant



Figure 4. 17 Isometric View Process Flow Diagram of 1300 Tph Crushing and Screening Plant

Component (4)

Haul road construction map and specification - Estimated quantities by year

Regarding the haul road construction, total distant of Main Access Road depends on its suitable gradient less than 8% grade for heavy Dump trucks' Safe Driving. Total altitude of limestone mountain is about from 40-meter elevation to (206) meter elevation, (166) meters height different. Therefore, with the 8% grade, total haul road distance is about (3,445) meter. While mining operation starts at northern part of mountain, main access road construction to (206) meter top elevation. It is essential road construction work for (3) stages extraction of (30) year project life. This is enough for long term project and there is no need extra road construction case for estimated quantities by year, in order not to mention detail by year and It only need to estimate total work (rock) volume to be excavated for the whole length of access road.

Therefore, the total (3,345) meters road length with the (8%) grade, (376,313) Cubic meter of drilling and blasting work and it will be finished at the mine development stage before starting of production operation during the project operation.

Component (5)

Water supply (need, quantity, source, treatment, storage and transport) -

Generally, average daily domestic water consumption per head are 20 gallons, total employees assigned for the project are about (173) persons. Therefore, it is essential to supply (2,700) gallons of domestic water daily.

Furthermore, it also needs to consider to conduct for road maintenance and crushing plant in order to dust control. It is not more than of domestic quantities and is about required (1,500) gallons. That source of water can be use from *Nga Wun* Chaung Stream way easily and store at ground tank with the capacity of (4,200) gallons of water. In water storage system, pumping hard water from *Nga Wun* Chaung is sent to water cleaning chamber with the facilities, 2 stages of Charcoal, Limestone aggregate, sand and gunny bag filter. After the filters cleaned water will be transported to main ground tank. For domestic water supply arrangement, it will be applied gravity flow method and for road maintenance by water bowser, and for crushing dust control by pumping method etc.

Dewatering (how, quantity, predicted cone of depression, transport, treatment and disposal) -

Regarding the Dewatering, it is very important at waste water disposal case. There are two kinds of waste water: - 1) kitchen waste water and bath room waste water, 2) Toilet waste water and sludge of human refuse. It will be use as fertilizer by Sludge Water Treatment Plant. All sludges are dried and packed for Sludge Fertilizer in order to use at Agriculture Farms of the Project Life.

At waste water storage, all two different kinds of waste water should not be stored together in one tank. Human refuse must be stored at separate septic tank and another waste water must be stored at launder with the suitable filter and then dispose freely to agriculture farms.

Component (6)

On-site support facilities -

Office, storage, Machineries yard, repair shop, fuel station etc. (Design specification in mine facility section); Design of facility (containment and emergency response provisions); Fuel containment and emergency response provisions are planned and mentioned at Component (9), Health care and Mine Safety Sector. Fuel for mining machineries will be stored fuel storage yard separately. Regarding to this case, all information is mentioned at [Table-4.7](#).

Table 4.7 Office and Camp Buildings

Office and Camp Building			
No	Building / Facility	Sizes	Units
	Project Office Site		
1	Project Office	60' x 40'	1
2	Meeting Room	40' x 40'	1
3	Sub-Store	60' x 20'	1
4	Dining Room	60' x 15'	1
5	Officer House	30' x 30'	2
6	Staff House	40' x 50'	6
7	Other Rank Barrack	30' x 60'	6
8	Car Parking		1
	Mine Site		
1	Operation Office	40' x 20'	1
2	Fuel Store	50' x 50'	1
3	Work Shop	60' x 30'	1

Component (7)

Mining Equipment

Machine type and quantities (Size, Capacity, fuel requirement for each activity. This topic is mention in [Table 4.1](#).

Cleaning, Excavation, Hauling, (Vehicle trip per day)

According to daily production capacity of Mining (Quarry), 2250,000 metric, daily transported rock tonnage (10,857) and by applying Dump truck (20) tons capacity, average vehicle trips per day are about (543) trips per day and (22) trips of one dump a day.

Personal transport

Personal transport facilities will be arranged by Light Truck, 4 times during a 2 operation shifts.

Component (8)

Operation Hours per day, Shift per day

For the mining (quarrying) operation, the system will be applied as follows: -

- Operation hours per days - 16 hours per day
- Operation shift per day - 2 shifts per day
- Operation hours per shift - 8 hours per shift
- Operation efficiency - 85%
- Effective operation hours a day - 13.6 hours per day

Component (9)

Other Lighting if nighttime operation are proposed (including source of energy)

For the night time operation, own generation arrangement will be applied by 45 KVA Generator Set. At the quarry mining area and all buildings of project.

Health care and mine safety measure

Regarding health care and mine safety measure, that is mentioned as follows: -
Health care arrangement and mine safety measure for employees are very important matter for the whole limestone mining project. Therefore, all administrative heads, supervisors and all operation level staffs must strictly obey the occupational law, rule, regulation and instruction laid down by long term plan of the project.

The main slogan of the mining industries sector is **“Mine Safety First”**. All mining operation staffs must understand to wear Mine Helmets, Mine Uniform, Safety Boots and Masks before going to all work sites. Furthermore, all visitors entering to work sites must be arranged like that by Administrative Section. If in unexpected case in order to conduct, safety properties such as Spades, Hoes, Pickaxe, Javelin, Axe and Handsaw must be ready and all is in **Red Color** and placed at Emergency Tools Yard Nearby Administrative Office.

Regarding the occupational safety and health care measure system, all employees will be trained to understand and obey about that case before assigned at the project. Emergency health care matter for all dependence of project employees will be arranged to send hospital at Tanintharyi. All employees will be cared medical checkup at (6) months timing regularly free off charges.

If health care case is lack off, diarrhea case will occur. So as to prevent that case all toilet system will also be arranged by Fly proved toilets (Septic Tanks).

Component (10)

Associated Appendices Slope Stability Analysis

Regarding the slope stability analysis for Limestone Mining (Quarrying), Mining Engineer referred to following table. (Rock in rock mass drained preliminary). Element of Open Cut Mining by Vladimir V. Rzhovsky and Viktor B. Dobretsov (Professor of Moscow Mining Institute, USSR Academy of Science, First Printed 1970.

Table 4. Typical Angles of Slopes of Working and Non-working Banks.

Rocks in rock mass, drained preliminary	Slope angle, deg. at height, m			
	5-12		15-25	
	working	non-working	working	non-working
Rich soft clay, light loam gravel, wet loess, overburden, sand, sandy loam, including rock waste, etc., (f 0,5-1.0)	40-50	30-40	32-45	25-35
Heavy clay, rich clay, heavy loam including gravel and rock waste, morainic clay with boulders up to 10%, slate clay, cobble including cobble-stone and others, rocks mined without drilling and blasting operations (f 1-2)	45-65	40-55	40-55	40-55
The same rocks mined with drilling and blasting operations ...	55-65	40-55	50-60	40-50
Sandstone, schistone, sandy shale, hard clay schale, nonstrong limestone, soft conglomerate, dense marl, iron ores (f 3-7) ...	65-75	60-65	60-70	55-65
Dense granitic rocks and granites, very hard sandstone and limestone, quartz reefs, very hard ferruginous ores, pyrites, hard marble and dolomite (f = 8-14)	75-80	70-75	70-75	70-75
The hardest and most tensile rocks: quartzites, basalts, granites, quartz rocks, the hardest sandstones and limestones (15-20)	to 90	80-85	to 90	75-80

Note. In the book one will come across the value (f) characterizing strength properties of rocks. The value (f) is a rock-hardness coefficient according to Prof. M. M. Protodyakonov's data.
The rock-hardness coefficient is a numerical value of temporary resistance limit of a rock specimen under one-axis stress divided by 100. So, for instance, if we say that "f" of any rock is equal to 14 that means that its $\sigma_{pr} = 1400 \text{ kg/cm}^2$.

Source: USSR Academy of Science, 1970

**CHAPTER 5:
PROJECT ALTERNATIVES**

5.1 Project Alternatives

Description of project alternatives is an identification of alternatives for meeting the purpose and need, which are economically and technically feasible, and sufficient detail for the most appropriate and representative alternatives to permit comparative assessment of impacts. Project alternatives offer opportunities to avoid or reduce adverse environmental, social and economic impacts of the project. The alternative ways for the Project were analyzed to undertake the project and identify the least environmentally-damaging practical alternatives. The analysis of alternative is the process of comparing potential impacts and mitigation options of a series of alternative locations, technologies, operations to identify optimal alternatives that meet national legislation.

These alternatives can include variations in layout, alternative engineering process, routing, linear facilities and screening of material suppliers to select those with appropriate environmental and risk management system. This mine will have good potential for local employment and ensure the income of villagers. Analysis of alternatives based on site and technology are given below.

5.2 Comparison and Selection of the Project Alternatives

i) Site alternatives

Mining industry is a site specific. The mine has to be located where the mineral exists in sufficient quantity so that it can be economically extracted. The selected sites have the following advantages:

- The huge availability of limestone: the primary criterion for determining potential sites,
- Limestone typically represents 80% of the raw materials for cement manufacturing,
- There are no other mines for limestone and other minerals in the study area,
- Availability labour from nearby villages, and
- There is no environmentally sensitive zone.

Alternative locations for the mine itself are usually not up for discussion, because the ore deposit exists where it is. The 24- Hour has identified huge limestone resources with good quality in the *Paung-Ni Kyauk Taung* area. No other places were found as alternatives. No additional land is being acquired for the mining project. Thus, no alternate sites were explored or considered. The isolated limestone hills and ridges occur as a chain trending nearly N-S in the project area and its surroundings. Based on the exploration survey, the 24-Hour Company believes that a large tonnage of limestone can be mined from this area. According to the chemical assay results of the representative grab sampling, the average assay of the *Paung Ni Kyauk Taung* limestone samples was - 52.34% CaO, 2.47% MgO, 1.13% Al₂O₃, 2.24% SiO₂, 3 0.17% Fe₂O, and LOI of 40.90% with a resource of the *Paung Ni Kyauk Taung* limestone resulting in an estimated 73.5 million tons in the high-grade portion. The potential for these deposits needs more detailed exploration to establish their tonnages and detailed outcrop mapping and regional mapping for these locations or occurrence. Moreover, it was observed that a number accessibility options are available and the water supply for mine operation is sufficient from the *Nga Wun Chaung*, the whole year round. There are no villages, no farm, no plantation in the vicinity of the project location. The project site is approximately 20 miles away from the nearest village. It is therefore virgin/vacant land – no land grabbing and no resettlement id necessary.

The location of key mine facilities was also considered to be located in the least environmentally-damaging locations. These include the location of ore processing facilities (machines for crushing and breaking) and the location of waste disposal facilities, including facilities for the disposal of overburden. These facilities will be placed inside the quarry site for the convenience of transport and mitigate to protect public safety and minimize impact on critical resources, such as surface waters, groundwater, or ecologically important wildlife habitat. The 24- Hour also considered the alternatives of mining methodologies which can preserve surface resources, with fewer human inhabitants and better protect surface waters, groundwater, or ecologically important wildlife habitat.

ii) Technology alternatives

Surface mining is the predominant exploitation method worldwide. It is suitable for large, low-grade ore deposits which occur below a thin layer of rock, or alluvial deposits. Surface mining includes mechanical excavation methods such as open pit (open cut), quarrying, open cast and auger mining were considered as alternative methods for mining operation. The following *Table 5.1* shows the comparison of mining methods considered for the proposed project.

Open pit mining: When minerals and deposits are found close to the surface and spread across a large distance, the best way to mine is to use the open pit mining method. In open pit mining, any overburden is stripped and transported to a disposal area to uncover the mineral deposit.

Quarrying: Dimension-stone quarrying produces from a deposit prismatic block of mineral which are both roughly sized and shaped. Quarries resemble open pits, but the benches are lower and nearly vertical.

Open cast mining: Open cast mining is a surface exploitation method, used mainly for coal, which resembles open pit mining but differs in one unique respect.

Auger mining: Auger mining is a method for surface high wall or outcrop recovery of coal by boring or excavating openings into the seam beneath the overburden although the overburden is not removed.

The mining method is determined largely by the physical characteristics of the ore body and geology such as depth to the ore body, surface topography, geologic structure and location. The mining method should be substantiated by the project proponent in terms of these characteristics. Limestone is surface deposit. So, selection of mining methods could not be much contemplated. The open cut mining is the best possible method to dig limestone from the mine. The open pit mining method can cause higher land disruption, ecology damage, noise and vibration pollution. However, the land reclamation will be prepared and applying suitable drilling, explosive charge and blasting patterns will control noise and vibration. The other mining methods, shown in the following table, were not suitable for this project according to the ore body, production rate and etc. Therefore, Open pit (open cut) mining method is the best suitable method for this project according to the ore body, the high production rate and production cost.

Table 5.1 Comparison of mining methods considered for the proposed project

Particulars	Open pit (Open cut) Mining method	Quarrying	Open cast Mining method	Auger mining
Using heavy equipment	suitable for large equipment	Unsuited for extensive mechanization	suitable for large equipment	Auger flight, loader, conveyor and truck
Production rate	High	Low	High	Intermediate
Ore body	Large deposit (any, preferable tabular)	Small deposit (Thick –bedded or massive, large areal extend)	Mineral (Coal or soft ore) Tabular and bedded	Uncovering coal seam in high wall or outcrop occur Tabular and bedded
Health and Safety	Good slope stability must be maintained	Good and very stable walls and benches	Good slope stability must be maintained	Good
Ecology damage	High	High	High	Intermediate
Noise, vibration and pollution	High	High	Low	Intermediate

Source: Technical Guidance –EIA of Mining, 2018

iii) No Project Alternatives

No Action Alternative is the analysis which represents the reasonable impacts, projected into the future, of not taking the proposed action. It should be considered what would happen in the future if the proposed project or action is not approved or withdrawn. The assessment of this option requires a comparison between the alternative of proceeding with the proposed project with that of not proceeding with the proposed project. The proposed project has the potential to uplift the local communities by providing employment opportunities, and create procurement goods and service opportunities. The proposed project also represents a relatively large private sector investment and its success will have a significantly positive impact on the national as well as local economy, at least in the short term. Potential negative impacts on the environment can be managed to acceptable levels if the recommendations in the EMP are successfully implemented.

A “No Project” scenario means there will be no limestone mining project by the 24-Hour. An assessment of the environmental and social impacts of a future, in which whether the proposed mining project takes place or does not take place, is important to understand a comparison of advantages and disadvantages if the project does not move forward. The proposed mining project is located in a degraded forest with very low biodiversity and no cultural heritage sites and no potential or expectation for a tourism site. Likewise, due to its low fertility and ragged hilly areas, mostly uninhabited, the development of agriculture, including animal husbandry, will not be well developed in these areas. Therefore, if the proposed mining project does not take place, the benefits of the projects, such as employment and income to local communities, will be merely lost.

Presently, it was observed that, due to the development of limestone mining in the country, the import of cement to Myanmar is reducing and saving the foreign exchange. However, Myanmar’s mining sector has not as developed as its neighboring countries. The production volume of limestone in 2018 reached about 4.93 million metric tons. This was a decrease from the previous year, in which Myanmar produced just less than eight million metric tons of limestone (Statistic Research Department, 2021). Since the mining sector is not currently developing, the improvement of this sector should be encouraged. When appropriately regulated, it has a great potential to contribute to the industrial and economic development of the country, through job creation and the revenues which can generate for the State. In addition, the foreign investments complying with internationally agreed standards can also contribute to upgrading the standards of business conduct in the sector, particularly by improving the mining practices of local business partners.

Basically, the proposed project has the potential to uplift the local communities by providing employment opportunities, procurement goods and service opportunities in the local community. It also represents a relatively large private sector investment and its success will have a significantly positive impact on the national and local economy in the short term and long term. Potential negative impacts on the environment can be managed to acceptable levels if the commitments in the Environmental Management Plan are successfully implemented.

CHAPTER 6:
DESCRIPTION OF NATURAL AND SOCIAL
ENVIRONMENT

6.1 Identification of the study limits

In consideration of the proposed Project area, project descriptions and surrounding natural as well social conditions, the study limits of the EIA study was set as described in the below table and figure. The EIA study area is indicative and not definite. Additional area may be included during the EIA study as may be deemed necessary by the EIA Study Team. Furthermore, existing baseline data outside of the study area may also be utilized for this EIA study.

Prior to the identification of particular impact, this study determined a wider geographical area than the immediate proximity of the limestone quarry, as well as the typical area of influence of a prospective ESIA study (in general, the AOI of an ESIA would likely be in a range of a few hundred meters to two kilometers), in order to understand the site's regional contexts, such as the presence of Protected Areas (PA) or Key Biodiversity Area (KBA). For this reason, the area of influence of this study is set at 5 km distance from the site boundary to identify cultural, physical, social and biological significances. The area of influence of this EIA study is shown in the *Fig. 6.1*.

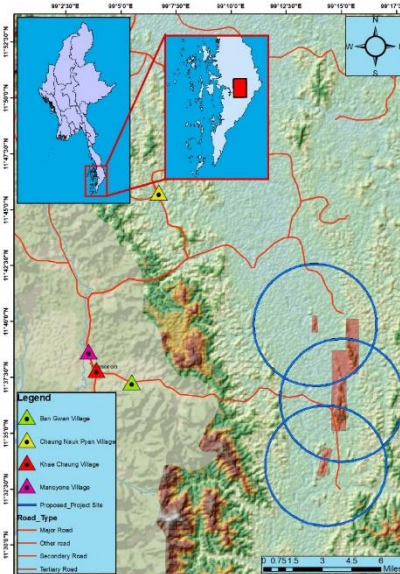


Figure 6.1 EIA Study Area

6.1.1 Methodology and Approach

Determining the environmental and social impacts of the proposed project identifies the factors that need to be considered to ensure the environmental and social impacts of the project. For the data collection of physical components, air and water quality, and noise level measurements were conducted before the project operation is required to reduce the air pollution level during the operation as needed.

A desktop study was conducted to create baseline information through collecting secondary data available from Regional and Township level government organizations, online resources. They include physical, biological, socio-economic, cultural and visual aspects, as shown in *Table 6.1*. The approach used for investigating the surrounding environment and field of the project is summarized in the following *Table 6.2.1*.

Table 6.1 Baseline data collection and approaches for the surrounding environment

No.	Components	Approach/source of the Study
Physical Components		
1.	Climate and Meteorological features	Secondary Data collection
2.	Topography, Geology	Secondary Data collection
3.	Traffic Volume, Natural Hazards	Secondary Data collection
4.	Air Quality, Water Quality, Noise and Vibration	Field Investigation

Biological Components		
1.	Flora and Fauna	Field Investigation
Socio-Economic Component		
1.	Households and Population	Secondary Data collection
2.	Livelihood and Economy, Health Profile	Secondary Data collection
3.	Land Use	Secondary Data collection
4.	Social infrastructure and Service, Electricity, Waste Management	Secondary Data collection
Cultural Component		
1.	Ethnic Minorities, Religion, Education,	Secondary Data collection

6.2 Environmental baseline data and social condition for EIA study

A series of environmental baseline data and social conditions are required to be collected during the preparation of the EIA report. These would be collected by field survey and desktop reviewing as necessary and would be utilized in impact assessment, setting up environmental management plan and environmental monitoring plan. Information and data required for collection for the EIA study are listed in the following [Table 6.2](#).

Table 6.2 Data collection of environmental baseline data and social condition for EIA study

No.	Information	Detail items/ Parameters	Location	Period of Data collection
1	Air Quality	NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5}	3 points in and around Project site	the dry season
2	Surface Water Quality	pH, Suspended Solids, BOD, COD, Total Nitrogen, Total Phosphorus, Oil and Grease	3 points in and around Project site	dry season
3	Flora and Fauna,	Trees and plants Birds, Insects, Mammals, Reptiles, Amphibians	3 points in and around Project site	dry season
4	Noise and Vibration	LAeq, Lv10 Lv10 (dB)	3 points in and around Project site	the dry season
6	Population	Population, percentage of gender, urban/rural ratio	Sample villages , Tanintharyi & Boke Pyin Township	Latest available data from GAD
7	Ethnicity	Race, Language	Sample villages , Tanintharyi & Boke Pyi Township	FGD, KII and household surveys
8	Religion	Religions, number of people for each religion, distribution	Sample villages , Tanintharyi & Boke Pyin Township	FGD, KII and household surveys
9	Local Economy and Livelihood	Types livelihood, living standard, poverty,	Sample villages , Tanintharyi & Boke Pyin Township	FGD, KII and household surveys
10	Social Infrastructure and Service	Transportation system, water source, solid waste management system, drainage, power supply, schools, medical facilities /services, etc.	Sample villages villages , Tanintharyi & Boke Pyin Township	FGD, KII and household surveys
11	Cultural Heritage	Cultural heritage	Project Site and Surrounding	Current situation
12	Landscape	Landscape	Surrounding Project Area	Current situation

Environmental baseline surveys such as air and water quality survey, noise and vibration level survey and flora and fauna surveys will again be conducted during project implementation stage in order to carry out environmental impact assessment for this project. Social conditions including local economy, education, health condition, landscape, meteorology, geology and emergency risk were referenced from previous study, reports and experiences.

6.3 Physical Components

6.3.1 General Geology in Tanintharyi Region

In the southern Tanintharyi Region, the morphology is influenced by three limestone horizons or chains. In the Mergui District (presently Myeik District) these are mostly crystalline, thick and coarse grained. The units of limestone form rugged mountains characterized by karst phenomena. Among them, the most westerly horizon can be seen in some isolated islands of Mergui archipelago, stretching from the west of Tavoy Island through the *Malikaing*, *Malidon*, Marble Isles and Turret Island to the St. Mathew Island. The second limestone horizon starts near the *Klong Thampra* hill as a range of precipitous cliffs along a tributary of the Le Nya River to the south. This outcrop constitutes with others a limestone chain from the source of *Nga Wun Chaung*, the southern tributary of the Little Tanintharyi River. The chain crosses the Great Tanintharyi River and continues westwards to the well-known limestone hill of *Kyauk Taung*, North west of Thara Bwin village and its surroundings and northwards to a point, west of *Pawut*. This second or central chain is the longest and best exposed in this region.

The third limestone horizon (eastern line) lies parallel to the second horizon and it was observed near the mouths of the *Bulusekhan* and *Khuhtaokhan* streams at their confluence with the Great Tanintharyi River. These rocks form prominent ridges and hills with precipitous sides, sometimes standing like fortresses and surrounded by alluvium. They contain caves of various dimensions. These rocks are known as 'Moulmein Limestone'. These limestone beds rest upon the Mergui Series of Carboniferous Age forming isolated rock pillars but distribution is widespread and formerly assigned to Permo-Carboniferous age rocks. The Moulmein limestone is overlying unconformably the Upper Carboniferous *Taungnyo* Group and fossil evidence indicates the Permian Age.

Tanintharyi Township is geologically made up of older Paleozoic rocks, Miocene rocks and Quarternary. Moreover, the patches of Mesozic and Paleozoic igneous intrusive and younger volcanic are found sporadically. The alluviums are the youngest rock unit of the study area. They occupied the coastal area and it also has hard ancient rocks due to continual existing with Eastern Highland. The Geology of Tanintharyi Township Relief and Drainage were described in *Fig. 6.2* and *Fig.6.3*, respectively. According to the geology and underlying rock, lead, tin, tungsten, sand gold, iron-ore, and diamond have been found in the area.

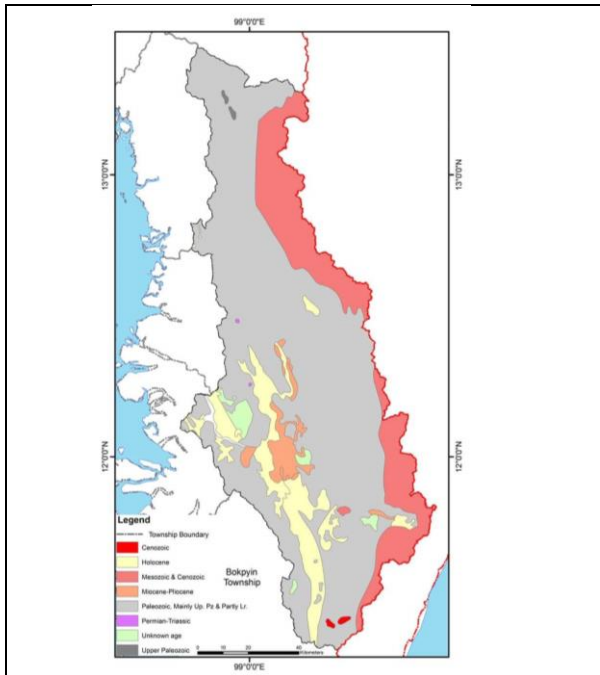


Figure 6. 2 Geology of Tanintharyi Township, (Source: Geology, University of Yangon)

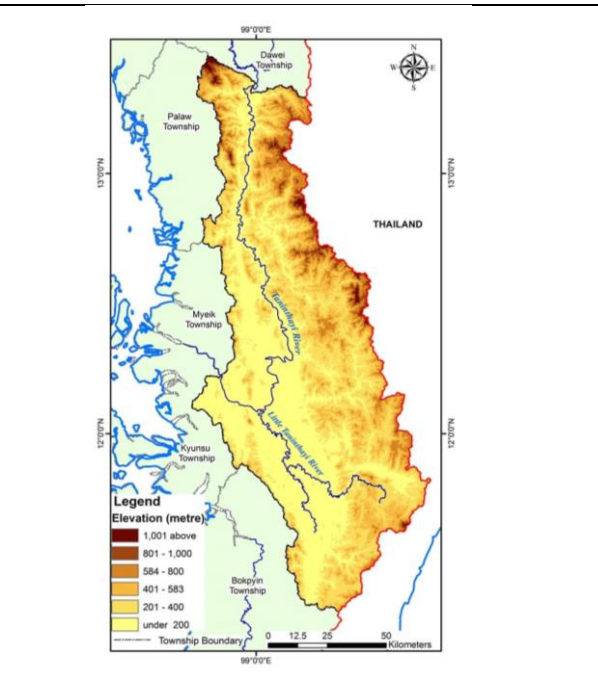


Figure 6. 3 Relief and Drainage of Tanintharyi Township; (Source: SRTM (DEM))

6.3.2 Geological description of the project area/ deposit (ore) geology

The geology of the *Nga Wun Chaung* field area and its surroundings are characterized by a series of metamorphic and sedimentary rocks well known locally as the Mergui series. These occur on both sides of the *Nga Wun Chaung* and its surroundings. Metamorphic rocks comprise mainly quartzite and phyllite with some siltstones and mudstones of sedimentary rocks. The group of rock types is Carboniferous in age and intruded by the granite of Late Cretaceous to early Eocene in age at the vicinity of *Hintakun Taung* which is about 8 miles to the west of the *Nga Wun Chaung*. Some isolated limestone hills and ridges are overlying on the Mergui Series. These rocks form prominent hills and ridges with precipitous sides. These rocks are so-called the Moulmein Limestone of Permian Age.

These units have weathered to form soils, some lateritic clays, laterites and alluvium. The project area is at the southern edge of the *Paung Ni Kyauk Taung Gyi* and southern extremity of the *Nga Wun* limestone chain known as *Htan Pe Taung*. There are isolated limestone hills situated at the eastern side of *Nga Wun Chaung*. These are mainly composed of grey colored medium to thick bedded limestone with some solution-pits (sink holes), spotted silica nodules, calcite veins & veinlets in lower portion and light grey to white coloured well jointed massive limestone with some covering of travertine. There are limestone caves of various size occurring at the base of some limestone hills which overlie quartzite of Mergui Series. It can be assumed that the limestone is Permian age and quartzite is Carboniferous Age. Some are NNE- SSW trending while 200 west dipping and some are NNE- SSW trending and 300 west dipping. *Fig. 6.4* shows the “Geological map of *Paung-Ni Kyauk Taung* Area” and the Great Tanintharyi River and its drainage were described in *Fig.6.5*.

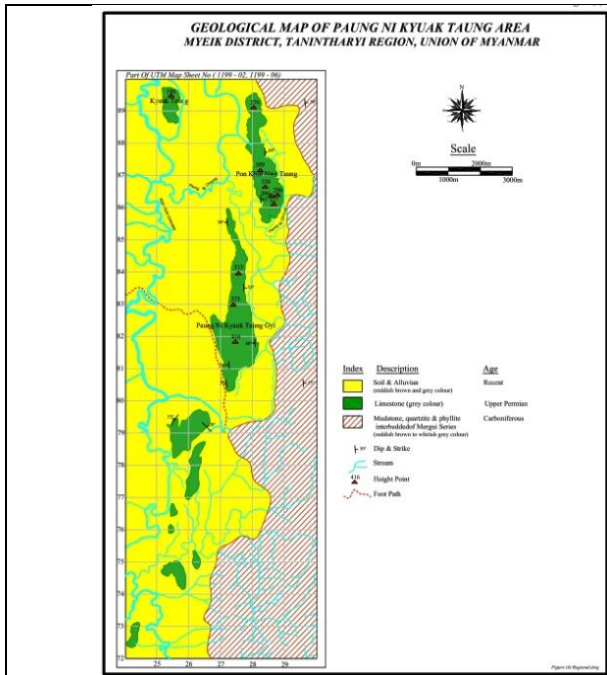


Figure 6. 4 Geological map of Paung-Ni Kyauk Taung Area



Figure 6. 5 The Great Tanintharyi River and its drainage (Source: Greattenasserimrivermap.png)

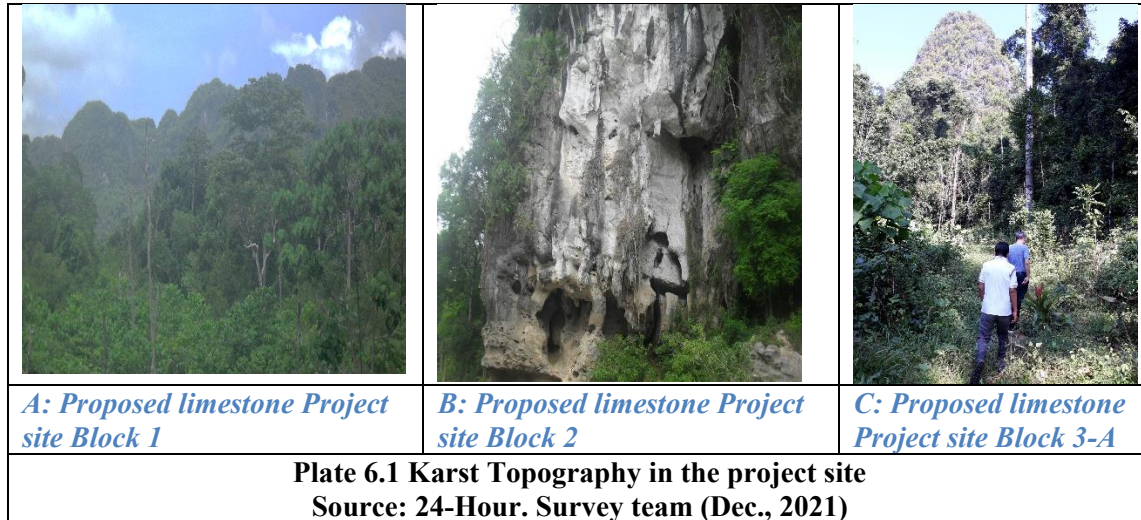
6.3.3 Topography and Drainage

Topographically, Tanintharyi Township possesses high land in the eastern part and low land area in the western part. In the eastern mountainous area, highest parts are the Kyaoyai Taung (1345 m), the Chaung din Taung (859m), the Chaung Nawng Hoi (505 m), and the Nyawun Chaung Taung (728 m). The elevation is generally between 20 meters and 1300 meters above sea level. The highest peak is Mt. Kyaoyai Taung. The mountain ranges become highest in the east and lowest in the west because of coastal area in the west. Western hilly part has an average elevation between 100 and 700 metres above sea level. The western part consists of three ranges namely the Khaw Lan Hpat Taung (644 m), the Hin Ta Khun Taung (668 m), and the nameless mountain near the south of the Hin Ta Khun Taung (881 m) on the watershed.

The coastal mountain ranges which run parallel to the Hilly Region are the continuation of the Eastern Highland and much older than Western Ranges and are composed of granite rocks which are often associated with tin and tungsten. Although the maximum elevation of the region 1129 meters on the coastal mountain ranges, the majority of the land areas are less than 7 meters. The moderately steep slopes occur on the coastal mountain ranges while most are less than 10% of slope. In the east and west of the *Nga Wun Chaung*, the terrain is mostly rugged with thickly vegetated mountains. Hill ridges and high points are generally NS trending and elevations are usually over 600 m above sea level. The highest local peak is *Hintakun Taung* with 680 m elevation and *Khaw-Lan-Hpat Taung* at 644 m above sea level, lying approximately 10 km west of the *Nga Wun Chaung*.

Tanintharyi Town is located on the southern bank of the Great Tenasserim, where it is joined by a tributary known as the "Little Tenasserim River" which runs from south to north enters into Tanintharyi River. From this point it flows 33 miles (53 km) before reaching the Andaman Sea at the major seaside town of Myeik (Mergui). The Great Tenasserim River or the Tanintharyi River is a major river of southeastern Burma. It flows through the Region, past the town of Tanintharyi, and enters the sea at Myeik (Mergui). The river rises from the Tenasserim Range at an altitude of 2,074 m (6,804 ft), and flows into the Andaman Sea.

Main tributaries found in the area are Tha Gyet Chaung (six-order), and Thein Kun (41km, seven-order), Indaw Creek (fifth-order), Mu Chaung (fifth-order), Kali Chaung (fifth-order), and Ye-Zein Chaung (fifth-order). The Great Tanintharyi River and its drainage were shown in *Fig. 6.3.4*. The prominent water flow of the *Nga Wun Chaung* is draining from south to north at the western side of the limestone hills and then turn to NW and drain into the Tanintharyi River. Locally other small streams of the *Htan Pe Chaung*, *Paung Ni Chaung* and *Kya Chaung* are flowing from east and *Yezein Chaung* and *Lam Pan Chaung* are flowing from west into the main stream of *Nga Wun Chaung*. *Nga Wun Chaung* is a stream located in Tanintharyi Township, (Lat. 11° 52' 1" N and Lon. 99° 6' 57" E). The estimate terrain elevation above sea level is 16 meters. *Plate 6.1* shows the natural scenery and Karst Topography of the project site, Block 1, Block 2 and Block 3.



6.3.4 Climate and Meteorology

Myanmar experiences a tropical-monsoon climate with three dominant seasons - i) hot, dry inter-monsoonal (mid-February to mid-May); ii) rainy southwest monsoon (mid-May to late October); and iii) cool relatively dry northeast monsoon (late October to mid-February). Rainfall/ precipitation pattern is influenced particularly by the Southwest monsoon wind occurring in two oceans (Bay of Bengal and Andaman Sea) and by the locality.

There are pronounced regional differences in climate. The Central Dry Zone is a large inland swath of the country that is prone to extreme heat events and drought. The rainy coasts, such as the Rakhine, Southern Coastal and Yangon Deltaic areas, are slightly cooler in annual average temperature but are prone to flooding. Further inland are the cooler Northern and Eastern Hilly regions, which experience heat waves, droughts and floods which can lead to landslides. In the hot and cool seasons, the Southern Coastal Region receives the most rainfall, with the second-highest rainfall observed in the Northern Hilly Region (hot season) and Ayeyarwaddy Delta (cool season). The highest annual precipitation is observed in the Rakhine Coastal Region, followed by the Ayeyarwaddy Delta, with the same pattern being observed in the wet season.

The NAPA Report (Myanmar’s National Adaptation Programme of Action (NAPA) to Climate Change, 2012) includes the following climate change projections for Myanmar:

- (i) “an increase in the temperature across the whole country, particularly from December to May with the Central and Northern regions experiencing the greatest increases; (ii) “an increase in clear sky days exacerbating drought periods; (iii) “an increase in rainfall variability during the rainy season including an increase across the whole country from March to November (particularly in Northern Myanmar), and decrease between December and February; (iv) “an increase in the risk of flooding resulting from a late onset and early withdrawal of monsoon events; (v) “an increase in

the occurrence and intensity of extreme weather events, including cyclones/strong winds, flood/storm surge, intense rains, extreme high temperatures and drought.”

6.3.5 Climate in Tanintharyi Region

The weather data during 2009 – 2018 were described in Tanintharyi Region as follows: Rainfall 4887 ± 741 mm; Temperature Mean max. 32.25 ± 0.5 and Mean Min. 23.0 ± 1.5 ; Mean Relative Humidity percent 8. In 2018, maximum rainfall of 6,871 mm in Dawei in Tanintharyi Region was reported (Myanmar Statistical Yearbook, 2019). Myanmar INC report (2012) documented an average temperature is 32°C in the coastal zones.

Altitude, alignment of mountain, wind, and nearness to the sea influence the climate of Tanintharyi Region. It is fairly cold in cool and quite hot in summer. Generally, in summer months from the middle of March till the end of May, temperature is high. The cool weather usually sets in November and lasts till the end of January. During the three cool months, the morning and evening are hot and the night cold.

The monthly rainy days and rainfalls for 10 years (2010 – 2019) of Tanintharyi Township were described in *Attachment 6 -1*. In the 10 –year records, the lowest values of rainy days were 127 days in 2015 while the highest rainy days of 168 days were observed in 2018. Similarly, the highest rainfalls were recorded in 2012 (7,595 mm) and 2013 (6,757 mm). The lowest rainfalls were observed 2,357 mm in 2010 and 2,587 mm in 2016. It was clearly seen that the total rainfalls declined significantly after 2013.

6.3.6 Limestone mining under climate change

Climate change is expected to cause more frequent droughts and floods, altering the supply of water and disrupting mining operations. Today, 30 - 50 % of production of copper, gold, and etc. is concentrated in areas where water stress is already high – a risk that may even double by 2030. The threats due to climate change that mining companies are facing remain urgent. Forecasts indicate that climate hazards such as heavy precipitation, drought, and heat will get more frequent and intense, increasing the physical challenges to mining operations. Therefore, mining companies, like limestone production of 24-Hour, should prepare for climate hazards.

Shifting to renewable sources of electricity is increasingly feasible, even in off-grid environments, because the cost of battery packs is projected to halve from 2017 to 2030. Energy efficiency improvements will reduce operating costs and indirect emissions from the electricity consumed, such as reducing the idle time of equipment. Another economically viable decarbonization option is to electrify mining equipment, such as diesel trucks and gas-consuming appliances, by applying the mining equipment which are fully electric.

It was recorded that, mining is currently responsible for 4 - 7 % of greenhouse-gas (GHG) emissions globally, directly through operations and indirectly through power generation. Similarly, the cost of access to capital is also expected to rise, as climate-related risks are coming under scrutiny by shareholders and investors. Likewise, mining operations are encountering high physical risks due to climate change. Many mines operate in areas exposed to climate risks and will become increasingly vulnerable to recurrent shocks in the future. For instance, extreme weather conditions may affect the stability of embankment and pond and other facilities and exacerbate the operation - structure failures.

Furthermore, extreme climatic conditions combined with changing weather patterns are a key concern for water supply, an important input to mining operations and key to the livelihoods of local populations. In response to these multifaceted risks, the mining industry needs to produce more sustainably. It is a risk-mitigation strategy and good for business and for investors. This means investing in sustainable processing solutions – to reduce risks relating to water use as well as to reduce the industry’s carbon footprint. Investments in decarbonization solutions, notably in electric vehicles, solar panels, and

battery storage systems, have increased substantially in these days. To achieve the objectives set by the “Paris Agreement - to achieve a 1.5 degree Celsius warming pathway”, there will be a significant increase in the production of low-carbon technologies, such as wind turbines, solar photovoltaics, energy storage facilities, and electric vehicles.

In the beginning of the limestone mine operation, the 24-Hr., Co., Ltd will use the diesel engines for electricity since the mine site is situated in the off-grid area. However, the company will try to access the power grid line as soon as possible. It will also apply more eco-friendly equipment to reduce their environmental impact. Replacing diesel engines with electric engines wherever possible can significantly reduce the amount of CO₂ produced by mining operations. Battery-driven mining equipment is often powerful enough to replace diesel-driven options. the 24-Hour will apply the possible measures to effectively respond to the climate change impacts. They are - shifting to renewable energies, which can lower the mine’s electricity costs and reduce volatility, and introducing “climate intelligence” to decision-making processes, such as capital allocation.

6.3.7 Natural hazards

(i) Tropical cyclones

The extreme events or natural hazards occur in Myanmar are tropical cyclones, monsoonal floods, Earthquakes and Tsunamis. Tropical cyclones arrive in Myanmar via the Bay of Bengal. There are two peaks in tropical cyclone activity in the region each year. The first occurs just prior to the onset of the monsoon season (from April to May), and the second occurs in the post-monsoon season (from October to November). An average of 10 tropical cyclones forms in the Bay of Bengal each year and since 1990, the total number of tropical cyclones reaching Myanmar has increased. There are more cyclone events occurring just before the monsoon season, while after the Bengal have been more likely to develop into hurricane-force storms.

Myanmar has a long continuous coastline bordering the Bay of Bengal in the West and the Andaman Sea in the South. Three coastal zones are identified as Rakine Coastal Zone, Ayeyarwaddy Delta Coastal Zone, and Tanintharyi Coastal Zone (Mon State and Tanintharyi Region). The weather is mainly influenced by southwest monsoon and northeast monsoon. There is a large variation in average annual rainfall in coastal area about 2500 mm to 5500 mm while mean temperature is 32°C. Coastal region is potentially rich with marine natural resources and also particularly prone to several impacts of tropical cyclones and related strong winds, heavy rains, storm surges, and associated weather. Myanmar coast was hit by cyclones almost every year after 2002 except southern coast. Among the three parts of coastal area, Rakhine coast is the most vulnerable area to tropical cyclone compared to the others. The cyclones in the Bay of Bengal have hardly hit the southern coast in Mon State and Tanintharyi Region in the history of Myanmar (Myanmar INC Report, 2012).

(ii) Earthquakes and tsunamis

Myanmar, lying in a major seismic belt, is indeed earthquake-prone and is vulnerable to hazards from moderate and large magnitude earthquakes, including tsunami hazards along its coastal areas. The seismotectonics of the region indicates that earthquakes in Myanmar mostly have originated along an active subduction zone (Andaman Megathrust Zone) in the west and along a large transform fault zone (Sagaing Fault Zone) in the middle part of the country. The Sagaing Fault is one of the largest sources of earthquakes in the country, having produced deadly quakes in the past centuries. Along the western coast, offshore Rakhine State, the Sunda Megathrust, where the Indian Plate dives beneath the Burma Plate is capable of producing large events and tsunamis like 2004 earthquake. Intermediate depth earthquakes east of the Chin Range also pose a risk to people. The Shan Plateau is

another source of earthquakes, hosting many active strike-slip faults that accommodate block rotation of the Sunda Plate. Thus, it is evident that Myanmar is vulnerable to hazards from moderate and large magnitude earthquakes, including tsunami hazards along its long coastline. The 2004 tsunami generated by the Sumatra earthquake caused moderate damage to the Ayeyarwady Delta, coastal areas of Rakhine and the Tanintharyi with loss of more than 60 lives and hundreds of boats.

(iii) Floods in Tanintharyi

Due to the incessant rains in Tanintharyi Region made the water level high in Tanintharyi River which reached at danger levels during July, 2018. The weather data shows the highest rainy days of 27, 29 and 30 days in 2018 June, July and August, respectively (*Attachment 6.1*). Similarly, the highest rainfalls of 1,351mm were in July and 1,058mm in August, 2018 (*Attachment 5.2*). During the floods, Tanintharyi Township Natural Disaster Information Committee confirmed over 5,000 number of flood victims were evacuated in eleven relief camps. In July 2021, following heavy rains, flood related disruptions were observed in southern regions of Myanmar. The most affected areas included Kayin and Mon States and Tanintharyi Region, the floods have led to casualties and damage, impacting at least 3,000 people. An additional 40,000 cultivated lands were affected across different States and Regions (OCHA, 27 Aug., 2021).

6.3.8 Surface and Groundwater Quality Water sampling and analysis

1) Objectives:

The parameters for water quality analysis are determined so as to cover the parameters of existing environmental standards of Myanmar. These data will serve as a baseline data before the start of the proposed limestone production project. During the project implementation, e.g., mine development and mine operation stages, the stream water (*Nga Wun Stream*) and ground water may be affected or polluted by the project activities.

2) Methodology:

Field survey trips for collection of water samples were conducted from 25 to 27th December, 2021. Water samples were collected from the possible affected areas, Areas of Influence (AOI) of the proposed project area. The samples were taken from pipe water / surface water of Ban Gwan Village and *Nga Wun Stream* as surface water, Ground water was taken from hand dug wells of Khae Chaung Village.

Note: *Nga Wun Stream* is situated in the west of the project sites (Block 1, 2, and 3), flowing from south to north, entering into the Tanintharyi River. The nearest distance between *Nga Wun Stream* and project site - Block 1 is 1840 meter. The nearest distances between *Nga Wun Stream* and project site – Block 2 and Block 3 are 300 m and 650 m, respectively. The nearest villages from the project site are Ma Noe Yone and Khae Chaung villages, 27 km and 30 km away from the project Block 3, respectively.

All water samples were taken with water tube and collected in plastic and sterilized glass sample containers. All sampling methods were strictly followed the guidelines of the standard procedures. According to the Laboratory standard, some samples were preserved using chemicals. All samples were kept in iced boxes and were transported to the laboratory in Yangon.

The locations of water samples and surveys are shown with latitude and longitude in *Table 6.3* and *Fig.6.6* shows the map of the water sampling points. The detail of each sampling points was described as below.

Table 6.3 Sampling and survey points of surface water quality analysis

Category	Sampling Point	Coordinates	Description of Sampling Point
Surface Water	W- 1	N-11.620639 E-99.093197	Ban Gwan Village
Underground Water	W -2	N-11.629794 E-99.067361	Khae Chaung Village
Surface Water	W-3	N-11.627965 E-99.227366	Nga Wun Chaung

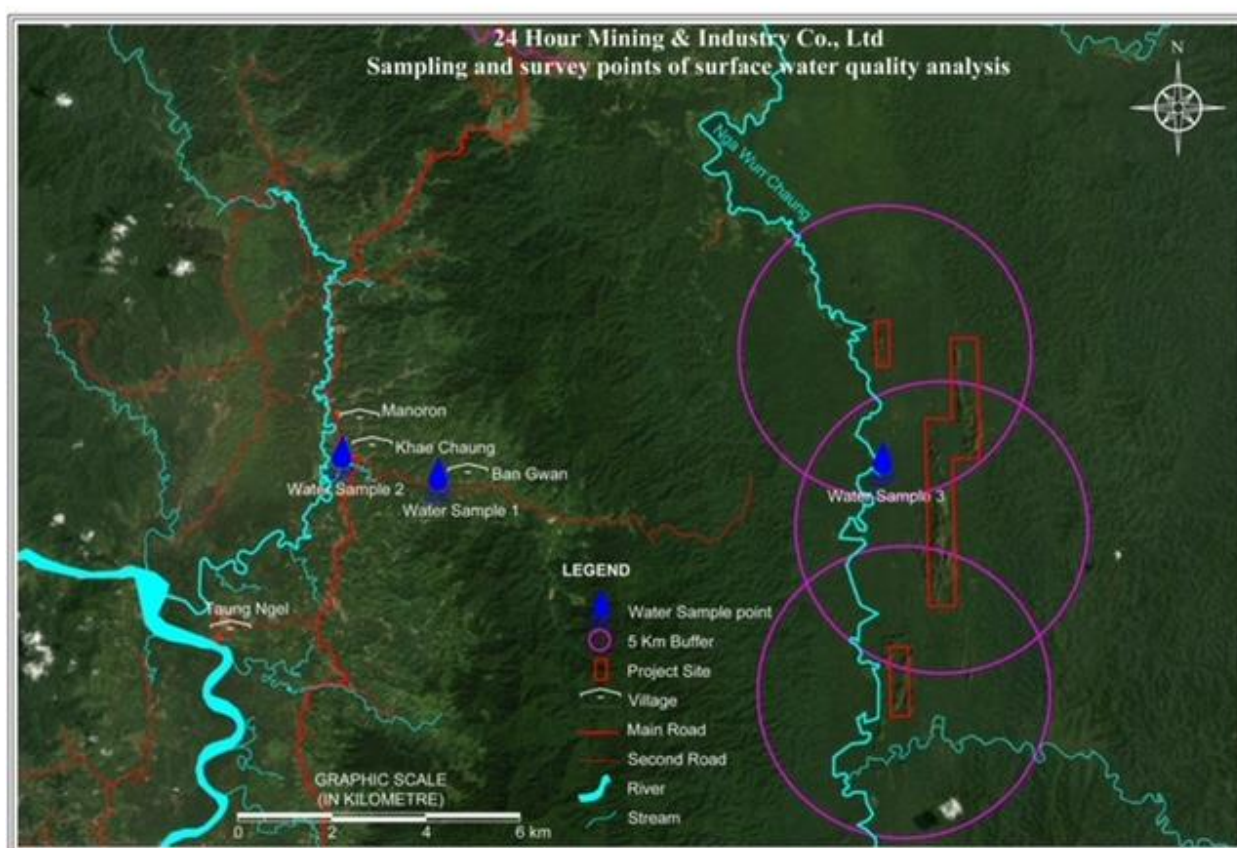


Figure 6. 6 Location map of water quality survey

3) Result of Water Quality analysis

Water samples were sent to the SGS (Mineral Services) Myanmar Limited for Phosphorus and grease and ISO TECH Laboratory for other quality test in Yangon.

It was found that the laboratory results are generally under the limits of WHO guild lines. In-situ water quality results were shown in following *Table 6.4*. It was observed that all tested water samples have a good quality for drinking and domestic uses, in comparing with WHO Standards. According to water quality test, it can be assumed that water temperatures are the same and the compositions of metals in the sample water were in the range of permissible level, except for Fe. Iron (Fe) content is higher than the standard limit of WHO guidelines (0.3 mg/l). The highest value of Fe (0.65 mg/l) was found in water samples of *Nga Wun Stream*. Similarly, the turbidity found to be the highest (39 NTU) in the samples of *Nga Wun Steam*, which was higher than WHO Drinking Water Guideline.

The other parameters of all water samples were found to be lower than WHO drinking water guidelines and some parameter cannot be detected because the composition (content) of metals in water was very few to be examined. In addition, the analysis was total phosphorous in all water samples are very low (<0.01 mg/l, 0.020 mg/l and 0.028 mg/l in samples of W- 1 Ban Gwan Village, W-2 Kae Chaung Village and W-3 Nga Wun River, respectively).

The water quality results from two laboratories (SGS (Mineral Services) Myanmar Limited and ISO TECH Laboratory) were described in *Table 6.4*. The original document of water sample results provided from the laboratories were presented in *Attachment 6.2*.

Table 6.4 Results of water quality analysis

Item/ Sample Name	Unit	W-1 (Ban Gwan Village)	W-2 (Khe Chaung Village) underground water	W-3 (Nga Wun Chaung)	WHO Drinking Water Guildline (Geneva – 1993)
Location		N-11.620639 E-99.093197	N-11.629794 E-99.067361	N-11.627965 E-99.227366	
pH		6.8	6.9	7.1	6.8 – 8.5
Color	TCU	Nil	Nil	20	15 TCU
Temperature	Degree Celsius	25 degrees Celsius	25 degrees Celsius	25 degrees Celsius	
Turbidity	NTU	3 NTU	5NTU	39 NTU	5 NTU
Conductivity	42 Micro S/cm	42 micro-S/cm	70 micro-S/cm	44 micro-S/cm	
Total Hardness	mg/l as CaCo3	14 mg/l	6 mg/l	14 mg/l	500 mg/l as CaCo3
Iron	mg/l	0.42 mg/l	0.37 mg/l	0.65 mg/l	0.3 mg/l
Chloride (as Cl)	mg/l	-			250 mg/l
Sulphate (as SO4)	mg/l	-			500 mg/l
Total solids	mg/l	-			1500 mg/l
Total Suspended Solids	mg/l	10	13 mg/l	42 mg/l	-
Total Dissolved Solids	mg/l	-		30 mg/l	1000 mg/l
Manganese	mg/l	-			0.05 mg/l
Salinity	ppt	-		0.1	
Fluoride (F)	mg/l	-	-	-	1.5 mg/l
Lead (as Pb)	mg/l	Nil	Nil	Nil	0.01 mg/l
Arsenic (As)	mg/l	Nil	Nil	Nil	0.01 mg/l
Nitrate (N.NO3)	mg/l	-	-	-	50 mg/l
Dissolved Oxygen (DO)	mg/l	7.0 mg/l	6.8 mg/l	6.6 mg/l	
Chemical Oxygen Demand (COD)	mg/l	64 mg/l	32 mg/l	64 mg/l	
(BOD) Biochemical Oxygen Demand	mg/l	mg/l	-mg/l	- mg/l	
Cyanide (CN)	mg/l	Nil	Nil	Nil	0.07 mg/l
Zinc (Zn)	mg/l	Nil	Nil	Nil	3 mg/l
Copper (Cu)	mg/l	Nil	Nil	Nil	2 mg/l
Total Phosphorus	mg/l	<0.01 mg/l	0.020 mg/l	0.028 mg/l	0.01 (LOQ)
Oil and grease	mg/l	<5	<5	<5	

Mitigation measures

1. Emphasis should be given for the clean and safe drinking water for the workers in the project site.
2. Use and storage of hazardous materials, such as lubricants from the machines and trucks may bring about potential pollution to the environment, particularly surface water quality. Appropriate storage area and proper disposal of industrial wastes should be able to prevent possible spillage and inadvertent pollution.
3. Follow the proper waste management systems (solid and liquid waste from the project during the all stages such as the construction and operation and mine closure).
4. To prevent the soil erosion from the quarry site and sedimentation to the nearby streams, a prevention ditch will be installed around the quarry site. A sedimentation pond will also be constructed to hold the eroded soils and rocks, preventing flowing into the streams.



Plate 6.2 Documentation photos of water sample collection

6.3.9 Air Quality

Ambient Air Quality Monitoring Analysis

1) Objectives:

In order to determine the existing baseline air quality status at and around the proposed project site of the 24hr. Mining and Industry Company Limited, Tanintharyi Region, the levels of ambient air parameters were monitored during the survey period. The results were compared with National Environmental Quality (Emission) Guidelines (NEQEG), 2015 stated by the Environmental Conservation Department (ECD).

2) Methodology:

The three surveyors from the laboratory of accredited Environment Quality Management (EQM), Yangon accompanied by the 24-Hour company members conducted the measurement of air and noise quality in the AOI of the proposed limestone production project area in the Paung Ni Kyauk Taung region during 21 – 24, December, 2021 (dry season). The applied monitoring device and location points of measurement and were as presented below.

Monitoring Device

Type of Air Monitoring Device	Monitoring Items (Air Parameters)	Model	Accuracy
HAZ-SCANNER EPAS	PM10 $\mu\text{g}/\text{m}^3$	EPAS	Calibration
Wireless Environmental Perimeter Air Monitoring Station. (EPAS)	PM 2.5 $\mu\text{g}/\text{m}^3$ NO2 $\mu\text{g}/\text{m}^3$ SO2 $\mu\text{g}/\text{m}^3$ CO mg/m^3 O3 $\mu\text{g}/\text{m}^3$ H2S ppb CO2 ppm VOC ppb NH3 ppm CH4 ppm	912005	certificate 2022 (attached)
	Meteorology		
	T (Degree C)		
	RH (%)		
	Wind Speed (kph), Wind Direction (Degree from North)		

Heaters used in order to reduce the humidity which affects the natural deposition of particulate matter in the air when the RH reaches 90% particularly midnight and early morning

3) Monitoring Points

To record the existing baseline ambient air quality at and around the project site, the ambient air monitoring was conducted in the vicinity within 3 km around the proposed project site. There were three locations of air sampling stations: Point 1 – Near Project Site, Point 2 – Khae Chaung Office and Point 3 – Near Nga Wun River. The coordinates of the sampling points and sampling dates were shown in the following [Table 6.5](#). The air quality sampling methodology used for this project (by the EQM) was described in [Attachment 6.3](#).

4) Results of Air Quality analysis

Regarding the findings of average concentrations of ambient air parameters monitored all of the points, the existing baseline particulates level (PM10 and PM2.5) met the guidelines values of Myanmar NEQEG. In terms of gases level, all gases levels (one-hour average level of CO and NO₂ and 8 hr. average of CO and O₃ and 24-Hour. Average level of SO₂) met the guidelines.

Thus, it can be assumed as the good air quality for these particulates and gases monitored at and around the project site. According to the observation, the potential sources which mainly come from mobile emission and human activities were very rare around the project site, since the proposed project was situated in the remote limestone – forested area. The all-air sampling locations (Coordinates) were described in [Table 6.5](#) and google maps in [Fig. 6.7](#).

Table 6.5 Air sampling locations for baseline survey in Paung Ni Kyauk Taung Area of proposed project

Points	Locations	Coordinates		Start Date	End Date
		N	E		
1	Near Project Site	11.577501°	99.237902°	21.12.2021	22.12.2021
2	Khae Chaung Office	11.62085°	99.06375°	22.12.2021	23.12.2021
3	Near Nga Wun River	11.637143°	99.224149°	23.12.2021	24.12.2021

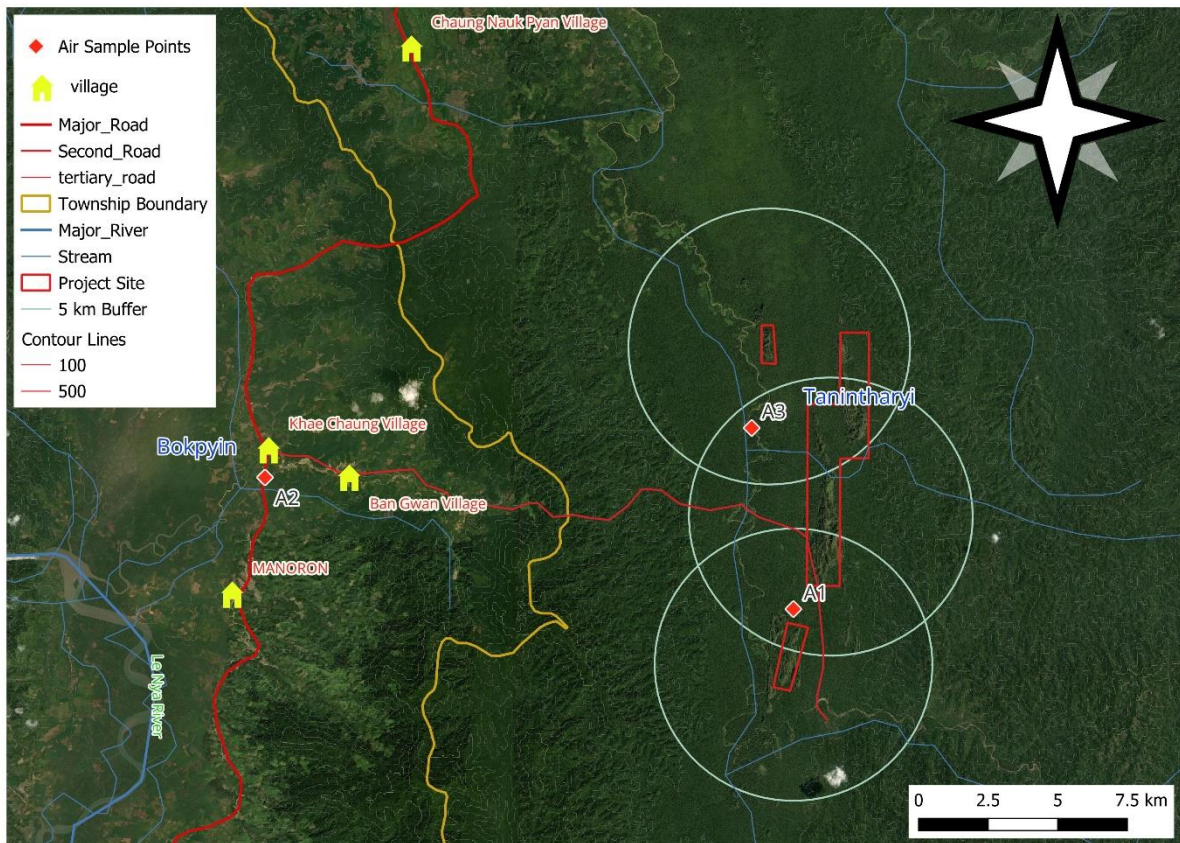


Figure 6. 7 Map showing all air sampling points (A1, A2 and A3) in the project site

5) Air sampling Point 1: Near the project site

The map of sampling point: Point 1 – Near Project Site and the photo documentation of air sampling analysis were described in *Fig.6.8* and *Plate 6.3*, respectively.

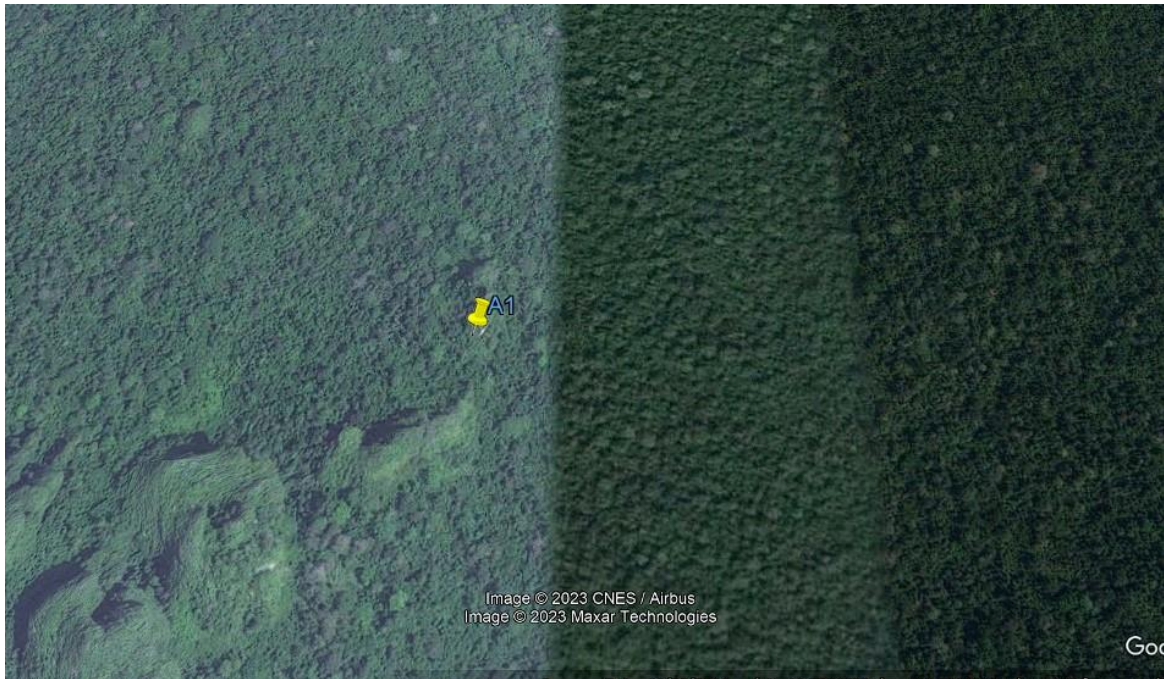


Figure 6. 8 Map of ambient air monitoring (A 1) near the project site



Plate 6.3 Air monitoring at Point (1), Near Project Site at Day time and Night time)

Results of the Air sampling Point 1 (A1) –

Regarding particulates, [Table 6.6](#) presents both the levels of PM10 ($21 \mu\text{g}/\text{m}^3$) and PM 2.5 ($11 \mu\text{g}/\text{m}^3$) met the Environmental Air Quality Guideline (ECD). In terms of gases level, one-hour average level of NO₂ ($30 \mu\text{g}/\text{m}^3$), one hour and 8hr average level of CO ($920 \mu\text{g}/\text{m}^3$) and ($390 \mu\text{g}/\text{m}^3$) respectively, 8hr average level of O₃ ($33 \mu\text{g}/\text{m}^3$) and 24hr average level of SO₂ ($6 \mu\text{g}/\text{m}^3$) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were also presented in the [Table 6.3.4](#).

6) Air sampling Point 2: Kae Chaung Office

The map of sampling point: Point 2 – at the Kae Chaung office and the photo documentation of air sampling analysis at day time and night time were described in [Fig.6.9](#) and [Plate 6.4](#), respectively.



Figure 6.9 Map of ambient air monitoring at Point 2 Khae Chaung Office



Plate 6.4 Air monitoring at Point 2, Kae Chaung Office at Day time and Night time and Air sampling surveyor group (12-22-2023) at Point 2.

Results of the Air sampling Point 2 (A2) –

Regarding particulates, [Table 6.6](#) presents both the levels of PM10 ($24 \mu\text{g}/\text{m}^3$) and PM2.5 ($12 \mu\text{g}/\text{m}^3$) met the Environmental Air Quality Guideline (ECD). In terms of gases level, one-hour average level of NO_2 ($34 \mu\text{g}/\text{m}^3$), one-hour average level and 8hr average level of CO ($1400 \mu\text{g}/\text{m}^3$) and CO ($1050 \mu\text{g}/\text{m}^3$) respectively, 8hr average level of O_3 ($21 \mu\text{g}/\text{m}^3$) and 24hr average level of SO_2 ($8 \mu\text{g}/\text{m}^3$) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were also presented.

7) Air sampling Point 3: Near Nga Wun Stream

The map of sampling point: Point 3 – near the *Nga Wun* Stream and the photo documentation of air sampling analysis at day time and night time were described in [Fig.6.10](#), and [Plate 6.5](#) respectively.

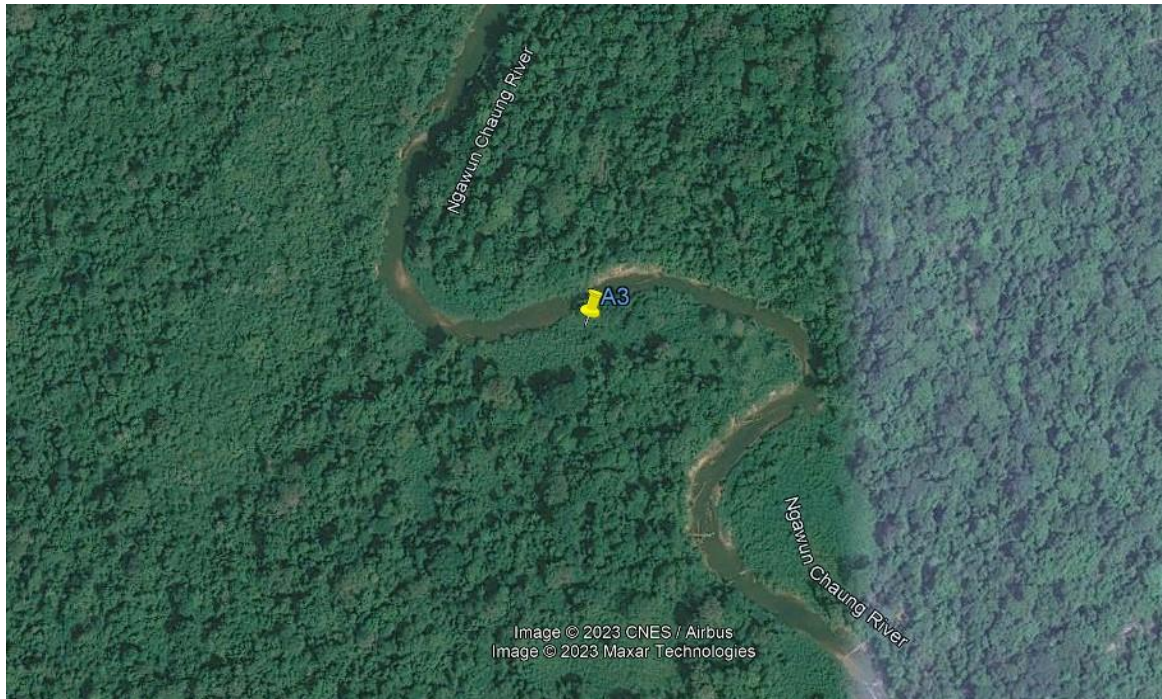


Figure 6. 10 Ambient air monitoring Near Nga Wun Stream



Plate 6.3.4 Air monitoring at Point (3), Near Nga Wun Stream at Day time and Night time

Results of the Air sampling Point 3 (A3) –

Regarding particulates, *Table 6.6* presents both the levels of PM₁₀ (18 µg/m³) and PM_{2.5} (6 µg/m³) met the Environmental Air Quality Guideline (ECD) adopted from WHO Guideline. In terms of gases level, one-hour average level of NO₂ (44 µg/m³), one-hour average level and 8hr average level of CO (875µg/m³) and (469 µg/m³) respectively, 8hr average level of O₃ (25 µg/m³) and 24hr average level of SO₂ (5 µg/m³) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were also presented.

Table 6.6 Ambient Air Quality Results from the sampling Points in the proposed project area

Parameters	Concentration (24hr average) except some Gases (NO ₂ , CO and O ₃)*			National Environmental Air Quality Guideline (ECD)/WHO Guideline (24hr average)
	Point (1), Near Project Site	Point (2), Khae Chaung Office	Point (3), Near Nga Wun River	
PM10	21 ^a (0 ^b -30 ^c) µg/m ³	24 ^a (11 ^b -37 ^c) µg/m ³	18 ^a (2 ^b -24 ^c) µg/m ³	50 µg/m ³
PM 2.5(µg/m ³)	11 ^a (0 ^b -15 ^c) µg/m ³	12 ^a (5 ^b -23 ^c) µg/m ³	6 ^a (1 ^b -11 ^c) µg/m ³	25 µg/m ³
NO ₂ *	16 ^a (2 ^b -33 ^c) µg/m ³ (24-Hour) 30µg/m ³ (one hr)	24 ^a (10 ^b -39 ^c) µg/m ³ (24-Hour) 34µg/m ³ (one hr)	28 ^a (12 ^b -45 ^c) µg/m ³ (24-Hour.) 44µg/m ³ (one hr.)	40 µg/m ³ (annual) /200 µg/m ³ (one hour)
SO ₂	6 ^a (0 ^b -12 ^c) µg/m ³	8 ^a (0 ^b -14 ^c) µg/m ³	5 ^a (0 ^b -11 ^c) µg/m ³	20 µg/m ³
CO *	0.37 ^a (0 ^b -1.5 ^c) mg/m ³ / 370 ^a (0 ^b -1500 ^c) µg/m ³ (24hr) 0.92 mg/m ³ (one hr)/920 µg/m ³ 0.39 mg/m ³ (8 hr) /390 µg/m ³	0.90 ^a (0 ^b -1.7 ^c) mg/m ³ / 900 ^a (0 ^b -1700 ^c) µg/m ³ (24hr) 1.4 mg/m ³ (one hr) / 1400 µg/m ³ 1.05 mg/m ³ (8 hr) / 1050 µg/m ³	0.44 ^a (0 ^b -1.2 ^c) mg/m ³ (24hr) / 440 ^a (0 ^b -1200 ^c) µg/m ³ 0.875 mg/m ³ / 875 µg/m ³ (one hr.) 0.469 mg/m ³ / 469 µg/m ³ (8 hr.)	30,000 µg/m ³ (one hr.) 10,000 µg/m ³ (8 hr.)
O ₃ *	32 ^a (30 ^b -37 ^c) µg/m ³ (24hr) 33 µg/m ³ (8 hr.)	19 ^a (14 ^b -40 ^c) µg/m ³ (24hr) 21 µg/m ³ (8 hr)	24 ^a (15 ^b -29 ^c) µg/m ³ (24hr) 25 µg/m ³ (8 hr.)	100 µg/m ³ (8hr)
H ₂ S	15 ^a (5 ^b -30 ^c) ppb	27 ^a (10 ^b -44 ^c) ppb	8 ^a (1 ^b -16 ^c) ppb	NA
CO ₂	325 ^a (251 ^b -442 ^c) ppm	379 ^a (301 ^b -467 ^c) ppm	296 ^a (222 ^b -350 ^c) ppm	NA
VOC	42 ^a (0 ^b -89 ^c) ppb	53 ^a (0 ^b -90 ^c) ppb	34 ^a (0 ^b -68 ^c) ppb	NA
NH ₃	4 ^a (1 ^b -7 ^c) ppm	4 ^a (1 ^b -8 ^c) ppm	4 ^a (3 ^b -5 ^c) ppm	NA
CH ₄	41 ^a (12 ^b -89 ^c) ppm	44 ^a (20 ^b -98 ^c) ppm	39 ^a (8 ^b -79 ^c) ppm	NA
Meteorology				
T (Degree C)	27 ^a (26 ^b -29 ^c)	27 ^a (26 ^b -29 ^c)	27 ^a (26 ^b -29 ^c)	
RH	89 ^a (71 ^b -100 ^c)	82 ^a (70 ^b -100 ^c)	91 ^a (72 ^b -100 ^c)	
Wind Speed (kph)	1 ^a (0 ^b -6.2 ^c)	2 ^a (0 ^b -6.2 ^c)	3 ^a (0 ^b -6.2 ^c)	
Wind direction (Degree from North)	287 (WNW)	260 (W)	271 (W)	
Remark				
	People and motor cycles activities. The generator ran at night (6:00 pm - 9:00 pm)	Near the Myeik - Kaw Thaung main road; vehicles (cars, trucks and motor cycles activities)	No significant findings were noted	

^a Average ^b Min ^c Max

Referring to National Environmental Air Quality Guideline (ECD), the color codes are categorized in order to reveal the general air quality status around of the project area.

Green – meets the standards

Yellow (slightly over and less than double)

Orange (exceeding if more than double)

6.3.10 Noise and Vibration

6.3.10.1 Noise Level Analysis

1) Objectives

Noise levels were monitored in the study area before the proposed project starts to establish a base line status. During the project implementation, the anticipated in noise sources are generators, blasting process and crushers. The impacts of these identified sources will be studied and their mitigation measures included for attenuation of the noise. The type of acoustic indices recorded depends on the type of noise being monitored, as established by a noise expert. Monitors should be located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface (e.g., wall). In general, the noise level limit is represented by the background or ambient noise levels that would be present in the absence of the project facility or noise source(s) under investigation.

2) Methodology

To record the baseline data of noise levels of the project site and its surrounding areas, the sampling points of noise level examinations considered to cover all the surrounding areas of project site. Three places were selected; they were – Point 1: Khe Chaung Project Office, Point 2: Chaung Nauk Pyan School, and Point 3: Aye Thar Yar Monastery. The noise data collection was done during 21 - 24 Dec., 2021. The sites' corresponding GPS coordinate points together with photo records and ambient weather condition for each sampling period of each site were documented. The noise sampling points with Coordinates, and respective sampling dates were described in [Table 6.7](#).

The noise levels (LAeq) were recorded by using Decibel X:dB Sound Level Meter at about 1.5 m above ground with no reflecting surface nearby in accordance with IFC guide lines. The recordings of baseline level were conducted in consecutive hours at each monitoring location between 07:00 and 09:00 for day time and between 22:00 and 24:00 for night time, respectively. The results represented the busiest hours of the project site and surrounding environs. Hourly A-weighted equivalent continuous sound pressure levels (LAeq) were recorded continuously over 24-Hours at each location. The maps of the sampling points (Point 1, Point 2 and Point 3) were also presented in [Fig.6.11](#), [Fig.6.12](#) and [Fig. 6.13](#).

3) Results

The results of average of baseline noise levels, minimum and maximum points were recorded and presented in the [Table 6.7](#) below.

Sampling Point 1, Khe Chaung Project Office -

According to the EQEG Guideline limits, the noise level (One Hour LAeq (dBA)) was 55 – 70 dBA and 45 – 70 dBA during the day time and night time, respectively. The results showed the average noise levels were in the range of 38.9 –70.7 dB(A) and 51.5–64.6 dB(A) during daytime and night-time, respectively. Based on these findings, the average noise levels (both day and night time) at Point 1 met the value with EQEG. The highest level of 70.7 dB(A) was a bit higher than the NEQEG Guidelines of value 70 dB(A), which may be created by some motor vehicles passing around the Khae Chaung project office.

The sampling Point 1: Khe Chaung Project Office is located in the Khae Chaung village, but its surrounding was not the busy residential settlement. However, in the day time there were some motor vehicles, such as motor cycles, trucks and trawlergy, etc., passing nearby village road.

Sampling Point 2, Chaung Nauk Pyan School -

The noise results of At Pont 2 ranged from 37.4 – 93.0 dB(A) during day time and 39.1 – 70.2 dB(A) night time. The day-time highest level of 93.0 dB(A) was higher than the day time value limits of EQEG.

The Point 2 inside the Chaung Nauk Pyan School was located beside the Myeik – Kawthaung Highway. It was noted that due to the traffic of the Highway, busier at day time, the noise levels of were found to be higher than other two sampling points. The possible reasons might be the nearness of the school location to the Highway. These levels were mainly captured from car, motor cycle and people activities, generally passing through the Highway and the people activities of the Chaung Nauk Pyan village itself. Other measurements were found to be under the range of permissible levels of EQEG.

Sampling Point 3, Aye Thar Yar Monastery -

For the noise level at Pont 3: Aye Thar Yar Monastery, the results of the day-time values ranged from 30.0 – 61.6 dB(A) while the night -time values were 36.5 – 41.6 dB(A). All values were under the range of EQEG Guideline values. Aye Thar Yar Monastery was relatively a cool place. A few vehicles and motor cycles sometimes pass through the village roads nearby the monastery. The noise levels of Point 3 were the lowest among the three sampling points.

Based on the noise monitoring results, it can be assumed that the baseline noise levels generally showed under the limited range of the national EQEG guideline values and they represent the common level of a general rural environment.

Table 6.7 Results of baseline noise sampling in project areas

Sampling Date	Sampling Site	GPS Coordinates	Result of the measurement				Myanmar National EQEG - Noise standard value (dBA) ^a	
			Day Noise (dB)	-Time Level	Night Noise (dB)	Time Level	Day Time	Night Time
21-12-2021	Pont 1: Khe Chaung Project Office	99° 03' 49.1029" E 11° 37' 15.0123" N	59.1 ^a , 38.9 ^d , 70.7 ^e		60.2 ^a , 51.5 ^d , 64.6 ^e		55 – 70	45 – 70
22-12-2021	Pont 2: Chaung Nauk Pyan School	99° 07' 51.1357" E 11° 47' 55.8021" N	65.9 ^a , 37.4 ^d , 93.0 ^e		50.8 ^a , 39.1 ^d 70.2 ^e		–	–
23-12-2021	Pont 3: Aye Thar Yar Monastery	99° 06' 46.2516" E11° 45' 32.6064"	41.2 ^a , 30.0 ^d , 61.6 ^e		38.5 ^a , 36.5 ^d , 41.6 ^e		–	–

^aAverage, ^dMin; ^eMax; Source: EMP Survey team

Generally, the noise results of all measurements were found to be under the range of permissible levels of EQEG. Therefore, it can be assumed that the baseline noise levels generally showed under the limited range of the guideline values and the common level of a general rural environment.

Based on these findings, the average noise levels (both day and night time) at all three sampling points, the data generally met the values of EQEG. These levels were high in some condition when captured from vehicles (cars and trucks, trawlergy), machine and people activities. The values of Night Time Noise Level (dB) were lower than the whole day average noise level and day time noise level.

It was assumed that when the limestone quarrying, daily life in the living environment will generate the noise from machines, drilling and blasting, construction and human activities. The dominant noise sources will be from the various machines and equipment used in the project area. During the project

implementation period, noise measurement will be conducted regularly. If the values are exceeding the national EQEG values and maximum limits of the health of the workers, the mitigation measure will be applied.

It was noted that normal conversation is about 60 dB, and a motorcycle engine running is about 95 dB. For example, a bulldozer, impact wrench, or motorcycle. 120 – 140 decibels. Noise above 70 dB over a prolonged period of time may start to damage your hearing. Loud noise above 120 dB can cause immediate harm to your ears. Besides hearing loss, noise- exposed workers are more likely to experience speech interference, disturbed sleep interference, excess stress, tinnitus, and decreased work performance.

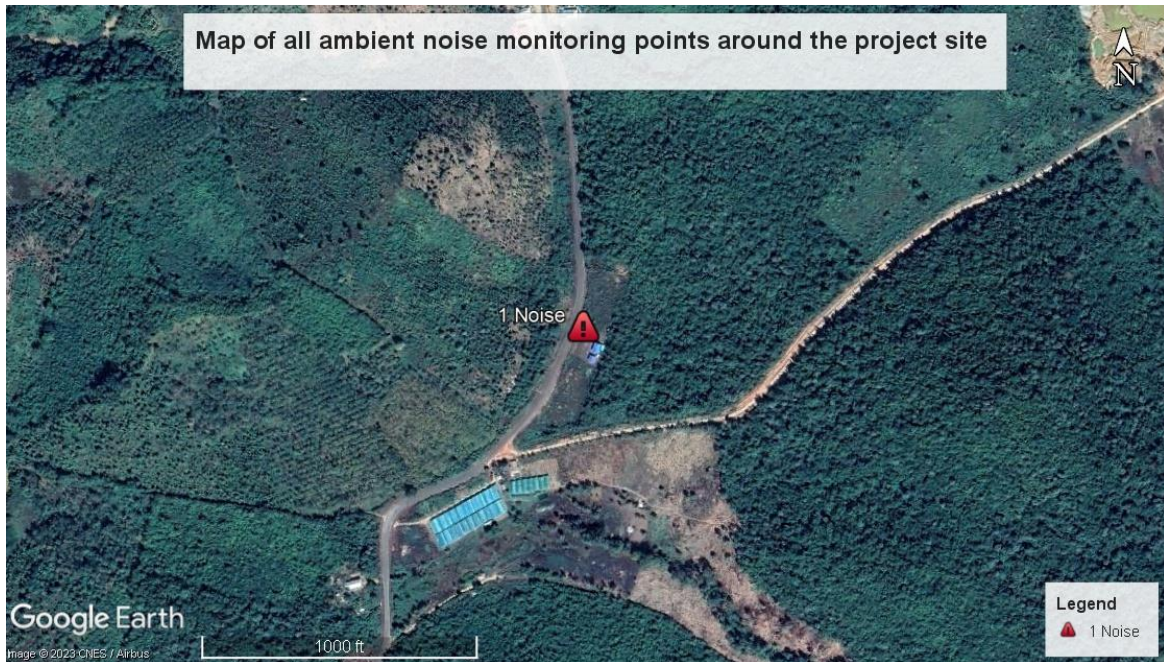


Figure 6. 11 Map for the noise monitoring Point 1



Figure 6. 12 Map for the noise monitoring Point 2

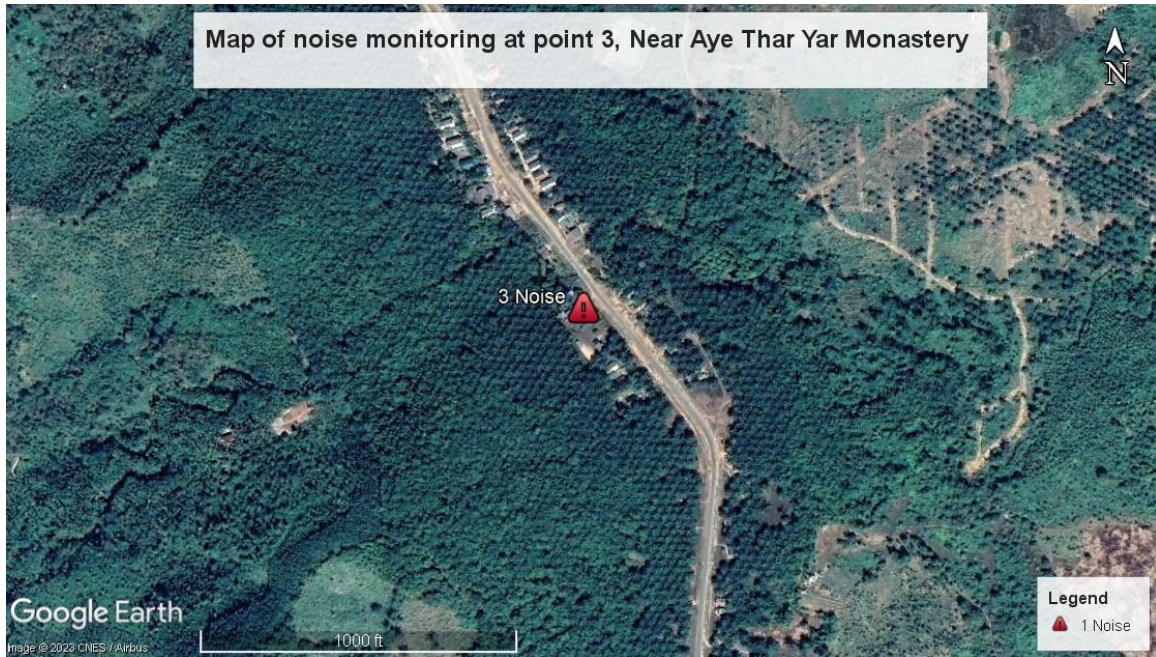


Figure 6. 13 Map for the noise monitoring Point 3

6.3.10.2 Vibration

As there is no vibration standard to receptors in Myanmar, the target vibration level at the project implementation phase shall be set based on the standards in some foreign countries, although the baseline data were not collected for the time being.

The tool used for vibration analysis is called an accelerometer for monitoring and analyzing machine vibrations. Vibration can be measured both by handheld devices operated by maintenance personnel and by sensors affixed to machine components. Vibration in motorized equipment is merely the back-and-forth movement or oscillation of machines and components, such as drive motors, driven devices (pumps, compressors and so on) and the bearings, shafts, gears, belts and other elements that make up mechanical systems. Vibration is transmitted into the person's hands and arms when using hand held / operated tools and machinery. Excessive exposure can affect the nerves, blood vessels, muscles and joints of the hand, wrist and arm causing Hand-Arm Vibration Syndrome (HAVS). Whole-body vibration can cause fatigue, stomach problems, headache, loss of balance and "shakiness" shortly after or during exposure.

To mitigate the impacts and for the safeguard of occupational health and safety of workers, the project proponent will undertake the vibration measurement during the project operation.

6.4 Biological Components

6.4. 1 Forest and vegetation cover

Tanintharyi Region has extensive patches of limestone karst scattered across the region. In these karst landscapes Tanintharyi limestone tropical evergreen forest occurs. Primary tree species are *Dipterocarps* that form a closed canopy, although they occur at lower density and lower tree height than surrounding lowland and upland evergreen forest ecosystems.

Soils are characteristically extremely shallow and acidic, and may be humus- rich. These forests can be found across the Tanintharyi lowlands on limestone hills and slopes, and in some cases may occur on very steep slopes and cliffs. As a result of the discontinuous distribution of limestone in Myanmar, which can frequently become very dry, endemism is

very high. For example, 12 new karst-adapted species of gecko were recently discovered in karst environments, some of which are restricted to isolated caves and limestone towers (Grismer et al. 2018). Reliable year-round rainfall, averaging in excess of 100 mm per month and between around 1,900 mm and 3,000 mm per year.

Natural forest cover was estimated to be 80.7% of total area in Tanintharyi. The most prevalent forest types are upland evergreen forest (42.3% of area) and lowland evergreen forest (21.6%). However, while just 27.1% of upland evergreen forest was classified as degraded (on the basis of canopy cover < 80%), 66.0% of mangrove forest and 47.5% of the region's biologically-rich lowland evergreen forest were classified as degraded. This information on the current status of Tanintharyi's unique forest ecosystems and patterns of human land use is critical to effective conservation strategies and land-use planning.

This ecosystem is very diverse, with a closed canopy consisting primarily of *Dipterocarpaceae*. Buttressed trees common, epiphytes, and ferns are present, and mosses and lichens are likely to be more abundant than in adjacent lowland forests. In 2010, Tanintharyi had 3.51 Mha of natural forest, extending over 88% of the land area. In 2022, it lost 23.3 kha of natural forest, equivalent to 14.0 Mt of CO₂ emissions. It highlighted a range of severe threats that have not yet been quantified, including illegal forest clearing, charcoal exports to Thailand and China for many years. Land cover classification for Tanintharyi Region was presented in the following *Figure 6.14*. The major land use of the basin is evergreen forest (80.7%) and is followed by agricultural land of about 11.5% (Connette et al., 2016). Land cover classification for Myanmar's Tanintharyi Region in 2016 (A); Mangrove degradation south of the city of Myeik (B); Oil palm plantation development and lowland evergreen forest in Tanintharyi township and Boke Pyin township (C). The tree canopy is primarily deciduous, although some evergreen species may occur. Connette et al (2016) defined this ecosystem as having a closed canopy (>80% canopy cover) comprising a mixture of trees with and without leaves during the dry season, and estimated that it accounts for about 10.8% of Tanintharyi Region. with Highly seasonal rainfall occurs in areas averaging 1,500 to 2,500 mm per annum.

https://www.researchgate.net/publication/233862241_Status_and_distribution_of_small_carnivores_in_Myanmar

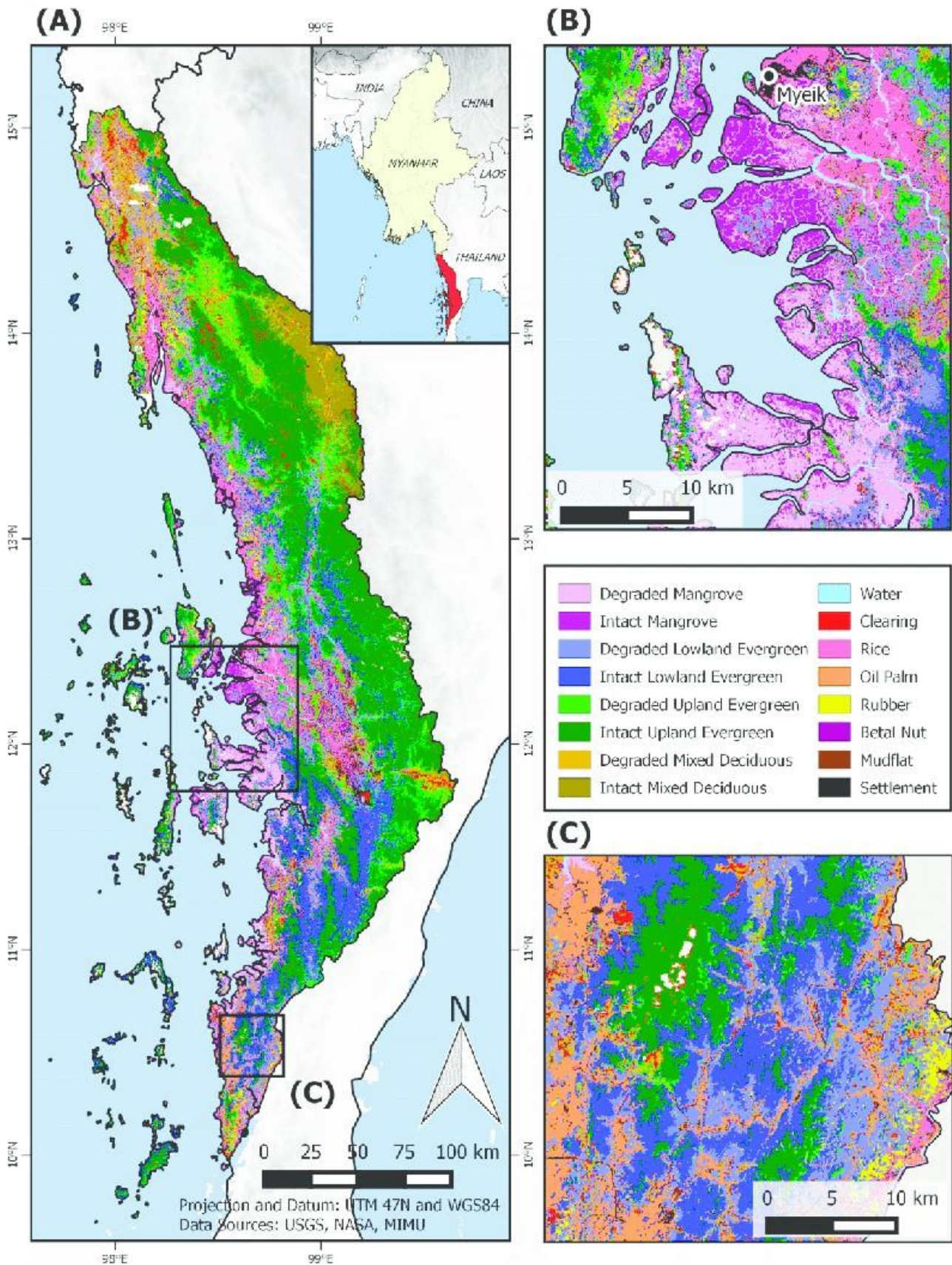


Figure 6. 14 Land cover classification for Myanmar Tanintharyi Region
Source: <https://www.researchgate.net/publication/233862241>

1) Survey Methodology

(a) Data collection

In order to obtain essential ecological data for predicting trees species diversity, 10 sample plots in study area (each sample plot was 30mx 30m) were subjectively laid down and observed. In each sample plot every living tree of girth at breast height (GBH) ≥ 10 cm was measured, listed and counted. Care has been taken to cover different elevation, slope, aspects, drainage and density gradients to study overall spectrum of species diversity. In addition to clarify the overall flora of study area, all trees, shrubs, and herbs were recorded and listed.

(b) Data analysis

Specimen identification was performed with the use of literatures by Backer *et al.*, 1963, and Kress *et al.* 2003 and confirmed at Herbarium in Department of Botany, in the University of Yangon. The field data collected was analyzed for number of species, stem density (trees) per hectare, basal area per hectare. Quantitative analysis of dominance and their relative values of frequency, density and basal area were calculated and summed to get Importance Value Index. Diversity statistics applied to the data, generated in this study were calculated using the software package; Species Diversity & Richness IV (SDR) for window 2007.

2) Result

(a) Important Value Index (IVI)

The total number of tree species with GBH ≥ 10 cm was 116 species. Ranking of ecological significance by IVI of tree species in the study area were given in [Table \(6.8\)](#). The tree layer in the study area is dominated by *Tetrameles nudiflora* R. Br. with the highest IVI of 19.05%, the second most dominant species is *Lagerstroemia floribunda* Jack (IVI = 11.62%) and *Xerospermum noronhianum* (Blume) Blume (IVI= 9.18%) is third. The IVI of top ten species in the study area was shown in [Figure 6.15](#). Those species could be considered as ecological indicator species of the study area.

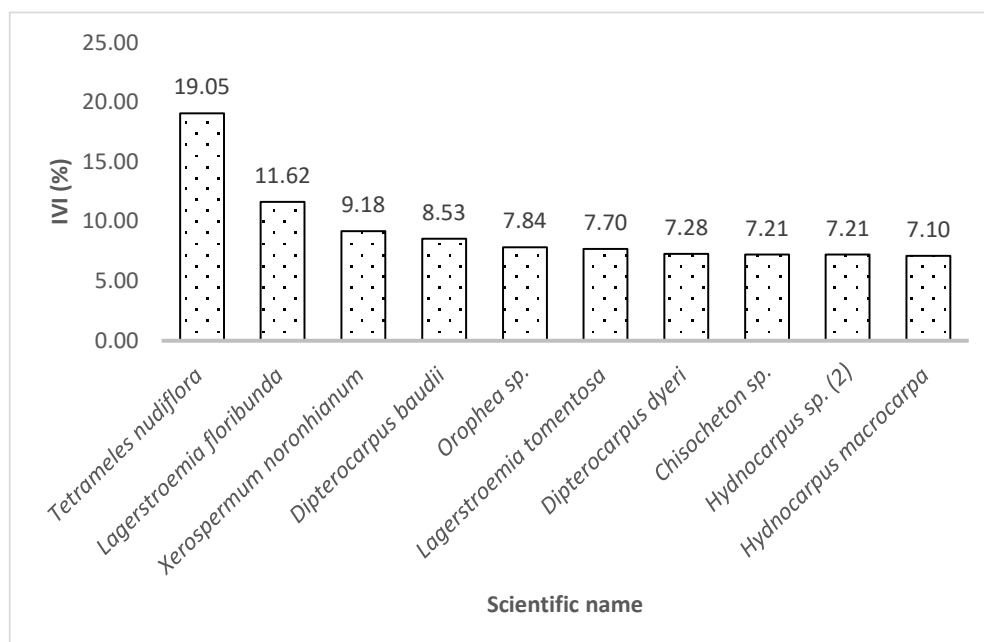


Figure 6.15 Important Value Index (IVI) of top ten species in the study area

Table 6.8 Ranking of Important Value Index (IVI) in the study area

No.	Scientific Name	RD (%)	RF (%)	R.Dm (%)	IVI (%)
1	<i>Tetrameles nudiflora</i> R. Br.	3.04	2.09	13.92	19.05
2	<i>Lagerstroemia floribunda</i> Jack	3.71	2.09	5.82	11.62
3	<i>Xerospermum noronhianum</i> (Blume) Blume	2.70	2.79	3.70	9.18
4	<i>Dipterocarpus baudii</i> Korth.	1.35	2.44	4.74	8.53
5	<i>Orophea</i> sp.	5.56	2.09	0.18	7.84
6	<i>Lagerstroemia tomentosa</i> Presl	1.35	1.39	4.96	7.70
7	<i>Dipterocarpus dyeri</i> Pierre	1.69	1.74	3.86	7.28
8	<i>Chisocheton</i> sp.	1.69	1.74	3.78	7.21
9	<i>Hydnocarpus</i> sp. (2)	3.37	1.74	2.09	7.21
10	<i>Hydnocarpus macrocarpa</i> Bedd.	3.20	2.44	1.45	7.10
11	<i>Swintonia floribunda</i> Griff.	1.35	1.74	3.84	6.93
12	<i>Baccaurea</i> sp.	4.38	2.09	0.38	6.86
13	<i>Aglaiia tomentosa</i> Teijsm. & Binn	4.22	1.74	0.33	6.29
14	<i>Polyalthia hookeriana</i> King	4.05	1.74	0.41	6.20
15	<i>Dipterocarpus macrocarpus</i> Vesque	0.51	0.35	4.85	5.70
16	<i>Lithocarpus</i> sp.	0.51	0.70	3.90	5.10
17	<i>Pterospermum semisagittatum</i> Buch.-Hum	3.54	1.05	0.43	5.02
18	<i>Myristica angustifolia</i> Roxb.	2.53	1.39	0.87	4.80
19	<i>Mesua nervosa</i> Planch. & Triana	1.85	1.05	1.85	4.75
20	<i>Hydnocarpus</i> sp. (1)	1.69	2.09	0.64	4.41
21	<i>Dipterocarpus</i> sp.	0.34	0.70	3.31	4.34
22	<i>Pentace griffithii</i> King	1.52	1.05	1.68	4.24
23	<i>Syzygium claviflorum</i> (Roxb.) A.M. Cowan & Cowan	1.01	1.74	1.36	4.12
24	<i>Barringtonia</i> sp. (2)	1.01	1.05	2.04	4.10
25	<i>Pterospermum jackianum</i> Wall. ex Mast.	1.01	1.39	1.57	3.98
26	<i>Dillenia parviflora</i> Griff.	0.84	1.39	1.70	3.93
27	<i>Callerya atropurpurea</i> (Wall.) Scot (CL)	1.01	1.05	1.83	3.88
28	<i>Aglaiia</i> sp. (1)	1.52	1.74	0.50	3.76
29	<i>Dipterocarpus gracilis</i> Blume	0.34	0.70	2.55	3.59
30	<i>Shorea cinerea</i> Fischer	0.84	1.05	1.44	3.33

No.	Scientific Name	RD (%)	RF (%)	R.Dm (%)	IVI (%)
31	<i>Antidesma velutinsum</i> Blume	1.52	1.39	0.09	3.00
32	<i>Aglaiia</i> sp. (2)	1.01	1.74	0.17	2.92
33	<i>Artocarpus</i> sp.	0.34	0.70	1.74	2.77
34	<i>Leea</i> sp.	2.02	0.70	0.05	2.77
35	<i>Mallotus</i> sp.	0.84	1.39	0.47	2.71
36	<i>Sageraea bracteolata</i> Parker	1.52	1.05	0.14	2.70
37	<i>Polyalthia</i> sp.	0.84	1.05	0.69	2.57
38	<i>Litsea</i> sp. (2)	1.18	0.70	0.67	2.55
39	<i>Syzygium zeylanicum</i> (L.) DC.	1.01	1.39	0.07	2.47
40	<i>Barringtonia angusta</i> Kurz.	1.01	1.39	0.05	2.45
41	<i>Heterophragma adenophylla</i> (Wall.) Seem.	1.18	1.05	0.21	2.44
42	<i>Nephelium</i> sp.	1.18	1.05	0.20	2.43
43	<i>Pometia pinnata</i> Forst. & Forst.	1.01	0.70	0.60	2.31
44	<i>Aporusa villosula</i> Kurz	0.84	1.39	0.05	2.29
45	<i>Barringtonia</i> sp. (1)	0.67	0.70	0.87	2.24
46	<i>Amoora rohituka</i> Wight & Arn.	0.51	1.05	0.67	2.22
47	<i>Dysoxylum</i> sp.	0.34	0.70	1.10	2.14
48	<i>Myristica</i> sp.	0.34	0.70	1.10	2.14
49	<i>Aporusa</i> sp.	0.67	1.39	0.06	2.13
50	<i>Pterocymbium tinctorium</i> (Blanco) Merr.	0.67	1.05	0.31	2.03
51	UN-6	0.17	0.35	1.44	1.96
52	UN-5	0.84	1.05	0.05	1.93
53	<i>Aglaiia argentea</i> Blume	0.67	0.70	0.53	1.90
54	<i>Shorea</i> sp.	0.34	0.35	1.16	1.85
55	UN-2	0.84	0.70	0.18	1.72
56	<i>Canthium</i> sp.	0.51	1.05	0.13	1.68
57	<i>Memecylon plebejum</i> Kurz	0.51	1.05	0.05	1.60
58	<i>Diospyros crumentata</i> Thwaites	0.51	1.05	0.04	1.60
59	<i>Xantolis tomentosa</i> Raf.	0.17	0.35	1.05	1.57
60	<i>Aglaiia lawii</i> (Wt.) Sald.	0.34	0.35	0.68	1.36

No.	Scientific Name	RD (%)	RF (%)	R.Dm (%)	IVI (%)
61	<i>Dalbergia</i> sp. (1)	0.51	0.70	0.04	1.25
62	<i>Ardisia polycephala</i> Wall.	0.51	0.70	0.04	1.24
63	<i>Syzygium</i> sp.	0.51	0.70	0.03	1.23
64	<i>Syzygium grande</i> (Wight) Walp.	0.51	0.70	0.03	1.23
65	<i>Sandoricum koetjape</i> Merr.	0.51	0.70	0.03	1.23
66	UN-1	0.34	0.70	0.19	1.23
67	<i>Dialium indum</i> L.	0.34	0.70	0.19	1.22
68	<i>Litsea</i> sp. (1)	0.51	0.70	0.02	1.22
69	<i>Amoora wallichii</i> King	0.34	0.70	0.17	1.21
70	<i>Dalbergia</i> sp. (2)	0.17	0.35	0.69	1.20
71	<i>Bhesa</i> sp.	0.34	0.70	0.05	1.09
72	<i>Sterculia macrophylla</i> Vent.	0.34	0.70	0.04	1.08
73	<i>Antidesma</i> sp.	0.34	0.70	0.03	1.07
74	<i>Macaranga gigantea</i> (Rchb.f.& Zoll.) Mull.-Arg.	0.34	0.70	0.03	1.06
75	<i>Glycosmis</i> sp.	0.34	0.70	0.02	1.06
76	<i>Hibiscus macrophyllus</i> Roxb. ex Horn	0.34	0.70	0.02	1.06
77	<i>Syzygium formosum</i> (Wall.) Masam.	0.34	0.70	0.01	1.05
78	<i>Ficus</i> sp. (1)	0.34	0.70	0.01	1.04
79	<i>Lannea coromandelica</i> (Houtt.) Merr.	0.34	0.35	0.33	1.02
80	<i>Markhamia stipulata</i> (Wall.) Seem. ex K. Schum.	0.51	0.35	0.14	0.99
81	<i>Aglaiia andamanica</i> Hiern	0.17	0.35	0.45	0.97
82	<i>Dipterocarpus turbinatus</i> Gaertn. f.	0.17	0.35	0.39	0.91
83	<i>Mischocarpus</i> sp.	0.51	0.35	0.04	0.90
84	<i>Picrasma javanica</i> Blume	0.17	0.35	0.37	0.89
85	<i>Hopea</i> sp.	0.34	0.35	0.15	0.83
86	<i>Dipterocarpus obtusifolius</i> Teysm.	0.17	0.35	0.31	0.83
87	UN-4	0.17	0.35	0.30	0.82
88	<i>Myristica conferta</i> King	0.34	0.35	0.11	0.79
89	<i>Elaeocarpus stipularis</i> Blume	0.17	0.35	0.26	0.78
90	UN-7	0.34	0.35	0.01	0.69

No.	Scientific Name	RD (%)	RF (%)	R.Dm (%)	IVI (%)
91	UN-3	0.17	0.35	0.15	0.66
92	<i>Lagerstroemia</i> sp.	0.17	0.35	0.12	0.64
93	<i>Barringtonia macrostachya</i> (Jack) Kurz	0.17	0.35	0.09	0.60
94	<i>Dysoxylum excelsum</i> Blume	0.17	0.35	0.09	0.60
95	<i>Sapium baccatum</i> Roxb.	0.17	0.35	0.07	0.59
96	<i>Aidia</i> sp.	0.17	0.35	0.06	0.57
97	<i>Flacourtia</i> sp.	0.17	0.35	0.05	0.57
98	<i>Cryptocarya</i> sp.	0.17	0.35	0.04	0.56
99	<i>Microcos paniculata</i> L.	0.17	0.35	0.03	0.55
100	<i>Carallia brachiata</i> (Lour.) Merr.	0.17	0.35	0.03	0.54
101	<i>Ficus dammaropsis</i>	0.17	0.35	0.03	0.54
102	<i>Phoebe</i> sp.	0.17	0.35	0.03	0.54
103	<i>Melia excelsa</i> Jack	0.17	0.35	0.02	0.54
104	<i>Diospyros brandisiana</i> Kurz	0.17	0.35	0.02	0.54
105	<i>Albizia</i> sp.	0.17	0.35	0.01	0.53
106	<i>Cinnamomum</i> sp.	0.17	0.35	0.01	0.53
107	<i>Schoepfia</i> sp.	0.17	0.35	0.01	0.53
108	<i>Aphanamixis polystachya</i> (Wall.) Parker	0.17	0.35	0.01	0.52
109	<i>Cinnamomum nitidum</i> Blume	0.17	0.35	0.01	0.52
110	<i>Diplospora</i> sp.	0.17	0.35	0.01	0.52
111	<i>Sterculia balanghas</i> L.	0.17	0.35	0.01	0.52
112	<i>Payena paralleloneura</i> Kurz	0.17	0.35	0.005	0.52
113	<i>Callicarpa</i> sp.	0.17	0.35	0.003	0.52
114	<i>Canthium glabrum</i> Blume	0.17	0.35	0.003	0.52
115	<i>Phoebe lanceolata</i> (Nees) Nees	0.17	0.35	0.003	0.52
116	<i>Scaphium scaphigerum</i> (G. Don) Guibort	0.17	0.35	0.003	0.52
Total		100	100	100	300

(b) Species distribution by frequency classes

In order to clarify the homogeneity or heterogeneity of the floristic distribution in the study area, species distribution by frequency classes was examined. According to the outcome of frequency chart, 85.34% of the total number of species was in lower frequency classes, A and B, while low value was observed only in higher frequency class C and D: 14.66% (12.07% + 2.59%), as shown in (Table 6.9, Fig. 6.16). It indicates that the forest of study area is floristically heterogeneous, according to Lamprecht (1989). The species which fall in high frequency class D were *Dipterocarpus baudii* Korth., *Hydnocarpus macrocarpa* Bedd., and *Xerospermum noronhianum* (Blume) Blume respectively. These species can be considered as the most common species in the study area.

Table 6.9 Species distribution by frequency classes $\geq 10\text{cm}$

Frequency Class	Frequency Range (%)	No. of species	% of total species frequency distribution
A	1 -20	73	62.93
B	21 -40	26	22.41
C	41 -60	14	12.07
D	61 -80	3	2.59
E	81 -100	0	0

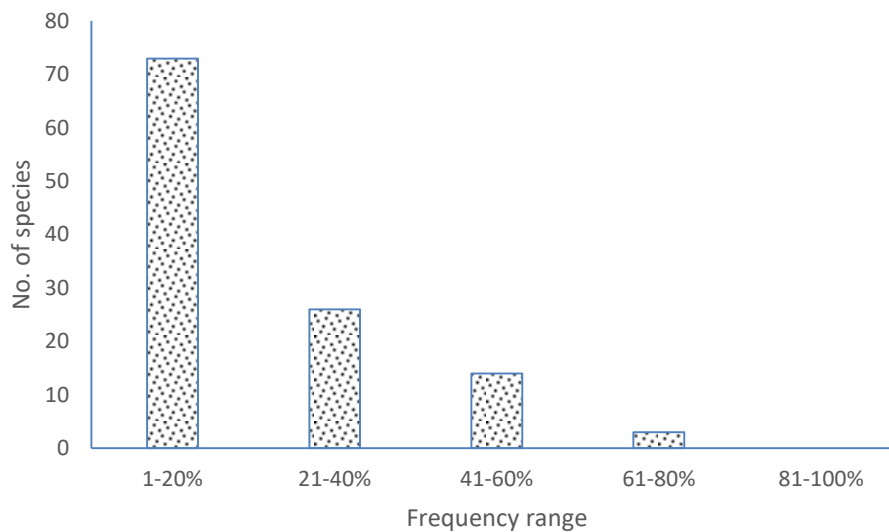


Figure 6. 16 Species distribution by frequency classes $\geq 10\text{cm}$

(c) Forest structure

The consolidated detail of species inventory in the study area was presented in Table 6.4.3. Stem density of $\geq 10\text{cm}$ was 659 stem ha^{-1} and basal area was 39.94 m^2/ha in the study area (Table 6.4.3). Among the 10 sample plots studies, 116 tree species were recorded, 35 species were found only one individual and these were considered as unique species.

The ranking of relative basal area by species (consolidated detail of species inventory in the study area) was shown in Table 6.10. The three (3) most abundance

species in terms of basal area occupied 24.70% of the total, of which *Tetrameles nudiflora* R. Br. was the most dominant species in the study area with 13.92%, followed by *Lagerstroemia floribunda* Jack 5.82%, and *Lagerstroemia tomentosa* Presl 4.96% of the total basal area (Table 6.4.4 and Figure 6.17). List of recorded plant species along the tracking are showed in Attachment 6.4.

Table 6.10 Consolidated detail of species inventory in the study area

Description	Results
No. of sampling points	10
No. of tree species	116
Density (Stem/ ha)	659
Basal Area (m ² /ha)	39.94
Total number of unique species	35

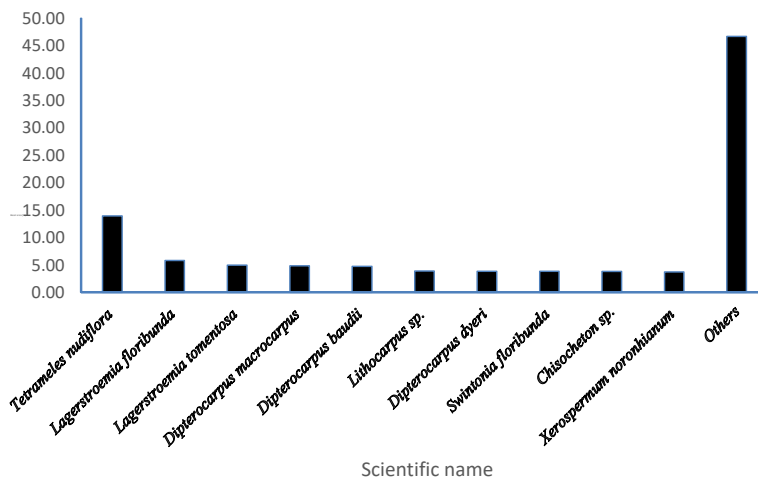


Figure 6.17 Relative basal area by species in the study area

Table 6.11 Ranking of relative basal area by species in the study area

No.	Scientific Name	Stem/ha	Basal area (m ² /ha)	Basal area (%)
1	<i>Tetrameles nudiflora</i> R. Br.	20	5.56	13.92
2	<i>Lagerstroemia floribunda</i> Jack	24	2.33	5.82
3	<i>Lagerstroemia tomentosa</i> Presl	9	1.98	4.96
4	<i>Dipterocarpus macrocarpus</i> Vesque	3	1.94	4.85
5	<i>Dipterocarpus baudii</i> Korth.	9	1.89	4.74
6	<i>Lithocarpus</i> sp.	3	1.56	3.90
7	<i>Dipterocarpus dyeri</i> Pierre	11	1.54	3.86
8	<i>Swintonia floribunda</i> Griff.	9	1.53	3.84
9	<i>Chisocheton</i> sp.	11	1.51	3.78
10	<i>Xerospermum noronhianum</i> (Blume) Blume	18	1.48	3.70
11	<i>Dipterocarpus</i> sp.	2	1.32	3.31
12	<i>Dipterocarpus gracilis</i> Blume	2	1.02	2.55
13	<i>Hydnocarpus</i> sp. (2)	22	0.84	2.09
14	<i>Barringtonia</i> sp. (2)	7	0.82	2.04
15	<i>Mesua nervosa</i> Planch. & Triana	12	0.74	1.85
16	<i>Callerya atropurpurea</i> (Wall.) Scot (CL)	7	0.73	1.83
17	<i>Artocarpus</i> sp.	2	0.695	1.74
18	<i>Dillenia parviflora</i> Griff.	6	0.68	1.70
19	<i>Pentace griffithii</i> King	10	0.67	1.68
20	<i>Pterospermum jacksonianum</i> Wall. ex Mast.	7	0.63	1.57
21	<i>Hydnocarpus macrocarpa</i> Bedd.	21	0.58	1.45
22	<i>Shorea cinerea</i> Fischer	6	0.58	1.44
23	UN-6	1	0.58	1.44
24	<i>Syzygium claviflorum</i> (Roxb.) A.M. Cowan & Cowan	7	0.54	1.36
25	<i>Shorea</i> sp.	2	0.46	1.16
26	<i>Dysoxylum</i> sp.	2	0.44	1.10
27	<i>Myristica</i> sp.	2	0.44	1.10
28	<i>Xantolis tomentosa</i> Raf.	1	0.42	1.05
29	<i>Myristica angustifolia</i> Roxb.	17	0.35	0.87
30	<i>Barringtonia</i> sp. (1)	4	0.35	0.87

No.	Scientific Name	Stem/ha	Basal area (m ² /ha)	Basal area (%)
31	<i>Dalbergia</i> sp. (2)	1	0.27	0.69
32	<i>Polyalthia</i> sp.	6	0.27	0.69
33	<i>Aglaiia lawii</i> (Wt.) Sald.	2	0.27	0.68
34	<i>Litsea</i> sp. (2)	8	0.27	0.67
35	<i>Amoora rohituka</i> Wight & Arn.	3	0.27	0.67
36	<i>Hydnocarpus</i> sp. (1)	11	0.25	0.64
37	<i>Pometia pinnata</i> Forst. & Forst.	7	0.24	0.60
38	<i>Aglaiia argentea</i> Blume	4	0.21	0.53
39	<i>Aglaiia</i> sp. (1)	10	0.20	0.50
40	<i>Mallotus</i> sp.	6	0.19	0.47
41	<i>Aglaiia andamanica</i> Hiern	1	0.18	0.45
42	<i>Pterospermum semisagittatum</i> Buch.-Hum	23	0.17	0.43
43	<i>Polyalthia hookeriana</i> King	27	0.16	0.41
44	<i>Dipterocarpus turbinatus</i> Gaertn. f.	1	0.16	0.39
45	<i>Baccaurea</i> sp.	29	0.15	0.38
46	<i>Picrasma javanica</i> Blume	1	0.15	0.37
47	<i>Lannea coromandelica</i> (Houtt.) Merr.	2	0.13	0.33
48	<i>Aglaiia tomentosa</i> Teijsm. & Binn	28	0.13	0.33
49	<i>Dipterocarpus obtusifolius</i> Teysm.	1	0.13	0.31
50	<i>Pterocymbium tinctorium</i> (Blanco) Merr.	4	0.12	0.31
51	UN-4	1	0.12	0.30
52	<i>Elaeocarpus stipularis</i> Blume	1	0.11	0.26
53	<i>Heterophragma adenophylla</i> (Wall.) Seem.	8	0.08	0.21
54	<i>Nephalium</i> sp.	8	0.08	0.20
55	UN-1	2	0.08	0.19
56	<i>Dialium indum</i> L.	2	0.08	0.19
57	<i>Orophea</i> sp.	37	0.07	0.18
58	UN-2	6	0.07	0.18
59	<i>Amoora wallichii</i> King	2	0.07	0.17
60	<i>Aglaiia</i> sp. (2)	7	0.07	0.17

No.	Scientific Name	Stem/ha	Basal area (m ² /ha)	Basal area (%)
61	<i>Hopea</i> sp.	2	0.06	0.15
62	UN-3	1	0.06	0.15
63	<i>Sageraea bracteolata</i> Parker	10	0.06	0.14
64	<i>Markhamia stipulata</i> (Wall.) Seem. ex K. Schum.	3	0.06	0.14
65	<i>Canthium</i> sp.	3	0.05	0.13
66	<i>Lagerstroemia</i> sp.	1	0.05	0.12
67	<i>Myristica conferta</i> King	2	0.04	0.11
68	<i>Barringtonia macrostachya</i> (Jack) Kurz	1	0.03	0.09
69	<i>Dysoxylum excelsum</i> Blume	1	0.03	0.09
70	<i>Antidesma velutinsum</i> Blume	10	0.03	0.09
71	<i>Sapium baccatum</i> Roxb.	1	0.03	0.07
72	<i>Syzygium zeylanicum</i> (L.) DC.	7	0.03	0.07
73	<i>Aporusa</i> sp.	4	0.02	0.06
74	<i>Aidia</i> sp.	1	0.02	0.06
75	<i>Bhesa</i> sp.	2	0.02	0.05
76	<i>Aporusa villosula</i> Kurz	6	0.021	0.05
77	<i>Leea</i> sp.	13	0.02	0.05
78	<i>Barringtonia angusta</i> Kurz.	7	0.02	0.05
79	<i>Memecylon plebejum</i> Kurz	3	0.02	0.05
80	<i>Flacourtia</i> sp.	1	0.02	0.05
81	UN-5	6	0.02	0.05
82	<i>Dalbergia</i> sp. (1)	3	0.02	0.04
83	<i>Diospyros crumentata</i> Thwaites	3	0.02	0.04
84	<i>Sterculia macrophylla</i> Vent.	2	0.02	0.04
85	<i>Mischocarpus</i> sp.	3	0.02	0.04
86	<i>Ardisia polycephala</i> Wall.	3	0.017	0.04
87	<i>Cryptocarya</i> sp.	1	0.02	0.04
88	<i>Antidesma</i> sp.	2	0.01	0.03
89	<i>Microcos paniculata</i> L.	1	0.01	0.03
90	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Mull.-Arg.	2	0.01	0.03

No.	Scientific Name	Stem/ha	Basal area (m ² /ha)	Basal area (%)
91	<i>Syzygium</i> sp.	3	0.01	0.03
92	<i>Carallia brachiata</i> (Lour.) Merr.	1	0.01	0.03
93	<i>Ficus dammaropsis</i>	1	0.01	0.03
94	<i>Phoebe</i> sp.	1	0.01	0.03
95	<i>Syzygium grande</i> (Wight) Walp.	3	0.01	0.03
96	<i>Sandoricum koetjape</i> Merr.	3	0.01	0.03
97	<i>Glycosmis</i> sp.	2	0.01	0.02
98	<i>Hibiscus macrophyllus</i> Roxb. ex Horn	2	0.01	0.02
99	<i>Melia excelsa</i> Jack	1	0.01	0.02
100	<i>Diospyros brandisiana</i> Kurz	1	0.01	0.02
101	<i>Litsea</i> sp. (1)	3	0.01	0.02
102	<i>Syzygium formosum</i> (Wall.) Masam.	2	0.01	0.01
103	<i>Albizia</i> sp.	1	0.01	0.01
104	<i>Cinnamomum</i> sp.	1	0.005	0.01
105	<i>Schoepfia</i> sp.	1	0.004	0.01
106	UN-7	2	0.003	0.01
107	<i>Aphanamixis polystachya</i> (Wall.) Parker	1	0.003	0.01
108	<i>Cinnamomum nitidum</i> Blume	1	0.003	0.01
109	<i>Diplospora</i> sp.	1	0.002	0.01
110	<i>Ficus</i> sp. (1)	2	0.002	0.01
111	<i>Sterculia balanghas</i> L.	1	0.002	0.01
112	<i>Payena paralleloneura</i> Kurz	1	0.002	0.005
113	<i>Callicarpa</i> sp.	1	0.001	0.003
114	<i>Canthium glabrum</i> Blume	1	0.001	0.003
115	<i>Phoebe lanceolata</i> (Nees) Nees	1	0.001	0.003
116	<i>Scaphium scaphigerum</i> (G. Don) Guibort	1	0.001	0.003
Total		659	39.93	100.00

The existing vegetation included the food and fruit species, valuable timber species and important medicinal species. It was observed that other ecologically and economically important species noted among the ten most important species. Some valuable timber species such as *Dipterocarpus*, *Shorea* were found to be the most abundant. Medicinal plants such as *Ficus*, *Cinnamomum spp.*, *Sterculia* were

also found. The abundant forests species were predominantly pioneers with potential to provide medicinal products, timber or local construction materials to the local.

The plant species that listed and recorded in recent study were checked with IUCN red list of threaten species; these species should be paid primary conservation status for study area. The following species are assessing in IUCN Red list (*Table 6.12*). The photo documentation of survey and the natural forest and vegetation seen in the proposed project site were shown in Plate 6.6.

Table 6.12 Tree species under IUCN red list

No.	Scientific Name	Family Name	Myanmar Name	Habit	Global Threat Status
1	<i>Dipterocarpus baudii</i> Korth.	Dipterocarpaceae	Kanyin	T	Critically Endangered A1cd+2cd ver 2.3
2	<i>Dipterocarpus dyeri</i> Pierre	Dipterocarpaceae	Kanyin, Si-bin	T	Critically Endangered A1cd+2cd, B1+2c ver 2.3
3	<i>Dipterocarpus gracilis</i> Blume	Dipterocarpaceae	Kanyin	T	Critically Endangered A1cd+2cd ver 2.3
4	<i>Dipterocarpus turbinatus</i> Gaertn. f.	Dipterocarpaceae	Kanyin ni	T	Critically Endangered A1cd+2cd ver 2.3
5	<i>Diospyros crumentata</i> Thwaites	Ebenaceae	Taung-boke	T	Endangered B1+2c ver 2.3



Plate 6.6 Photo documentation of forest and vegetation in the proposed limestone project site

6.4.2 Wildlife resources

The limestone karst formations that are distributed throughout the hotspot (in some places as extensive belts and in other places as isolated outcrops) support highly distinctive ecosystems rich in endemic species (Clements et al. 2006). While the unsuitability of limestone karst for agriculture means that wholesale habitat conversion is generally less of a threat than it is to other forest types in the hotspot, tall forest on limestone is localized, often heavily harvested for firewood. Among threatened forest passerines, Gurney's pitta (*Hydrornis gurneyi*) is chiefly distributed in the evergreen forests of Tanintharyi Region. Limestone karst is particularly prone to hold species with very small geographic ranges,

such as *Cyrtodactylus* geckos (e.g., Grismer et al. 2018). Such species are susceptible to relatively localized habitat perturbation, from direct human activity or perhaps climate change.

Tanintharyi National Park is a proposed national park that was supposed to cover an area of 2,072 km² of mangrove and evergreen forests at an elevation from sea level to 1,490 m (4,890 ft). It was proposed in 2002. Wildlife species in this area include Asian elephant, sambar deer, Malayan tapir, Indian muntjac, and leopard.

Tanintharyi Nature Reserve was gazetted in 2005 for the maintenance of natural resources, covering 1,699.99 km². Most of the tropical rain forest is evergreen, interspersed with some grassland. The reserve provides habitat to Asian elephant (*Elephas maximus*) and Gurney's pitta (*Hydrornis gurneyi*).

1) Biodiversity Survey/ Methodology

In the study area, two major habitat types were observed namely (1) forest and (2) aquatic habitat. The biodiversity survey was carried out from 21st – 23rd December, 2021. The main study area was around the Paung-Ni Limestone Mining Project, which is located near the Nga-Wun Chaung Area, Tanintharyi Townships, Myeik District, Tanintharyi Region. Direct observation survey and face-to-face interview survey with local people (asking their experiences of the occurrence wildlife) were used as the study design. Surveys were made twice a day (during day and night). Birds and other animals were observed and recorded by using an 8x12 binoculars. All the observed animals were recorded in note writing or take a photograph or video with the geographic coordinates by using Garmin GPS maps 78s. The recorded animals were grouped as the invertebrates (butterflies) and the vertebrates (aquatic species (fishes and prawns), amphibians, reptiles, birds and mammals).

Birds were observed with binoculars and identified aided with field guide. The birds were watched from 6:00 am to 10:00 am in the morning and from 4:00 pm to 6:00 pm in the evening. Nocturnal birds were observed when it becomes dusk. Point count and opportunistic methods were used to census the species richness and point counting and transect count were used to get the relative measure of bird abundance. Birds were identified according to Smythies (2001), and Lekagul and Round (1991).

Identification of recorded species followed after Kinyon (2004) and Kunte (2005) for Butterflies, Talwar and Jhingram (1991) and Jayaram (2013) for fishes, Tung Aung (1975) and Zug (2003) for amphibians, Das (2010) for reptiles, Robson (2011) for birds and Francis (2008) for mammals.

2) Results of the study

A total of 108 species of wildlife fauna belonging to 96 genera of 61 families under 31 orders were recorded for the biodiversity survey. Among them, 12 species of butterfly, 20 aquatic species, 10 amphibian species, 11 reptilian species, 35 bird species and 20 species of mammals were identified. The recorded animals were reported by each table and graphs, together with their local names and also conservation status.

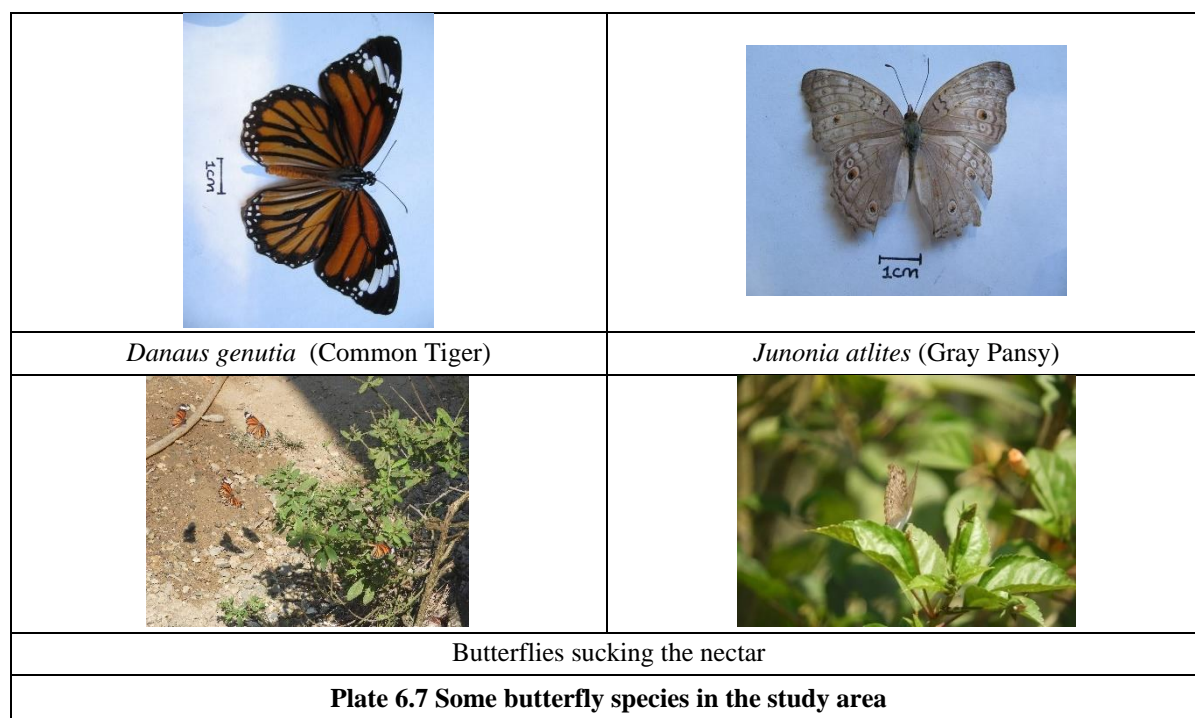
i) Butterfly

A total of 12 butterfly species belonging to nine genera under five families were recorded in the study area, representing families of Pieridae (4 species of 4 genera), Papilionidae (3 species of 2 genera), Danaidae (2 species of one genus) and Nymphilidae (2 species of one genus), and Satyridae (1 species of 1 genus) were found during the survey period of 3 days. All the recorded butterfly species were common species. The distribution of the butterflies is found to be random. According to the IUCN Red List (2018), only one butterfly species, *Danaus chrysippus* is listed as Least Concern (LC) (Table 6.13, and Plate 6.7).

Table 6.13 List of recorded butterfly species in the study area

Sr.	Class	Order	Family	Scientific name	Common name	IUCN
1	Insecta	Lepidoptera	Papilionidae	<i>Papilio memnon</i>	Great Mormon	-
2				<i>Papilio polytes</i>	Common Mormon	-
3				<i>Graphium agamemnon</i>	Tailed Jay	-
4			Pieridae	<i>Hebomoia glaucippe</i>	Great Orange Tip	-
5				<i>Catopsilia pomona</i>	Lemon Emigrant	-
6				<i>Leptosia nina</i>	Psyche	-
7				<i>Eurema hecabe</i>	Oriental Common Grass Yellow	-
8			Danaidae	<i>Danaus genutia</i>	Common Tiger	-
9				<i>Danaus chrysippus</i>	Plain Tiger	LC
10			Satyridae	<i>Mycalesis perseus</i>	Common Bushbrown	-
11			Nymphilidae	<i>Junonia atlites</i>	Gray Pansy	-
12				<i>Junonia lemonias</i>	Lemon Pansy	-

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)



ii) Aquatic species

Overall, 20 aquatic species were recorded in the study area, including 19 fish species belonging to 17 genera under 12 families of eight orders and only one river prawn species of the order Decapoda. The recorded fish families were Notopteridae, Gobiidae, Clariidae, Synbranchidae, Mestacembalidae, Anabantidae, Badidae, Latidae (1 species of 1 genus each), Bagridae (2 species of 2 genera), Siluridae (2

species of 2 genera), Channidae (2 species of 1 genus), Cyprinidae (5 species of 4 genera), and the river prawn family Palaemonidae (1 species of 1 genus). Of the 20 species, 17 aquatic species are classified as Least Concern (LC); two species are Near Threatened (NT); and one species is Vulnerable (VU) in the IUCN Red List ([Table 6.14](#), and [Plate 6.8](#)).

Table 6.14 List of recorded aquatic species in the study area

Sr. No.	Class	Order	Family	Scientific name	Common name	Local name	IUCN
1	Actinopterygii	Osteoglossiformes	Notopteridae	<i>Notopterus nopterus</i>	Bronze Featherback	Nga phe	LC
2		Cypriniformes	Cyprinidae	<i>Puntius chola</i>	Swamp Barb	Nga khone ma	LC
3				<i>Osteobrama cunma</i>	Rohtee	Nga byat	LC
4				<i>Osteobrama belangeri</i>	Manipur osteobrama	Nga phan oung	NT
5				<i>Cyclocheilichthys apogon</i>	Beardless Barb		LC
6				<i>Osteochilus vittatus</i>	Bonylip Barb		LC
7				Gobiiformes	Gobiidae	<i>Glossogobius giuris</i>	Tank Goby
8		Siluriformes	Bagridae	<i>Hemibagrus microphthalmus</i>	Irrawaddy Mystus	Nga aik	LC
9				<i>Mystus cavasius</i>	Gangetic Mystus	Nga zin yai phyu	LC
10			Siluridae	<i>Ompok bimaculatus</i>	Butter Catfish	Nga nu than	NT
11				<i>Wallago attu</i>	Wallago	Nga bat	VU
12			Clariidae	<i>Clarias batrachus</i>	Walking Catfish	Nga khu	LC
13		Synbranchiformes	Synbranchiidae	<i>Monopterus albus</i>	Asian Swamp Eel	Nga shint	LC
14			Mestacembalidae	<i>Mastacembelus armatus</i>	Zigzag Eel	Nga mwe nagar	LC
15		Anabantiformes	Anabantidae	<i>Anabas testudineus</i>	Climbing perch	Nga bye ma	LC
16			Badidae	<i>Badis ruber</i>	Burmese Badis	Nga thein net	LC
17		Perciformes	Channidae	<i>Channa striatus</i>	Striped Snakehead	Nga yant	LC
18				<i>Channa panaw</i>	Panaw Snakehead	Nga panaw	LC
19		Carangaria/misc	Latidae	<i>Lates calcarifer</i>	Asia Seabass	Kakadit	LC
20	Arthropoda	Decapoda	Palaemonidae	<i>Macrobrachium rosenbergii</i>	River Prawn	Pazun	LC

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)

	
<i>Notopterus notopterus</i>	<i>Hemibagrus microphthalmus</i>
	
<i>Badis ruber</i>	<i>Cyclocheilichthys apogon</i>
	
<i>Osteochilus vittatus</i>	<i>Clarias batrachus</i>
	
Local fish catch (22-12-2023)	A fishing boat in Taung Nge village
Plate 6.8 Some fish species in the study area	

iii) Reptiles and Amphibian species

A total of 21 species of Herpetofauna were observed, including 11 reptile species and 10 amphibian species in the study area. In the reptiles, 11 species belonging to 9 genera under 5 families of the order Squamata, and 10 species belonging to 10 genera under 6 families of the order Anura in the amphibia. Recorded reptile families were Agamidae (3 species of 2 genera), Scincidae (3 species of 2 genera), Colubridae (2 species of 2 genera), Gekkonidae (2 species of 2 genera) and Elapidae (1 species of 1 genus). Recorded amphibia families were Bufonidae (2 species of 2 genera), Dicroglossidae (3 species of 3 genera), Megophryidae (1 species of 1 genus), Microhylidae (2 species of 2 genera), Rhacophoridae (1 species of 1 genus), and Ranidae (1 species of 1 genus). In the Herpetofauna, *Limnonectes blythii* (Blyth's River Frog) is as the Near-Threatened (NT), most of the species are Least Concern (LC), and some species are not listed in the IUCN Red List ([Table 6.15](#) and [Table 6.16](#), and [Plate 6.9](#)).

Table 6.15 List of recorded reptile species in the study area

Sr. No.	Class	Order	Family	Scientific name	Common name	Local name	IUCN
1	Reptilia	Squamata	Agamidae	<i>Calotes emma</i>	Forest Garden Lizard	Poke thin nyo	-
2				<i>Draco blanfordii</i>	Blandford's Flying Lizard	Poke thin pyan	LC
3				<i>Draco taeniopterus</i>	Barred Gliding Lizard	Poke thin pyan	LC
4			Gekkonidae	<i>Gekko gekko</i>	Tokay Gecko	Ein tauk tai	LC
5				<i>Hemidactylus garnotii</i>	Indo-Pacific Gecko	Ein myaung	-
6			Scincidae	<i>Eutropis macularia</i>	Grass Sun Skink	Kin leik shaw	-
7				<i>Eutropis multifasciata</i>	Many-lined Sun Skink	Kin leik shaw	LC
8				<i>Sphenomorphus maculatus</i>	Spotted Forest Skink	Kin leik shaw	-
9			Colubridae	<i>Boiga dendrophilia</i>	Gold-ringed Cat Snake	Kyaung mway	-
10				<i>Ptyas fusca</i>	White-bellied Rat Snake	Lin mway	LC
11			Elapidae	<i>Naja kaouthia</i>	Monocled Cobra	Mway hauk	LC

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)



Gekko gekko



Eutropis multifasciata

Plate 6.9 Some reptile species in the study area

Table 6.16 List of recorded amphibian species in the study area

Sr. No.	Class	Order	Family	Scientific name	Common name	Local name	IUCN
1	Amphibia	Anura	Bufonidae	<i>Duttaphrynus melanostictus</i>	Asian Common Toad	Phar-byoke	LC
2				<i>Phrynooidis aspera</i>	River Toad	Phar-byoke-thae	LC
3			Dicroglossidae	<i>Fejervarya limnocharis</i>	Alpine Cricket Frog	Kyaw-san-kay	LC
4				<i>Limnonectes blythii</i>	Blyth's River Frog	Kyauk phar	NT

5			<i>Occidozyga martensii</i>	Malayan Puddle frog	Thei-phar	LC
6		Megophryidae	<i>Leptobrachium smithi</i>	Southern Bicolor-eyed Toad frog	Dike-phar	LC
7		Microhylidae	<i>Kalophrynus arnya</i>	Northern Burmese Sticky Frog	Phar-say	-
8			<i>Microhyla heymonsi</i>	Black-sided Narrow-mouth Frog	Phar-la-tat	LC
9		Rhacophoridae	<i>Polypedates leucomystax</i>	Common Tree Frog	Phar-pyan	LC
10		Ranidae	<i>Odorana hosii</i>	Green Odor frog	Phar-sane	LC

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)

iv) Birds

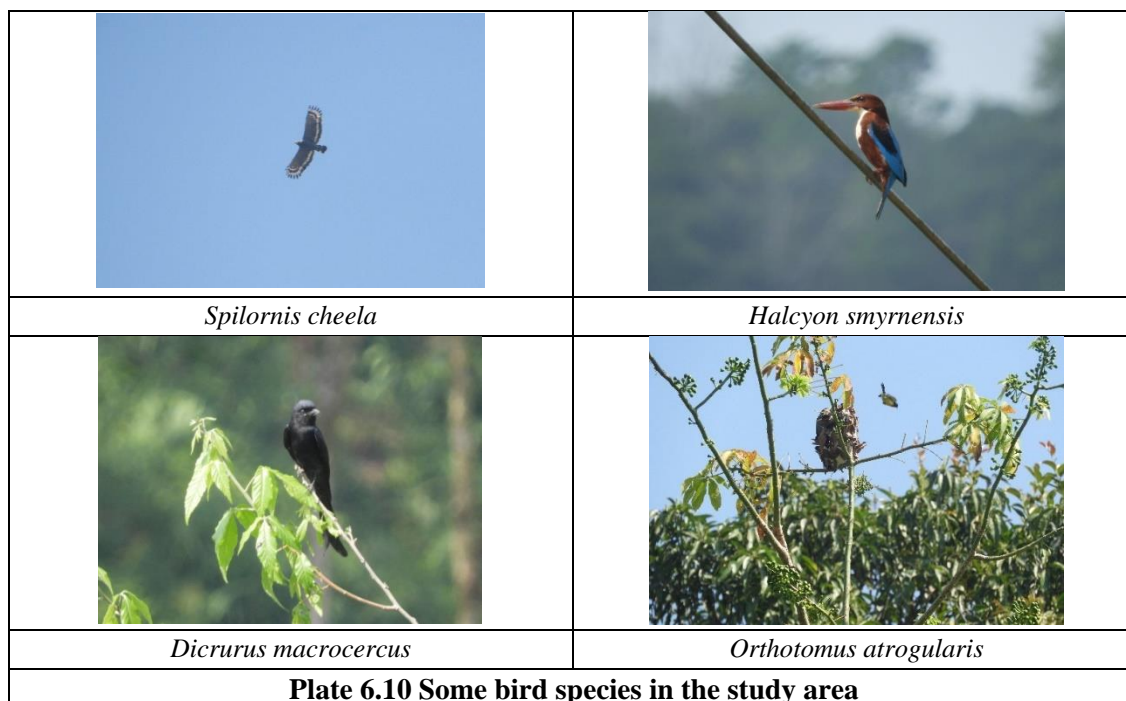
A total of 35 bird species belonging to 31 genera under 19 families of the 12 orders were recorded in the study area ([Table 6.17](#)). Recorded bird families were Ardeidae (2 species of 2 genera), Phalacrocoracidae (1 species of 1 genus), Accipitridae (2 species of 2 genera), Columbidae (3 species of 3 genera), Psittaculidae (1 species of 1 genus), Cuculidae (2 species of 2 genera), Strigidae (1 species of 1 genus), Apodidae (1 species of 1 genus), Coraciidae (1 species of 1 genus), Alcedinidae (2 species of 2 genera), Ramphastidae (1 species of 1 genus), Picidae (1 species of 1 genus), Bucerotidae (6 species of 6 genera), Pittidae (2 species of 1 genus), Dicruridae (3 species of 1 genus), Sturnidae (3 species of 2 genera), Muscicapidae (1 species of 1 genus), Cisticolidae (1 species of 1 genus), and Monarchidae (1 species of 1 genus). In the recorded bird species, *Rhinoplax vigil* (Helmeted Hornbill) and *Pitta gurneyi* (Gurney's Pitta) are listed as Critically Endangered (CR), *Berenicornis comatus* (White-crowned Hornbill) is as Endangered (EN), *Psittacula eupatria*, *Ptilolaemus tickelli* are Near Threatened (NT), *Buceros bicornis* and *Aceros subruficollis* are Vulnerable (VU), and the rest 28 bird species are listed as Least Concern (LC) in the IUCN Red List. [Plate 6.10](#) shows some bird species found in the study area.

Table 6.17 List of recorded bird species in the study area

Sr. No.	Class	Order	Family	Scientific name	Common name	Local name	IUC N
1	Aves	Pelecaniformes	Ardeidae	<i>Ardeola bacchus</i>	Chinese Pond Heron	Byine Out	LC
2				<i>Egretta garzetta</i>	Little egret	Wai thar li Byine	LC
3		Suliformes	Phalacrocoracidae	<i>Microcarbo niger</i>	Little Cormorant	Tin Kyee	LC
4		Accipitriformes	Accipitridae	<i>Spilornis cheela</i>	Crested Serpent-Eagle	Lin Yone	LC
5				<i>Pernis ptilorhynchus</i>	Oriental Honey Buzzard	Sawn	LC
6		Columbiformes	Columbidae	<i>Columba livia</i>	Rock Pigeon	Kho	LC
7				<i>Streptopelia chinensis</i>	Spotted-Dove	Gyo Le Pyauk	LC
8				<i>Chalcophaps indica</i>	Emerald Dove	Gyo Sane	LC
9		Psittaciformes	Psittaculidae	<i>Psittacula eupatria</i>	Alexandrine Parakeet	Kyat tu yway	NT
10		Cuculiformes	Cuculidae	<i>Eudynamis scolopaceus</i>	Asian Koel	Oakau	LC
11				<i>Centropus sinensis</i>	Greater Coucal	Boat Hnget	LC
12		Strigiformes	Strigidae	<i>Glaucidium brodiei</i>	Collared Owlet	Zee kwet lay	LC
13		Apodiformes	Apodidae	<i>Aerodramus fuciphagus</i>	Edible Nest Swiftet	Zee wa zoe	LC
14		Coraciiformes	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	Hnget Khar	LC
15			Alcedinidae	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	Bein-Nyin	LC
16				<i>Alcedo atthis</i>	Common Kingfisher	Bein-Nyin	LC
17		Piciformes	Ramphastidae	<i>Megalaima lineata</i>	Lineated Barbet	Pho khaung	LC
18			Picidae	<i>Micropternus brachyurus</i>	Rufous woodpecker	Thit tauk ni nyo	LC
19		Bucerotiformes	Bucerotidae	<i>Ptilolaemus tickelli</i>	Southern Brown Hornbill	Auk chin nyo	NT
20				<i>Anthracoceros albirostris</i>	Oriental Pied-Hornbill	Auk chin	LC
21				<i>Rhinoplax vigil</i>	Helmeted Hornbill	Auk chin myee shay	CR
22				<i>Buceros bicornis</i>	Great Hornbill	Aung Laung	VU
23				<i>Aceros subruficollis</i>	Plain-pouched Hornbill	Gau yin	VU
24				<i>Berenicornis comatus</i>	White-crowned Hornbill	Auk chin gaung phyu	EN

25	Passeriformes	Pittidae	<i>Pitta gurneyi</i>	Gurney's Pitta	Tee too yin mal	CR
26			<i>Pitta moluccensis</i>	Blue-winged Pitta	Taung ngone	LC
27		Dicruridae	<i>Dicrurus macrocercus</i>	Black-Drongo	Hnget-Taw	LC
28			<i>Dicrurus leucophaeus</i>	Ashy Drongo	Lin Mee Zew	LC
29			<i>Dicrurus paradiseus</i>	Greater Racket-tailed drongo	Hnget Taw Myee Shay	LC
30		Sturnidae	<i>Gracula religiosa</i>	Common Hill Myna	Thar li kar	LC
31			<i>Acridotheres fuscus</i>	Jungle Myna	Taw Zayet	LC
32			<i>Acridotheres tristis</i>	Common Myna	Zayet	LC
33		Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie-Robin	Tha-beik-lwe	LC
34		Cisticolidae	<i>Orthotomus atrogularis</i>	Dark-Necked Tailorbird	Hnen Pye Sote	LC
35		Monarchidae	<i>Terpsiphone paradisi</i>	Asian Paradise-Flycatcher	Sar Phyu	LC

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)



v) **Mammals**

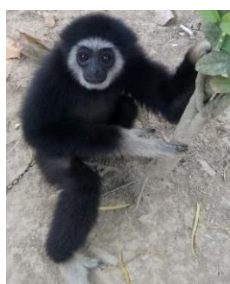
A total of 20 mammal species of 18 genera belonging to 13 families under 7 orders were recorded in the study area. Recorded mammalian families were Manidae (2 species of 1 genus), Bovidae (2 species of 2 genera), Cervidae (2 species of 2 genera), Hystricidae (1 species of 1 genus), Elephantidae (1 species of 1 genus), Lorisidae (1 species of 1 genus), Cercopithecidae (3 species of 2 genera), Hylobatidae (1 species of 1 genus), Viverridae (2 species of 2 genera), Ursidae (2 species of 2 genera), Felidae (1 species of 1 genus), Pteropodidae (1 species of 1 genus), and Rhinolophidae (1 species of 1 genus). In the recorded mammals, *Manis javanicus*, *Manis pentadactyla*, *Elephas maximus*, *Hylobates lar*, and *Panthera tigris* are listed as the Endangered (EN), *Capricornis sumatraensis*, *Rusa unicolor*, *Hycticebus bengalensis*, *Macaca arctoides*, *Macaca leonina*, *Arctictis binturong*, *Helarctos malayanus*, and *Urus thibetanus* are as the Vulnerable (VU), *Trachypithecus obscurus* is the Near Threatened (NT), *Muntiacus muntjak*, *Athercurus macrourus*, *Paradoxurus hermaphrodites*, *Eonycteris spelaea* and *Rhinolophus affinis* are the Least Concern (LC) in the IUCN Red List ([Table 6.18](#) and [Plate 6.11](#)).

Table 6.18 List of recorded mammal species in the study area

Sr. No.	Class	Order	Family	Scientific name	Common name	Local name	IUCN/CITES
1	Mammalia	Pholidota	Manidae	<i>Manis javanicus</i>	Malayan Pangolin	Thin-kway-chut (Yellow)	EN
2				<i>Manis pentadactyla</i>	Chinese Pangolin	Thin-kway-chut (Black)	EN
3		Artiodactyla	Bovidae	<i>Bos javanicus</i>	Banteng	Saing	-
4				<i>Capricornis sumatraensis</i>	Southern Serow	Taung Sate	VU
5			Cervidae	<i>Muntiacus muntjak</i>	Red muntjac	Chay	LC
6				<i>Rusa unicolor</i>	Sambar	Sat	VU
7		Rodentia	Hystricidae	<i>Athercurus macrourus</i>	Asiatic Brush-tailed Porcupine	Pyu Mee Phwar	LC
8		Proboscidea	Elephantidae	<i>Elephas maximus</i>	Asian Elephant	Sin	EN
9		Primates	Lorisidae	<i>Hycticebus bengalensis</i>	Asian Slow Loris	Myauk Maungma	VU
10			Cercopithecidae	<i>Macaca arctoides</i>	Stumped-tailed Macaque	Myauk mee toe	VU
11				<i>Macaca leonina</i>	Northern Pig-tailed Macaque	Myauk-pa-di	VU
12				<i>Trachypithecus obscurus</i>	Dusky Langur	Myauk-myte-kwin-phyu	NT
13				Hylobatidae	<i>Hylobates lar</i>	White-handed Gibbon	Myauk-lwe-gyaw-let-phyu

14	Carnivora	Viverridae	<i>Paradoxurus hermaphrodites</i>	Common Palm Civet	Kyaung Wonpite	LC
15			<i>Arctictis binturong</i>	Binturong	Wun-kyauung	VU
16		Ursidae	<i>Helarctos malayanus</i>	Sun Bear	Khway-wun	VU
17			<i>Urus thibetanus</i>	Asiatic Black Bear	Wet-wun gyi	VU
18		Felidae	<i>Panthera tigris</i>	Tiger	Kyar	EN
19	Chiroptera	Pteropodidae	<i>Eonycteris spelaea</i>	Cave Nectar Bat / Lesser Dawn Bat	Lin Swel	LC
20		Rhinolophidae	<i>Rhinolophus affinis</i>	Intermediate horseshoe Bat	Lin Nott	LC

Note: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), NT = Near Threatened, Least Concern (LC)



Hylobates lar



Eonycteris spelaea

Plate 6.11 Some mammal species in the study area

6.4.3 Occurrence of recorded animals in the study area

The recorded animals which include Butterfly, Aquatic species, Amphibia, Reptile, Bird and Mammal were all together 108 species under 61 Families and 31 Order as shown in the following [Table 6.19](#) and [Fig. 6.18](#). It includes 12 spp. of butterfly and 20 spp. of Aquatic species (Fish & Prawn). The spp. number of Reptile, Bird and Mammal were observed as 11, 35 and 20, respectively.

Table 6.19 Occurrence of recorded animals in the study area

Recorded animals		Order	Family	Genus	Species
Invertebrate	Butterfly	1	5	9	12
Vertebrate	Aquatic species (Fish & Prawn)	9	13	18	20
	Amphibia	1	6	10	10
	Reptile	1	5	9	11
	Bird	12	19	31	35
	Mammal	7	13	19	20
Total		31	61	95	108

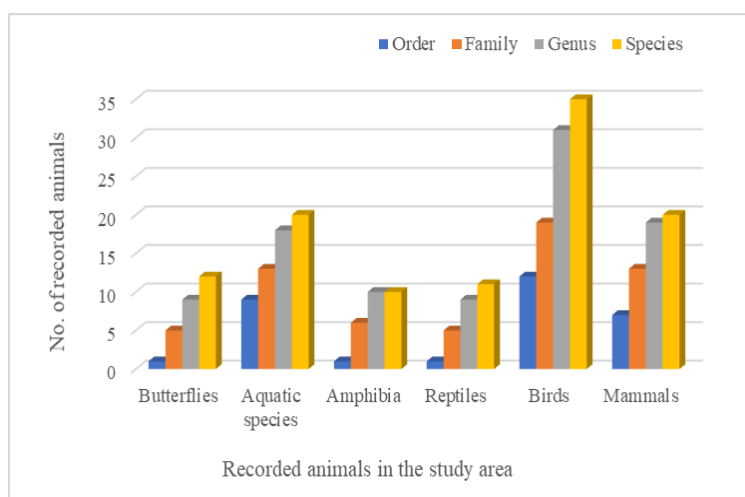


Figure 6.18
Occurrence of recorded animals in the study area

6.4.4 Conservation status of recorded animals in the study area

Based on the recorded wildlife species, according to the IUCN Red List (2018), only one butterfly species, *Danaus chrysippus* is listed as Least Concern (LC). Seventeen aquatic species are classified as Least Concern (LC); two species are Near Threatened (NT); and one species is Vulnerable (VU). In the Herpetofauna, *Limnonectes blythii* (Blyth's River Frog) is as the Near-Threatened (NT), most of the species are Least Concern (LC), and some species are not listed in the IUCN Red List. In the recorded bird species, *Rhinoplax vigil* (Helmeted Hornbill) and *Pitta gurneyi* (Gurney's Pitta) are listed as Critically Endangered (CR), *Berenicornis comatus* (White-crowned Hornbill) is as Endangered (EN), and 28 bird species are listed as Least Concern (LC).

In summary, as shown in (Table 6.20), it was noted that the two bird species (Helmeted Hornbill, Gurney's Pitta) recorded in the study area were critically endangered (CR); and one bird species and five mammals were endangered species. It was also observed that one aquatic species, two bird and 8 mammals were vulnerable (VN). The total six species of animals were Near Threatened (NT) and total 5 species were found to be the Least Concern (LC) according to the IUCN.

Table 6.20 Conservation status of recorded animals in the study area

Recorded animals		CR	EN	VU	NT	LC
Invertebrate	Butterfly	-	-	-	-	1
Vertebrate	Aquatic species (Fish & Prawn)	-	-	1	2	17
	Amphibia	-	-	-	1	8
	Reptile	-	-	-	-	6
	Bird	2	1	2	2	28
	Mammal	-	5	8	1	5
Total		2	6	11	6	65
CR = Critically Endangered; EN = Endangered; VU = Vulnerable; NT = Near Threatened; LC = Least Concern						

6.4.5 Summary of Biodiversity

In the proposed project site, Tanintharyi limestone tropical evergreen forest were generally observed. Primary tree species are *Dipterocarps* that form a closed canopy. The most prevalent forest types are upland and lowland evergreen forest but almost half of the areas were classified as degraded. A total of 288 plant species were recorded in the study area; stem density of $\geq 10\text{cm}$ was 659 stem ha^{-1} and basal area was $39.94 \text{ m}^2/\text{ha}$ in the study area. Among the 10 sample plots studies, 116 tree species were recorded, 35 species were found only one individual in study area, as the unique species of the project site. These findings indicate that the forest of study area is floristically heterogeneous. The plant species which are under IUCN red list of threaten species will be paid primary conservation status and proper mitigation measures will be undertaken to protect these species. All the species are protected by the Forest Law (1994).

The various habitats found in this study area provide the favorable conditions for the diversity of wildlife species. The major impacts of the proposed project are expected to occur during mine development and mine operation stages. The adverse impacts from land clearing may occur on threatened animal and plant species of the study area and therefore, the mitigation measures will be applied as much as possible.

Some bird species and mammals were endangered species according to the IUCN. The mitigation measure and management should focus on these threatened species. For example, the White-handed Gibbons which is Endangered (EN) according to the IUCN Red List (2013). It was noted that the hunting of these mammals is banned by the local authority, and people have to adhere to this ban since the authority may use force when a hunter is discovered.

Potential negative impacts on wildlife animals are normally caused by habitat fragmentation, destruction, degradation and habitat loss. The project proponent will apply the updated machineries and best methods to produce fewer negative impacts as much as possible. Mitigation measures will be considered in two parts, namely "Potential design measures" and "Best practices or management practices for mitigation measures". It minimizes the amount of land disturbance. During the project implementation, the all-possible mitigation measures to reduce the impact on ecology and biodiversity will be considered in priority.

The negative impacts on aquatic animals and fish will be serious, if waste disposal practices are not properly done. To control the sedimentation and soil erosion entering into the streams (*Nga Wun* Stream), the proper waste management and sedimentation ponds and ditches around the limestone mine site will be installed. The mitigation measures described in the Environmental Management plan (EMP) will be strictly followed by the project proponents – mine site engineers and workers as well. Moreover, the Environmental Monitoring Plan (EMoP) will be implemented regularly and the analysis of water quality, and air quality as well, will be done as necessary, and the project proponent will follow the reporting process to the designated ministries.

6.5 Socio-economic Components

6.5.1 Description of Administrative Components

Tanintharyi Region lies in the southern part of panhandle of Myanmar and it is composed of (10) townships. Taninthayi Township is situated in Myeik District, Tanintharyi Region of south-western Myanmar. Tanintharyi Town is located on the Great Tenasserim/ Tanintharyi River which eventually enters the sea at Myeik. The Township is situated between latitudes 10°N and 14°N and longitudes 90°E and 100°E . It is composed of 2 towns including 4 Wards and 21 village tracts. It has an area of 11344.5 sq. km (4380.15 sq miles) with an elongated shape. Its boundaries are Thailand in the east, Dawei Township in the north, Bokpyin Township in the south and Palaw, Myeik and Kyunsu Townships in the west (*Fig. 6.19* and *Fig. 6.20*).

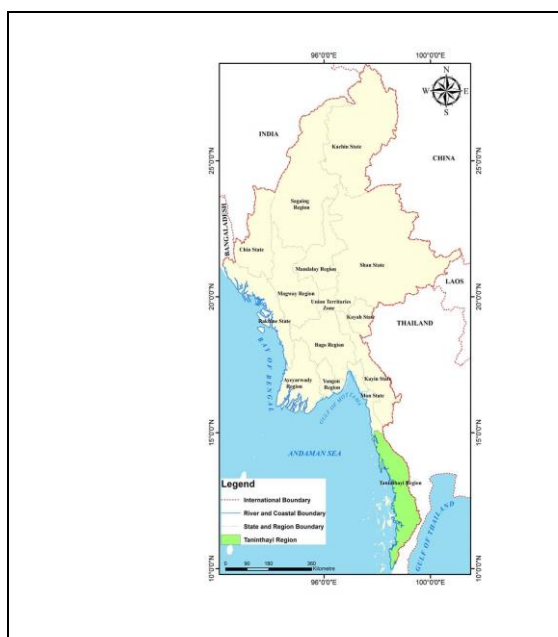


Fig. 6.19 Tanintharyi Region in Myanmar
Agriculture Atlas: 2002

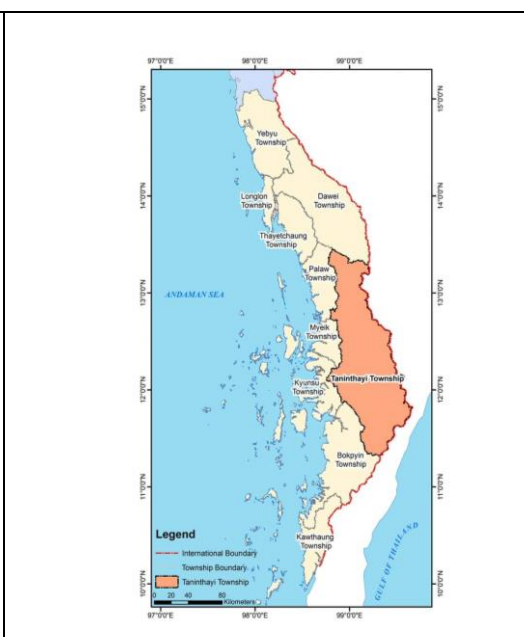


Fig. 6.20 Tanintharyi Township in Tanintharyi Region; Source: Based on UTM toposheets (1: 50000)

6.5.2 Tanintharyi Township Profile

(a) Demography of Tanintharyi Township

Based on the Myanmar Census, 2014, the total population of Tanintharyi Township was 106,853 persons. There are two wards and nineteen Village Tracts. In Tanintharyi Township and there are fewer females than males with 105 males per 100 females. The majority of the people in the Township live in rural areas with only (5.2%) living in urban areas. The population density of Township is 9 persons per square kilometer. 5.2 persons are living in each household in Tanintharyi Township. This is more than the Union average. According to the GAD, 2019 report, the total population was 101,842 of which Tanintharyi Township: 97,809) and Maw Taung Sub-Township: 4033). The demographic profile of the Tanintharyi Township was shown in [Table 6.21](#).

Table 6.21 Demography of Tanintharyi Township

Sr	Ward/Village Tract	No. of households	Population		
			Total	Males	Females
	Total	19,929	106,853	54,817	52,036
	Wards	1,126	5,514	2,746	2,768
1	Chaung Gyi(W)	651	3,199	1,575	1,624
2	Chaung Nge(W)	475	2,315	1,171	1,144
	Village Tract	18,803	101,339	52,071	49,268
1	Sin Chay Hpone(VT)	1,062	5,293	2,733	2,560
2	Pa Wa(VT)	1,291	7,113	3,589	3,524
3	Maw Tone (East)(VT)	759	3,960	2,041	1,919
4	Maw Tone (West)(VT)	402	2,198	1,077	1,121
5	Lel Thit(VT)	590	3,290	1,677	1,613
6	Ta Moke Chone(VT)	739	3,770	2,049	1,721
7	Ban La Mut(VT)	461	2,402	1,225	1,177

Sr	Ward/Village Tract	No. of households	Population		
			Total	Males	Females
8	Thein Khun(VT)	3,093	15,648	8,589	7,059
9	Kyauk Ta Lone(VT)	149	796	434	362
10	Thar Ra Hpon(VT)	380	1,996	1,022	974
11	Thein Daw(VT)	676	3,662	1,839	1,823
12	Ban Law(VT)	871	4,563	2,303	2,260
13	Ta Ku(VT)	2,038	11,052	5,464	5,588
14	Nyaung Pin Kwin(VT)	2,102	11,046	5,545	5,501
15	Tha Kyet(VT)	1,168	6,418	3,178	3,240
16	Kawt Ma Pyin(VT)	373	2,065	1,051	1,014
17	Thin Baw U(VT)	671	4,923	2,639	2,284
18	Za Wea (VT)	626	3,307	1,758	1,549
19	Thar Ra Bwin (VT)	1,352	7,837	3,858	3,979

Source: Myanmar 2014 Census

Note: in the “Myanmar PC code Release 9.3 Jan., 2021 countrywide” Tanintharyi Township has 21 Village Tracts; however, these days A Hmat Koe (No.9) *Ward* and Chaung La Mu Village Tract are added to the Tanintharyi Township. The villages under the Chaung La Mu Village Tract are five, namely Aye Mon Thar, Aye Thar Yar, Chaung La Mu, Chaung Nauk Pyan and Tar Pa Lat.

(b) Ethnicity of Tanintharyi Township

The ethnicity of Tanintharyi Township, described in table showed that out of the total population of 126,186 people, Bamar were the highest number 109,022 (86.4%), followed by Kayin:14002 people (11.1%). The others were in a few numbers, such as Mon and Shan people with number of 1,023 and 2,022, respectively. The ethnicity of Tanintharyi Township was shown in [Table 6.22](#).

Table 6.22 Ethnicity of Tanintharyi Township

Sr.	Ethnicity	Population	Total population of the Township	% of the Township population
1	Kayin	14002	126,186	11.10
2	Chin	2	-	0.001
3	Mom	1023	-	0.81
4	Bamar	109,022	-	86.40
5	Rakhine	90	-	0.07
6	Shan	2022	-	1.60
7	Chinese	2	-	0.001
8	Others	24	-	0.02

Source: Township Profile Tanintharyi, GAD (2019): mimu.org

(c) Religion of Tanintharyi Township

Regarding the religion of the people living in Tanintharyi Township, the Buddhists are the largest number, 106,170 (84% of the total township population). The others are in smaller amount such as Christians and Islams were 12890 people (10.2%) and 6944 (0.6%), respectively.

6.5.3 Demography of Project Area

The proposed limestone quarry site is situated in Tanintharyi Township while the project office is situated at Khae Chaung village (Ma Noe Yone Village Tract) in Bokpyin Township. Accordingly, the five villages which were situated nearest to the project site were selected as survey sample villages. They were – Chaung Nauk Pyan, Chaung La Mu,

Ta Pa Lat in Tanintharyi Township and Khae Chaung and Ma Noe Yone villages in Bokpyin Township. The two Village Tracts Profiles, Ma Noe Yone Village Tract (Bokpyin Township) and Chaung La Mu Village Tract (Tanintharyi Township) were presented in [Table 6.23](#).

Table 6.23 Basic information of Village Tracts in surrounding areas of project site

Sr.	Item	Description (Name of Village Tracts)	
		Ma Noe Yone Village Tract (Bokpyin Township)	Chaung La Mu Village Tract (Tanintharyi Township)
1	Households number	1018	1089
2	Male	2325	2629
3	Female	2185	2434
4	Total population	4510	5063
5	No. of School	6	5
6	Type of Housing	50% one story	50% one story
7	Type of Toilet	47%Fly proof/improved pit Latrine	30% Fly proof /improved pit latrine
8	No. of Clinic	0	1
9	Ethnicity	Kayin and Bamar	98% Bamar
10	Government staff	-	33
11	Pagodas	-	1
12	Community Hall	-	1
13	Libraries	-	1
14	Monasteries	-	5
15	Location	Longitude-99.06, Latitude-11.6312	Longitude-99.11, Latitude-11.858

Source: GAD village Tracts offices (Tanintharyi and Bokpyin Township). 2021 Dec.

Under the Scoping Study stage, a pilot survey for the social economy was done through focus group discussion (FGD) and key informant interviews (KII). They were undertaken with the participation of village heads, Village Tract Administers, Hundred –household heads and elders. The summary findings were described in the Scoping Report.

(a) Demography of study villages

The population of study villages and their Village Tracts were shown in the following [Table 6.24](#). The total population of both Ma Noe Yone Village Tract and Chaung La Mu VT were similar, 4510 and 5063 people, respectively. Aye Thar Yar Village had the highest number of people (1165) followed by Ma Noe Yone Village (563) and Khae Chaung Village (534).

Table 6.24 Population by Village Tracts and study villages

Village Tract		Houses	Household	Male	Female	Total
1	Ma Noe Yone Village Tract	879	1018	2325	2185	4510
2	Chaung La Mu VT	1015	1089	2629	2434	5063
Study Villages						
1	Khae Chaung Village	112	120	281	253	534
2	Ma Noe Yone Village	105	114	269	294	563
3	Chaung Nauk Pyan Village	44	45	100	91	191
4	Tar Pa Lat Village	114	120	253	235	488
5	Aye Thar Yar Village	238	253	594	571	1165

Source: Village Tract GAD, 2019

(b) Ethnicity and Religion by Village Tract

Regarding the ethnicity of village people Bamar was highest number followed by Kayin people in both Village Tracts. In Ma Noe Yone VT, Buddhists are higher number of 2,562 people, followed by Christians (1,945). However, in Chaung La Mu VT, the religions of all residents (5063) were Buddhists (*Table 6.25*).

Table 6.25 Ethnicity and Religion by Village Tract

Ward/Village Tract	Ethnicity				Religion			Total Population
	Kayin	Bamar	Mon	Others	Buddhist	Christian	Other	
Ma Noe Yone	1939	2557	5	9	2562	1945	3	4510
Chaung La Mu	57	4031	966	-	5063	-	-	5063

Source: Village Tract GAD, 2019

6.5.4 Transportation

In the Tanintharyi Town, there is no air and railway transportation while the road and water transports are available. There is one port at Tanintharyi Town and it is 45 miles away from Myeik. Road transportation access is easily available after the Myeik – Kawthaung Highway was established around 2016. There are express public buses are in operation. Tanintharyi is 45 miles and 95 miles far from Myeik and Bokepyin, respectively (Source: GAD, 2016).

6.5.5 Health sector in Tanintharyi Township

Health facilities in Tanintharyi Township in 2019 were recorded as one “Township General Hospital” and two “Station Hospitals”. There are four “Rural Health Center” (RHC) under which 22 numbers of “Sub-RHC” are operated. The general information was shown in the following *Table 6.26*.

Table 6.26 Health facilities in Tanintharyi Township

Sr.	Health facility	No. of bed	Location
1	Township General Hospital	50 beds	Tanintharyi
1	Station Hospital	16 beds	Ta Ku
2	Station Hospital	16 beds	Maw Taung
		No. of Sub- RHC	Location
1	Rural Health Center	5 Sub-RHC	Ta Ku
2	Rural Health Center	5 Sub-RHC	Thein Daw
3	Rural Health Center	5 Sub-RHC	Maw Tone East
4	Rural Health Center	7 Sub-RHC	Nyaung Pin Kwin

Source: GAD Tanintharyi Township, 2019 (mimu.org)

6.5.6 Most common disease in Tanintharyi Township

Among the five most common diseases, the most affected cases in Tanintharyi Township in 2015 and 2019 were Diarrhea, Dysentery and Malaria in descending order. It was observed that the Malaria cases declined in 2019 than in 2015 significantly (*Table 6.27*). The reason was noted to be strenuous efforts of Malaria Campaign by the government and the NGOs. The activities included provision of long-lasting insecticide-treated mosquito nets and vital community-based health education and etc.

Table 6.27 Most common disease in Tanintharyi Township in 2019

No.	Disease	Affected cases	
		2015	2019
1	Malaria	545	123
2	Diarrhea	1917	1195
3	Tuberculosis /T. B	146	122
4	Dysentery	673	321
5	Hepatitis	16	-

Source: GAD Tanintharyi Township, 2019

Regarding the major health index, GAD report 2019 documented as follows. Total number of pregnant women was 2720 while that of the baby was 2437. Birth rate of 1000 population was 21, with the maternal mortality rate of 0.8, mortality rate of child under age 5 was 7.7. The abortion rate was recorded as 40 in 1000 population.

6.5.7 Land use and agriculture

The project site is within the hilly region with very few open land areas. The dominant land use is the secondary forest type, thin forest cover of tropical evergreen forest. To the east of the *Nga Wun Chaung*, the land is hillier and agricultural production is through plantations of oil palm and rubber trees. There is no significant industrial use of the land inside the AOI of the project. Residential areas are limited to the area along the Meik – Kawthaung Highway and scattered agricultural land such as paddy fields and orchards of fruit trees, being arable, mainly at a subsistence level. In most villages, there are limited community facilities such as schools, health centers and pagoda and stupa.

The land use in Tanintharyi Township shows that the total crop sown areas were 120,329 acres of which the paddy land (*Le Land*) were 32,098 acres while 434 acres of other crops are grown in *Ya Land*. There are a vast area of Virgin land/ Myay- yaing (1,170,124 acres) and *Taw -yaing / unclassified forest* (879,213 acres) (*Table 6.28*). The local people also grow some orchard plantation, such as betel nuts and banana in Taungya lands but most Taungya lands were not officially registered.

Table 6.28 Land use in Tanintharyi Township, Tanintharyi Region

Sr.	Land class	Area (acre)
1	Cultivated area	
	(a) Net sown area	120,329
	<i>Le</i> Land	32,098
	<i>Ya</i> Land	434
	<i>Kaing /Kyun</i> (Alluvial soil)	87696
	Orchard	101
	<i>Taung-ya</i> land	-
	(b) Fallow Land	104
2	Virgin land/ Myay- yaing	1,170,124
3	Taw -yaing (unclassified forest)	879,213
4	Reserved and non-reserved forest	8,428
5	Urban, rural and others	625,098
	Total	2,803,296

Source: Land Use Division, DOA, Tanintharyi Township, 2021

The subsistence agriculture, both permanent and shifting *Taungya*, is the primary livelihood in the rural Tanintharyi Region. The commercial agriculture has been seen as the development of the vast areas of rubber and palm oil plantations since late 1990s. Some plantations often include their own palm oil processing plants. Mining has also emerged as a significant industry in resource-rich Tanintharyi Region, supplying up to two-thirds of Myanmar's tin and tungsten.

The plantation of the two industrial crops, oil palm and rubber in Tanintharyi Township was 62,639 acres and 25,435 acres, respectively. The harvest areas of oil palm will be increased while the rubber harvest will remain the same until 2026-27. Based on the data of DOA, the sown areas of these plantations will not be increased significantly. The reason was that the producers / companies do not able to expand their plantation primarily because of the land scarcity, high investment and unattractive outcomes of the business (Source: DOA, 2021).

6.5.8 Cultural Components

As stated in the project description and location, the proposed project does not affect any major residential areas, there is no settlements and orchard farms in the AOI of the project. Within the AOI, there are neither local shrines (Pagoda and Stupa) nor monasteries. There is no cultural or historic site within the project study area and surrounding of the limestone quarry site. The nearest villages, namely Khae Chaung and Ma Noe Yone villages are situated 27 km away from the proposed quarry site. As the religious structures, there are one or two monasteries and pagodas or a church in the study villages.

6.5.9 Visual Components

Major visual components of the surrounding of project area consist of hills, rivers, streams, forest trees. Several villages are situated along the Myeik – Kawthaung Highway, plantations of oil palm and rubber, beetle nut and banana are seen near the villages. There are some rice fields but the vacant marginal land, and natural vegetation is largely seen.

6.5.10 Socioeconomic baseline survey for the villages in the proposed project

1) Methodology

Socio-economic factors are financial viability and social standing and livelihood components. The social survey team, by using a questionnaire, collected the data on health status, income, environment, and education as a baseline data before the proposed project starts. The Social Impact Assessment (SIA) will provide a baseline description

of the study area, specifically focusing on the communities living and working close to the proposed development project site. SIA for the proposed project was conducted by the following procedures.

Step I: Pilot Social Survey

The pilot survey was done for the determination of SIA study area and the study area was considered after the discussions with key informers such as members of 24hour Co., Ltd and staff of General Administrative Department (GAD) in Myeik and Tanintharyi Township. Google Map and census were also used for the SIA study area during the pilot survey.

Step 2: Baseline Socioeconomic Data Collection

The SIA team employed both quantitative and qualitative approaches such as primary data collection by household survey (including focus group discussion, interviews, and field survey) and secondary data from Census and various government offices of the proposed project area. A household sample survey was conducted to evaluate the primary socioeconomic conditions of the project area and to understand the mood, perceptions and extent of preparedness of the people towards the proposed project.

Baseline surveys were undertaken by a social survey team of GGG Co., Ltd; which was formed with researchers from social-economic, research experiences in the field of social impact assessment. The survey questionnaires were designed to collect information as to the following household characteristics: household composition (age, gender, educational status and types of Housing); occupations; ownership of agricultural fields and livestock; water consumption and energy sources; other economic activities; income and etc.

The secondary data were collected from various sources of related Township and District Government Departments (such as Department of Agriculture: DOA; Forest Department: FD, Myeik University, etc. and the 2014 census of Myanmar.

2) The Socio-economic profiles of the study area

Baseline surveys were undertaken during 21 – 23, December 2021; it was derived from engagement with village leaders, farmers and villagers of interest and a survey of 58 households from five villages which was situated nearest to the Project sites. They are Ta Pa Lat village and Chaung Nauk Pyan (Chaung Nauk Pyan Village Tract) and Aye Thar Yar village (Chaung La Mu Village Tract) in Tanintharyi Township, and Khe Chaung village and Ma Noe Yone Village (in Ma Noe Yone Village Tract) in Bokpyin Township. The map of the study villages was described in *Fig. 6.1* EIA Study Area. The *Table 6.5.3* and *6.5.4* show some basic information of study villages and Ma Noe Yone Village Tract and Chaung La Mu Village Tract where these study villages were situated.

3) Socio-economic Characteristics

Socio-economic infrastructure services are basic services and act as support for socio-economic development. Therefore, infrastructure facilities play an important role in fostering economic growth and enhancing public welfare. Socio-economic infrastructure including education status, health, and other community facilities of above said five villages was surveyed by questioning for their household size, type of household, age group, income, land ownership, Energy consumption, type of housing, and livelihood.

(i) Household characteristics of respondents

According to the result of sample household data, most of the households have 4 to 6 family members. The detail in the size of the household in the following household members of respondents are described in *Table 6.29*. It was noted that there were 278 total family members for 58 Respondents so that the average Household size was 4.8.

Table 6.29 Household and household status of sample villages

Name of villages	Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	Total population
Male	27	47	46	8	9	137
Female	34	48	45	8	6	141
Total	61	95	91	16	15	278
Average Household size for 58 Respondents	4.8					

Source: Social Survey Team, December,2021

(ii) Gender of respondents

The social survey team applied a random sampling method for each village site. Results of the socio-economic survey showed that the total population of the 58 samples households were 278 (*Table 6.30*). The number of respondents ranged from 2 to 22 people in study villages. Since Ta Pa Lat and Aye Thar Yar were situated far from the other villages and due to the difficulty of mobility under COVID 19 and safety condition. The following table shows the distribution of respondents in each village by genders, which are 39.6% male and 60.3% female. The male usually work outside – *Taungya* farms and orchards, so female have more chance to answer the survey questions.

Table 6.30 Gender of Respondents

No	Item	Name of Villages										Total	
		Ma Noe Yone		Khe Chaung		Chaung Nauk Pyan		Ta Pa Lat		Aye Thar Yar			
1.	No. of respondents	11		20		22		3		2		58	
	Male	3		10		6		3		1		23	
	Female	8		10		16		0		1		35	
	Male% & Female%	5.1	13.8	17	17	10.3	27.5	5	0	1.7	1.7	39.7 (M)	60.4 (FM)
	Total= 39.65% male and 60.39% Female												

Source: Social Survey Team, December,20201

(iii) Age composition of the family members of respondents

In the result, most of the household members (160:58%) were between 18-65 yrs., which was assumed to be the good working age. It indicates the adult group of the working population will have good knowledge and experiences in the project area. The people with the age level of 18-65 years were more than other age groups in all study villages. About 29% (81) numbers of the total households are age group 5 to 18 years including students and some dropped out from school. *Table 6.31* shows the age composition of the 278 household members from the survey area.

Table 6.31 Age groups of family Members

No.	Item	Name of Villages					
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	Total
1	< 5yrs	14	10	13	0	0	37
2	5 - 18yrs	16	26	29	2	8	81 (29%)
3	18 - 65yrs	31	59	49	14	7	160 (58%)
	Total	61	95	91	16	15	278
1	< 5yrs	5.04	3.60	4.68	0.00	0.00	%
2	5 - 18yrs	5.76	9.35	10.43	0.72	2.88	%
3	18 - 65yrs	11.15	21.22	17.63	5.04	2.52	%

Source: Social Survey Team, December .2021

(iv) Occupational structure of households

The total respondents were 58 (Household) represented 278 household members. According to the survey data, based on the type of main occupational status of the households, major-income sources are food stalls, owners of garden and seasonal workers. In addition, about 19 numbers of the households are working as governmental staff and company staff. Out of the total household number 278, the highest number, seventy-eight (78) numbers of the households are seasonal workers. Villagers of the Ma Noe Yone, Khae Chaung and Chaung Nauk Pyan villages generally work as the construction labor and beetle farm labors, making charcoal, depending on the work availability. During 3 months of dry season when the weather is not suitable for agriculture, they found the scarce job opportunity. Types of occupation for the respondents were shown in *Table 6.32* and *Fig.6.21*. It was observed that in all large villages, Ma Noe Yone, Khae Chaung and Chaung Nauk Pyan villages, the number of seasonal / causal workers were the highest.

Table 6.32 Types of occupational status

No.	Types of Occupation	Name of Villages					
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	Total
1	Government. Staff	0	2	1	0	0	3
2	Company Staff	0	2	9	5	0	16
3	Gardener	6	10	6	2	2	26
4	Shopkeeper/seller	1	8	6	0	0	15
5	Seasonal /causal labor	26	32	16	2	2	78
6	Others (vegetable farms)		1				1

Source: Social Survey Team, December .2021

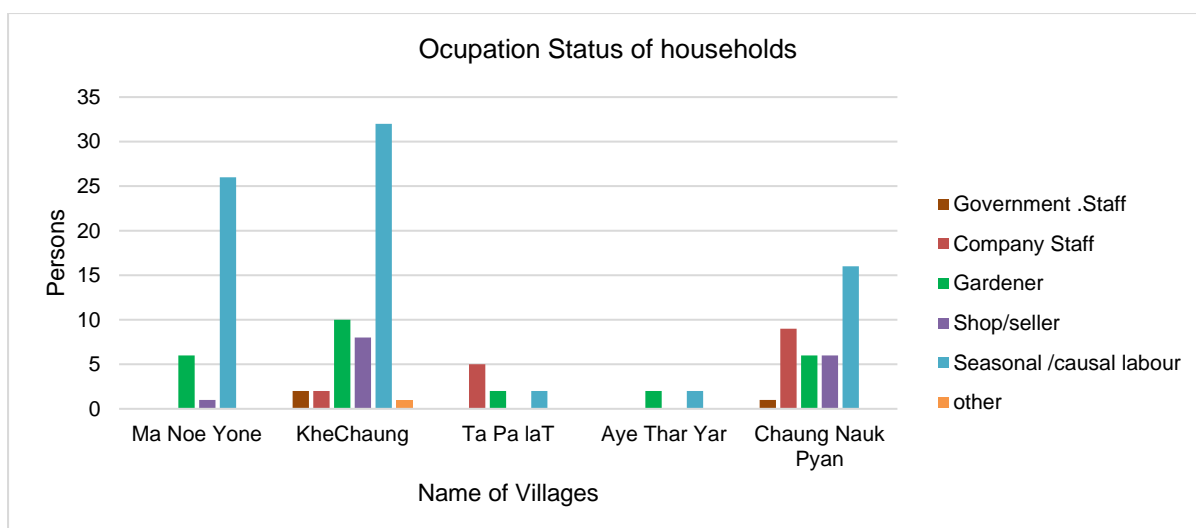


Figure 6. 21 Types of occupation status of households

(v) Types of housing

All respondents live in self-owned houses. Most houses have been constructed with one story, mostly with Nipa palm for the roof, bamboo for wall and wooden floor. Some housings are constructed with CGI sheet for the roof, wood for wall, wood and concrete for the floor. One story - houses were 44 (76%) while two story -houses were fewer as 14 (24%) (*Table 6.33*).

Nipa Plam was the largest material used for roof in study villages. Thirty-five HH (60%) used nipa palm while 17 HH (30%) used Metal Sheet. Similarly, brick houses were seen as 6 (10%) while the bamboo houses were 29 (50%) of all study villages. Based on the type of housing, these rural villages were assumed to be in low living condition.

Table 6.33 Housing condition of Respondents

No.	Types of housing	Name of Villages					Total
		Ma No Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
1	Story						
	one	10	12	18	2	2	44 (76%)
	two	1	8	4	1	0	14 (24%)
	Total respondents						58
2	Roof						
	Nipa Plam	8	10	15	0	2	35 (60%)
	Tile	0	0	2	1	0	3
	Thatch	1	0	2	0	0	3
	Metal (CGI Sheet)	2	10	3	2	0	17 (30%)
3.	Wall						
	Bamboo	6	7	13	1	2	29 (50%)
	Wood	4	8	9	2	0	23
	Brick	1	5	0	0	0	6 (10%)
4.	Floor						
	Bamboo	4	3	8	0	1	16
	Wood	7	13	14	3	1	38
	Concrete	0	4	0	0	0	4

Source: Social Survey Team, December 2021

(vi) Farmland ownership

The main livelihood source is agriculture for the local community such as cultivation of garden and seasonal vegetables, and others businesses related to agriculture. Some villagers are employed in the private sector or with the government, particularly in Ta Pa Lat, Chaung Nauk Pyan and Khe Chaung Village. Generally, most households engaged in farming and agriculture-related business (e.g Betel and Banana farms and sellers). Most respondents are small-scale farmers with small investment for plantation. Upland rice (known as *Taungya*) was grown for one year at a place and was moved to another place for the next year growing. According to the respondents, there were no paddy lands (*Le*) in Khe Chaung, Chaung Nauk Pyan and Ta Pa Lat villages while Aye Thar Yar had 20 acres of *Le* land. *Yar* land were for some upland crops like pulses, sesame, and maize, for the substance agriculture. Betel or banana gardens/ orchards were seen highest acres in Khe Chaung and Chaung Nauk Pyan villages as 170 ac and 128 ac respectively. In addition, there were uncultivated / fallow land in Khe Chaung and Chaung Nauk Pyan villages which means the farmers had no enough labor or investment for farming. The reason may be the weak incentives for income from farming. The finding of farm land ownership showed their farming was only for the subsistence level of their economy. The area coverage of various type of farming in all study villages was described in [Table 6.34](#).

Although the data collection for livestock rearing, it was observed that some households in the five villages also engaged in livestock raising such as pigs for selling, and chicken/hen (5 to 50 heads) mainly for household consumption.

Table 6.34 Type of Farmland ownership

No.	Item (acre)	Name of Villages				
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar
	<i>Le</i>	5	0	0	0	20
	<i>Yar</i>	9	5	12	0	0
	Garden/ Betel/ Banana	86	170	128	41	15
	Uncultivated land	0	41	70	0	10

Source: Social Survey Team, December 2021

(vii) Income level of respondents

Generally, the income level groups were divided into three, namely - Lower income group: <3,000,000 MMK, Middle income group: 3,000,000 - 6,000,000 and Higher income group: > 6,000,000 per year. Some respondents in all study villages got high-income level with more than 60 lakh Kyats per year. It was noted that two small samples from two villages are included in this group. They are two owners of (Garden + *Le*) in Aye Thar Yar and another two gardeners in Tar Pa Lat village, who had the highest income group of > 6,000,000 per year. This was the weakness which causes the uneven size of sample households/ respondents in the survey period because the mobility of surveyors and villagers was restricted due to the safety issue.

Most of the respondents (25 HH (43%)) fell into the lower level of regular income group: with less than 30 lakh Kyats per year was observed in Ma Noe Yone, Chaung Nauk Pyan and Khe Chaung and Aye Thar Yar villages, except for Aye Thar Yar and Tar Pa Lat villages. The middle-income group (3,000,00 - 6,000,000 MMK per year) was found in 17 HH (29%), in Ma Noe Yone, Chaung Nauk Pyan, Khe Chaung and Ta Pa Lat villages ([Table 6.35](#)).

The casual workers in the villages were paid for daily wages, significantly difference between male and female adults. It was reported the daily wages for male was 10,000 Kyats while that for female was 7,000 Kyats. Most households said they generally had no saving and households with debt were common in the study villages.

Table 6.35 Income distribution of Respondents

No.	Item	Name of Villages					Remark (Total)
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
1	Lower income group: <3,000,000	5	11	9	0	0	25 (43%)
2	Middle income group: 3,000,000 - 6,000,000	5	2	9	1	0	17 (29%)
3	Higher income group: > 6,000,000	1	7	4	2	2	16 (28%)
	Total respondents						58

Source: Social Survey Team, December 2021

(viii) Education status

According to the study, most people are literate who had school education, as shown in the *Table 6.36* and *Fig.6.5.4* below. Out of the total number 58 households with 278 total household members, 208 people had school education. The people with Primary level education and Middle school level are more in number (69 and 78 numbers, respectively) while people with High school level are fewer (52 persons), comparing with the three education levels.

The University levels of graduate, and graduates of some profession (Diploma and certificates) were also found in the study villages.

Table 6.36 Educational Status of Households

No.	People with education level	Name of villages					Total
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
	Primary	8	26	26	2	7	69
	Middle	15	24	27	7	5	78
	High	14	15	14	6	3	52
	University level	1	2	0	0	0	3
	Other Graduates	0	4	1	1	0	6
	Total HH with education						208

Source: Social Survey Team, December 2021

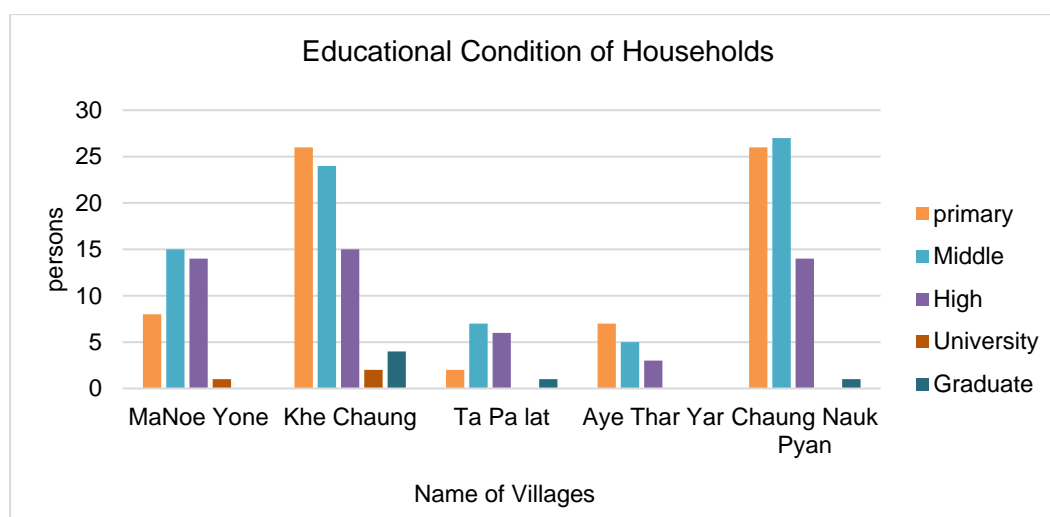


Figure 6.22 Educational level of households

During the household survey, the education and health facilities of the study areas were documented.

The Basic Education High School was located in Ma Noe Yone VT while Chaung La Mu VT had no High School level, but it had Middle Schools and Primary Schools.

There are one Basic Education Middle School and four Basic Education Primary Schools in the Chaung La Mu Village tract. Total number of teachers were 32 in Ma Noe Yone VT and 20 teachers in Chaung La Mu VT. The ratio of teachers and students ranged from the Primary Schools of Ma Noe Yone VT 1:13 in Ma Noe Yone VT to 1:63 in the Middle Schools of Chaung La Mu VT (*Table 6.37*).

Table 6.37 Education and health status of the study area

No.	Village Tract/ School	No. of Schools	No. of Teachers	No. of Students	Teacher/ Student Ratio
1	Ma Noe Yone VT				
	High School	1	10	515	1:51
	Middle School	3	15	327	1: 22
	Primary School	2	7	89	1:13
	Total	6	32	935	1:29
2	Chaung La Mu VT				
	High School				
	Middle School	1	11	629	1:63
	Primary School	4	9	407	1:45
	Total	5	20	1099	1.55
Health centers in Village Tracts					
		Number			
1	Ma Noe Yone VT				
	Hospital (16-bed)	-			
	RHC (Rural Health Center)	2			
	Maternity and Child Care center	-			
2	Chaung La Mu VT	0			

(ix) Public health care facilities and health condition

The 2014 Myanmar Census, Tanintaryi Township has three public hospitals, two public clinics, and twenty-two local health centers. Public health and health status are determined based on the source of food, source of drinking water, management of wastewater, toilet system, solid waste management, medical history and current status of public health services.

Regarding the public health condition of the 58 sample households surveyed, most respondents usually go to public hospitals and health care centers depending on their health problems. According to the finding, it was noted that complaints related to health conditions were - insufficiency of doctors and nurses, high cost of medical care expenses, and far and inconvenient location of public healthcare centers.

Higher expenses and less accessibility of medical centers were more important problems for respondents in the survey area. All villagers had to go to the rural health center (RHC) at Khae Chaung village in Ma Noe Lone village Tract. There was no RHC in Chaung La Mu VT (*Table 6.37*) Most respondents said the common disease was flu. Others were related with heart diseases, hypertension, and diabetes, digastric and etc. It was noted that the severity/ causality of COVID 19 was not severe comparing with other townships. and COVID 19 vaccination program was also completed in all study villages.

(x) Energy for lighting and cooking

With proper lighting, adults can continue to work around the house and children can study after sunset. This is the reason why lighting is one of the most basic uses of energy in households. The survey results showed that most households used charcoal for cooking in all study villages, as it was better quality than the fuelwood. A few households had access to use the gas stoves in Khe Chaung, Ma Noe Yone and Chaung Nauk Pyan villages (*Table 6.38*). It was observed that, almost all households of all study villages used their owned-solar cells for lighting since these villages were not accessible to the national grid line. The electricity was available in most villages where the diesel engine was operated by a community group or a person who distributed electricity. The villagers have to share the cost monthly.

Table 6.38 Energy consumption of respondents

No.	Item	Name of Villages				
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar
1	Cooking					
	Charcoal	8	20	22	3	2
	Firewood	1	0	0	0	0
	Gas	1	3	1	0	0
2	Lighting					
	Electricity	3	14	0	0	1
	Solar	8	6	22	3	1

Source: Social Survey, December 2021

(xi) Drinking water sources

Water is a fundamental input to household health for drinking, cooking and washing, among other domestic uses. The source of water has an impact on the quality of water, e.g., the likelihood of the water being contaminated, polluted, or carrying water-borne diseases. The 2014 Myanmar Census shows that in Tanintharyi Township the main sources of drinking water were protected well/spring (30%), River/Stream/Canal (25%) and other source drinking (15.6%).

The village survey showed that villagers consumed drinking water from different sources such as streams and creeks, hand-dug well, hand pumps, piped water supply from the tanks/ reservoirs which connected from a stream or a spring source.

Higher number of respondents access water for drinking and domestic use mostly from wells (46 HH: 64%) and community pipes (and 16 HH: 23%). Seven HH /respondents got water from stream /creek directly while 2 respondents from Khae Chung village consumed purified water (*Table 6.39*). Most respondents expressed that the quality of water was good enough with sufficient amount. They had no much concerns about the drinking water quality and quantity. It was noted that only in the summer season there was less water from some dug wells and underground tube wells but not significantly. The water from stream and creeks were dirty and polluted some times in rainy season so that villagers relied on dug wells and tube wells in that case.

Table 6.39 Water sources in sample villages of project area

No.	Item	Name of Villages					Total
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
1	Well	8	11	22	3	2	46 (64%)
3	Purified water bottle	0	2	0	0	0	2
4	Pipes (Reservoir)	3	13	0	0	0	16 (23%)
5	Stream /Creek	6	0	1		0	7 (1%)

Source: Social Survey Team, December 2021

(xii) Types of toilets

The 2014 Myanmar Census, the main type of toilet facility in Tanintharyi Township is an improved pit latrine in 89% of households surveyed. It is important to note that 11% of households in the Township reported that they did not have a proper toilet facility.

According to the baseline survey results in the study villages, the toilet systems of respondents in the study villages are open toilets and flyproof latrines. The numbers 44 HH (76%) of the total respondents used fly-proof (improved pit latrines) while 13 (22%) used Open type latrine. One Septic type was seen in Khae Chaung Village (*Table 6.40*).

Table 6.40 Types of Toilets in sample villages of project area

	Types of Toilets	Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	Total
1	Open type	2	1	9	0	1	13 (22%)
2	Fly Poof / Improved pit Latrine	9	18	13	3	1	44(76%)
3	Septic type	0	1	0	0	0	1

(xiii) Options of the respondents for the project

The socio-economic study team also asked the respondents regarding their opinions based on local development and environmental benefits related to potential environmental and socioeconomic positive and negative impacts due to the proposed project. Most respondents answered that the proposed project will promote regional development, employment opportunities, their socio-economic status would be better than before. The total respondents (58) were asked their ideas concerning with the project impact.

The results showed that 25 respondents (43.10 %) said there will be positive impacts on the environment while 8 people (13.79 %) thought negative impacts of the project. Thirty-five respondents (60.34%) of the respondents answered there will be positive impacts on economy while 11 respondents (18.97 %) thought negative impacts and 23 (20.69 %) respondents said they did not know the economic impact of the project (*Table 6.41*). Similarly, 37.93 % of the respondents said there will be positive impacts on the health issues but 39.66% thought negative impacts of the project. Concerning environmental impacts, the same number of respondents (25: 43.10 %) expected the positive and negative impacts while 13.79 % of respondents did not answer. In addition, 27 respondents (46.55 %) agreed with the upcoming project while 5 respondents (8.62 %) did not agree it and 26 persons (44.83 %) of the respondents said they did not know the answer.

Table 6.41 Options of respondents concerning with the impacts of the project

Opinion to Project Impact	Environmental impact		Economic impact		Health impact		Agree to the Project		
	Number	%	Number	%	Number	%	Opinion	Number	%
Positive	25	43.10 %	35	60.34%	22	37.93 %	Not Agree	5	8.62 %
Negative impact	8	13.79 %	11	18.97 %	13	22.41%	Agree	27	46.55 %
Unknown	25	43.10 %	12	20.69 %	23	39.66%	Don't know	26	44.83 %

Most respondents understood that the project will not result in the loss of any community's land and cultivated land as the land acquired for the project is owned by the Department of Forestry and it was allotted to the 24-Hour for limestone production by the Department of Mines. Respondents agreed to positive impacts for the local

community of the proposed project which were -job opportunity, infrastructure development, increase in business of local shops and markets, local development with CSR Program and etc. The possible negative impacts they expected were - air pollution for health /diseases, water pollution in *Nga Wun* Stream, traffic-related accidents and injuries and etc. It was also observed that most local people expected the project to support them in solving these problems related to health status. Adequate support of the project in the education and health sectors of existing villages could create high participation of local people in the implementation processes of the project.

6.5.11 Summary and key findings of the socio-economic survey of the Project Area

The results of the KII, FGD and household surveys were incorporated in the development of the baseline to complement the secondary data gathered previously in the Scoping Stage. In addition to the visual observation of site visits, the surveys and hearing from the local people provides more detail information about the village profiles of social, economy and livelihoods of the communities. Individual household surveys were taken place at five villages (58 households) which was situated nearest to the Project sites. The key findings on the socio-economy were as follows.

Since Ma Noe Yone, Khe Chaung and Chaung Nauk Pyan were located along the Myeik – Kyawthaung Highway, some households had majority income sources from roadside shops: food stalls and vendor shops. Types of occupational status showed that the higher portions were seasonal workers or casual labor in oil palm plantation companies and factories. Shopkeepers and gardeners/ farmers were fewer. The type of land ownership also showed that most villagers have betel nut plantations and banana and only a few had rice farms (*Le*) and *Taungya* farming, subsistence level of production. The finding of farm land ownership showed their farming was only for the subsistence level of their economy. In addition, the income distribution of households showed that the “Lower income group” are higher in number than the “Higher income group” in all study villages. These results showed that the living conditions and income of study villages were low.

The survey findings indicated that the majority of households have underground water (tube well and dug wells) surface water from streams easily available for all year round. The villagers believe that quality of water is clean and good enough for drinking. For the ecosystem services, villagers can have easy access of fuel wood and charcoal from nearby forest. More household used charcoal than firewood for cooking. Although the national grid lines are not available, villagers used power for lighting from diesel engine generators run by the village community or private owners. Many households were using solar power facilities in all study villages.

Concerning with health status, the study villages did not have any serious records of health issues. The most common disease was flu in the rainy season. Others were related with heart diseases, hypertension, and diabetes, digastric and etc. Since there were two RHC existed in Ma Noe Lone village Tract, most complaints related to health conditions were - insufficiency of doctors and nurses, high cost of medical care expenses, and far and inconvenient location of public healthcare centers. Regarding the sanitation almost all households are using improved types of toilets so that they all have access to improved sanitation.

During the survey, the options of respondents concerning with the impacts of the project were also noted. More respondents thought the positive impacts on environment and village economy by the proposed project but many respondents said they were not sure for the results. More than 40% agreed to the project while another more than 40% did not give the answer; the rest about 9% did not agree to the proposed project.

The following are the photo documentation of household surveys and village scenery seen during 21-23 Dec., 2021; Household surveys in study villages (*Plate 6.12*) and scenery of social and livelihoods in study villages (*Plate 6.13*).

		
<i>Chaung Nyauk Pyan- Taung-yar farm</i>	<i>HH Survey at Ma Noe Yone Village</i>	<i>Ban Gwan village HH Survey</i>
		
<i>Ban Gwan village HH Survey</i>	<i>Ban Gwan village - road side shop HH Survey</i>	<i>HH Survey at Khae Chaung Village</i>

Plate 6.12 Household surveys for social and livelihoods in study villages (21-23 Dec., 2021)

		
<i>Chaung Nyauk Pyan village Buddhist ordination by 24-Hour's CSR program</i>	<i>Chaung Nyauk Pyan village primary School</i>	<i>Ma Noe Yone village Primary School</i>
		
<i>Village Tract – Rural health Center (RHC) at Khae Chaung village</i>	<i>“Ywet Thit Wai” Nature Conservation Development Association at Chaung Nyauk Pyan village</i>	<i>Khae Chaung Village (Solar power & Skynet)</i>



Plate 6.13 Social and livelihoods in study villages during household surveys during 21-23 Dec., 2021

CHAPTER 7:
IMPACT ASSESSMENT AND MITIGATION
MEASURES

The preliminary identification and assessment of potential environmental and social impacts were conducted in the Scoping stage. Scoping allowed for the identification of main issues for the consideration within EIA process. It focused on the significant impacts that will be brought about by the project during all limestone mining project stages. The procedure of impact assessment exposed to the proposed limestone mining follows the EIA Procedure (2015) and [Mining Guidelines for Environmental Impact Assessment \(2018, MONREC\)](#) for the “Preparation of EIA”. The responsibilities for the EIA processes taken by the 24- Hour Mining and Industry Co., Ltd. (project proponent) and the ECD/ government are described in the following [Table 7-1](#).

Table 7.1 "Responsibility" in the EIA Process

	Project Proponent	Government
4 Public Participation throughout	1 Initiate Project	
	2 Prepare EIA Application	2 Screening: Review EIA Application and Categorization
	3 Scope EIA Issues	3 Prepare Terms of Reference and Scope EIA issues (Scoping Stage)
	5a Prepare and Submit EIA Document (EIA Stage)	
		6 Review EIA Document
	5b Correct deficiencies and respond to comment	
		7 Decision on Project
		8 Incorporate commitments into legal agreements (ECC issued)
	9 Implementation of Project, Environmental Measures and financial assurance	
	10 Correct violations	10 Auditing, compliance monitoring and enforcement

Source: Volume I - EIA Technical Review Guideline: Non-Metal and Metal Mining Regional Document prepared under CAFTA DR Environmental Cooperation Program to Strengthen Environmental Impact Assessment (EIA) Review, 2011.

7.1 Method and Approach to Impact Assessment

Any mining project will give rise to a number of potential impacts and risks to humans and the environment. Generally, the environmental design approach is used across all aspects of the project to identify potential impacts or risk at an early stage and remove or minimize the impacts or risks through modification of the design. A standardized approach was based around standard terminology for the determination of impacts and effects, their significance and mitigation or offsetting. The proposed approach for impact identification and assessment of effects relating to air, land and water was based on the “Source – Pathway – Receptor – Consequence” Model (SPRC). The model shows that to have an effect on a receptor all elements of the chain need to be present. Therefore, an effect can only occur if there is a source (of change), a receptor upon which that change acts and a pathway between the source and receptor.

The “Impact” is the change in environmental variable; the size of change can be determined objectively in cases where change can be measured or predicted, for example increases in emissions to air.-This “Impact acting on the Valued Environmental Receptor (VER) creates a consequence or “Effect” on that VER. In order to determine the level or importance of the “Effects” two key aspects were determined. These are - “Characterization of the magnitude and nature of the impact” and “Identification of VER and their level of importance and/or sensitivity to change”.

This assessment process used a bespoke scoring system to enable a systematic and transparent process to be undertaken to determine the impact magnitudes identified. For this EIA, the aspects such as size of impact, the extent; duration; frequency; probability; and reversibility of impact were taken into consideration. Identification of VERs was conducted through desk study and field work. A review of potential project activities which may affect the receiving environment has been

conducted. Based on the receptors and the likely activities an assessment of the severity of impacts and significance of effects has been undertaken.

7.1.1. Assessment of Potential Future Impacts (Identification and Evaluation of Possible Impacts in Proposed Limestone Mining)

The surface mining has impacts similar to any activity that disturbs the land surface such as erosion and sedimentation, dust, and vehicle /machinery air emissions. With some exceptions, the environmental impacts may last for years or decades after mining ends or are irreversible. These impacts are site-specific and determined by the geology, hydrology, hydrogeology, climate, and human and wildlife populations in the vicinity of the mine.

Limestone mining operations have potential impacts on the natural and human environments in each phase of the process which were taken into account. The impact assessment should account for all of the activities involved in the project, including the specific technologies in the project. Based on the process of preparation for “Scoping Phase and EIA”, including EMP and EMoP, the following stages of the limestone mining project generally takes place. They are (I) Exploration and Feasibility, (II) Planning and construction Stage (Mine development), (III) Operation / limestone production and (IV) Mine closure / Decommissioning. For the assessment of potential impacts/ environmental concerns, all possible components were considered, such as physical, biological, social, economic, health and safety, cultural components, and visual components. These impacts on all stages of mining project are taken into account and the anticipated activities of respective stages are also shown in the *Table 7. 2*.

Table 7.2 Mining cycle / project scope for limestone mining operation project

Stage	Anticipated Activities
I Exploration and Feasibility	Exploration: Reconnaissance: locate mineral anomalies (Discovery, sampling) Feasibility (Decision about economic feasibility of mining)
II Planning and Construction/ Limestone Mine development (M-D)	Mine planning, environmental and social planning, closure plan, environmental assessment, environmental and other permits
	Draw the work plan, design of the infrastructure, workers’ camp, electricity and etc.
	Securing land/space for construction yard of limestone mining and related facilities in the land area and utilization of local resources granted to the Project proponent by the government
	Procurement of construction materials and securing water supply and energy
	Clearing, Stripping, Blasting, Infrastructure Earth moving work such as excavation, cutting and mounting and etc. Work for construction (civil works), facilities /equipment, power house, Management of workers, their working activities, worker's camp, work safety
	Collection, transportation of construction materials and waste management – storage of generated waste including hazardous materials
	Remove the construction residues by manually and/or using machines and vehicles, kept in storage area for future use or damp site
III Limestone Mine Operation (M-O)	Crushing, Grinding, Sorting/ Screening
	Waste rock management, Waste management
	Transportation of limestone to the collection point at mine site
	Spatial occupancy of the mine and related facilities in project site and maintenance of related facilities/equipment
	Progressive reclamation

IV Limestone Reclamation and Mine Closure / (M-C)	Site clean-up, Dismantling the buildings, old machines and facilities: follow the Waste handling and management system; inform the Tanintharyi City Development Council and follow the guidance;
	Removal of equipment and machinery installed at the project site, and disposal of the old used items and materials and etc.
	Reclamation and rehabilitation -Replanting the site with trees and refilling the ground for the safety and aesthetic purposes.
	Maintenance, environmental monitoring

7.2. Assessment of Impacts on Key Environmental Components

The impacts associated with activities in each stage of the proposed limestone mine life cycle was based on the following conceptual model.

Table 7.3 Conceptual model of sources, pathways, mitigation, and receptors for a mining operation

Source	Pathways	Management/ Mitigation	Receptors
Site Preparation - Extraction-Mine Areas - Extraction-Waste Rock - Transportation - Reclamation-Barren lands -	Surface Water, Ground Water, Air, Soil,	Mine Design Runoff Controls	Aquatic Life Terrestrial resources Human Population

Reference from USEPA, 2008

The environmental pollutions will be significant caused by the activities of mining processes, such as “Site Preparation, Blasting/ Excavation and Crushing and transportation of limestones”. Regarding the major potential environmental impacts of limestone mining, the following methodologies and approaches were applied –

- (1) Environmental study in respect to the proposed project site and surrounding areas,
- (2) Secondary collection of relevant data including hearing and consultation with related local governmental departments,
- (3) Key Informant Interviews (KII) and Focus Group Discussion (FGD) with village leaders and elders,
- (4) Village household survey and
- (5) Stakeholder Meeting.

Since the first stage “Exploration and Feasibility” of the project will have a very few social and environmental impacts comparing with other stages, and its report was submitted to the Department of Mines by the 24-Hour Co., Ltd. before the permission of limestone mining, the impacts were not considered in this EIA report. The activities conducted in three stages of limestone mining, namely Mine Development (M-D), Mine Operation (M-O) and Reclamation and Mine Closure (M-C) are almost the same and their impacts on social environment, natural environment and pollution show more or less similar, except that the intensities of impacts may vary from each stage to another depending on the nature of the work activities. Among the three stages, the M-O stage will have more intense and longer impacts while M-C stage will have a short term and temporary impacts.

Mine development stage (M-D): During this stage, the site clearing and transport of machineries and civil work will affect the environment such as air and water quality; noise and vibration; soils; land use; fish and wildlife. The environmental concerns are - equipment emissions and fugitive dust, noise and vibration from construction activities, erosion and sedimentation, spills, deforestation and loss of habitat.

The site preparation (topsoil and overburden removal) will cause erosion and sediment from the site, modification of drainage patterns, streams and rivers; disruption and dislocation local wildlife. In this stage, the activities also include - construction of buildings, workshops, and temporary camps, construction of site access and roads and power lines. The activities also include operation of vehicles and equipment; fuel and chemical transportation, handling, and storage. In addition, increased road access in remote areas may lead to increased fishing/hunting, stressing populations and human invasion of previously inaccessible areas. These activities will have negative impacts on the environment, namely social, environment, global warming and pollution.

Mine operation stage (M-O): During the limestone mining, the land disturbance (excavation or dredging, etc.) will have impacts on the same natural environment items as seen in M-D stage, although the intensity may differ according to the activities. For example, there will be increased landslide potential; more equipment emissions and fugitive dust, and more noise and vibration from blasting and etc. During mining and power generation, emissions from vehicles and machinery and fugitive dust will increase. Operation of vehicles and equipment, fuel and chemical transportation, vehicle emissions and fugitive dust; spills at stream crossings and potential releases of volatile organic compounds and hazardous substances.

Reclamation and Mine closure stage (M-C): In this stage the activities generally include are - backfilling of pits with waste rock, removal of buildings, clean-up of workshops, fuel and reagents; disposal of scrap and waste materials, rehabilitation of waste rock, facilities restoration of surface drainage. The environmental concerns are – erosion and sedimentation, emissions from equipment, and fugitive dust, potential for hazardous spills health and safety of workers. These activities will cause negative impacts on the similar environmental issues with former two stages. The main environmental concerns are – erosion and sedimentation, emissions from equipment and fugitive dust and potential for hazardous spills during the activities. For the assessment of impacts on key environmental components the following steps were undertaken.

(i) Setting up the environmental components and items

To grasp whole features of possible environmental impacts caused by the project, it is necessary to identify and evaluate environmental components and items one after another to examine the possible impacts which may fall onto them. According to the EIA Guidelines for environmental and social considerations, possible impacts include those on human health and safety, as well as on the physical and natural environment, which are transmitted through air, water, soil, waste, climate change, ecosystems, fauna and flora, and global warming.

In addition to the direct and immediate impacts of projects, the derivative, secondary, and cumulative impacts as well as impacts associated with indivisible projects were assessed with regard to environmental and social considerations. Taking into consideration the EIA Guidelines and relevant laws and regulations of Myanmar, based on the environmental condition of the project area, there were three environmental components to be considered, such as – “Social environment, Natural environment and Environmental pollution”. For the proposed limestone mining project, the magnitudes of environmental impacts are estimated and the significance of the impacts assessed.

For the identification and evaluation of possible impacts, the following steps were conducted. The EIA Report includes a summary table (*Table 7.4*) of all relevant environmental and social impacts caused by the proposed limestone operation by 24-Hour. The table contains:

- i. Activities with potential for causing and impact – an activity is the basic element of a project or plan that has potential to affect any aspect of the environment.
- ii. Environmental and social components affected – Components are basic elements of the physical, biological, social, or economic environment. Environmental and social components are impacted by activities; and
- iii. Environmental impact, with an estimate or judgement of the significance of impact on physical, biological, social or economic environment.

(ii) Rating of possible impacts

Possible impacts are identified and the extent of the impacts are also evaluated one after another for each project stage by applying rating against the above-mentioned environmental items. The following rating criteria are adopted to examine and evaluate the extent of possible impacts. Both positive impact (+) and negative impact (-) are expected due to the proposed project, the ratings are as follows:

- A (+/-): Significant positive/negative impact is expected: (A -: significant, unacceptable adverse impacts to people and their livelihoods, or because there will be an irreversible impact on the ecosystem)
- B (+/-): Not significant but some positive/negative impact is expected:(B-: not significant negative acceptable after mitigation measures are applied)
- D: No impact is expected: (The impacts are not significant)
- C: Unknown impact

The project impacts were identified for 28 items (which included 12 items of social environments, 10 items of natural environment and (6) items of environmental pollution. Based on these ratings, the possible impacts are identified and their extent, intensity and cumulative effect of the impacts are evaluated for the listed environmental items as shown in the following *Table 7.4*.

Table 7.4 Summary table of evaluation of impact assessment caused by the proposed project

ENVIRONMENT		STAGE			REASONS
		M-D	M-O	M-C	
Social Environment					
1.	Involuntary Resettlement (land acquisition/ resettlement etc.)	D	D	D	All the activities for the limestone production will be carried out within area granted for limestone mining of 24-Hour. Co., Ltd by the Department of Mines and FD (MONREC). Thus, neither land acquisition nor resettlement is expected for the project site and surrounding areas. The project site is situated in the remote and uninhabited areas of hilly region.
2.	Local economy such as employment and livelihood	B+	B+	B+	Employment opportunities: The local people will have short- and long-term jobs or casual workers based on their skills and education and increased individual incomes. Temporary and permanent employment as unskilled and skilled labor is anticipated during the Mine development and operation stages. More than 200 employees will be employed. The project will emphasize in local purchase and services which will improve the local livelihoods.
3.	Land use and utilization of local resources	B-	B-	B-	Increased employees of mining increased pressures on natural resources and land uses in the vicinity of the mine. The proposed project is located in a remote area surrounded by the forest land and most of them are degraded. There is no agricultural land use and no inhabited areas in the AOI of the project. Thus, the impacts will not directly fall on utilization of local resources by the community. It may affect on the local peoples' hunting site and collection of non-timer forest products (NTFPs).
4.	Traffic conditions	B-	B -	B-	Temporary inconvenience of occasional traffic congestion to local traffic could take place due to transport of heavy equipment and machines to the construction site. Similarly,

ENVIRONMENT		STAGE			REASONS
		M-D	M-O	M-C	
					the traffic will increase for transport of limestone which come and buy at the collection site.
5.	The poor, migrants, indigenous or ethnic minority people	D	D	D	The ethnic minorities, migrants or IDPs residing in project area have a long association in the local area and these groups have generally been absorbed into the local communities. Kayin and Bamar Nationals were found most in the study villages. None of them are affected by the project.
6.	Gender	D	D	D	No discrimination on gender differences, which will not be affected. Depending on the requirement of the works, more male workers might be employed than female workers in the work site. But female workers will be employed as much as possible.
7.	Children's Right	D	D	D	No part of children's right is affected by the project. Child labor is not allowed in the work site according to the Myanmar Labor Law.
8.	Local conflict of interests	D	D	D	There is a possibility of local conflict of interest and/or split of community, if the job opportunities appropriately distributed. The local workers living in surrounding villages will be given priority. If the plan is not appropriately accepted to relevant stakeholders including communities through proper information disclosure and public participation, some misunderstanding will appear.
9.	Cultural and Historic Resources	D	D	D	There are no cultural, religious and historical heritage sites in the project site and its proximity. Moreover, there is no historical or cultural site or monument in the project AOI surrounding areas. Therefore, impacts on cultural, ceremonial and historic resources include any direct or indirect alteration of with those lifestyles. It was also noted that there are several national parks and nature reserve in the Tanintharyi Township. The distance from the proposed project site to the <i>Tanintharyi Nature Reserve</i> is about 188km/ 116.8 miles and to the <i>Tanintharyi National Park</i> is about 87km/ 54 miles according to the straight line of aerial view. The distance from the Project Site to <i>Lenya National Park</i> is about 62 km/ 38.5 miles.
10.	Community Health and Safety	D	D	D	The limestone mining activities will emit dust and gases and some pollutants. Due to the excavation and blasting, and operation of machines also produce noise and vibration. The settlements of local people are far away from the project site (the nearest village is over 20 miles away) so that it cannot have direct impacts on public health and safety of the local people. Most workers will be from the nearby villages and commute daily. There will be work camps at the project office site in Manoe Yone village for the workers from farther places. Therefore, the project will have very low possibility to affect the community health and safety.

ENVIRONMENT		STAGE			REASONS
		M-D	M-O	M-C	
11.	Working condition / Occupational health and safety	B-	B-	B-	<p>During the whole project stages, equipment emissions and fugitive dust, vehicle emissions will be significant. All of these can affect the workers' health - adverse impacts on working condition including occupational safety. It could take place if the mitigation and safety measures are neglected in the project site.</p> <p>Workers exposed to high concentrations of these gases risk serious illness and death. Emissions occur from operation of vehicles, heavy equipment, mining shovels or excavators, conveyors, crushers and grinders, and generators.</p> <p>This issue may be associated with transport safety along access roads-and handling of dangerous goods, impacts to water quality and quantity, inadvertent development of new vector breeding sites, and potential for transmission of communicable diseases, infectious diseases, e.g., malaria, respiratory and gastrointestinal infections due to the rapid influx of labor.</p>
12.	Natural hazard/risk	B-	B-	B-	<p>There might be some risks from natural disasters and hazards identified during the project cycle are cyclones, flooding, mudslides and earthquakes. However, based on the historical records, there were very few such events in the project region. It also includes risks from fire and storage and management of hazardous or toxic chemicals leaching out from containment.</p>
Natural Environment					
13.	Topography and Geology	A-	A-	D	<p>The topography and geology will be disturbed by activities of all mining cycle starting from site preparation, removal of trees and other vegetation, up to the limestone extraction and transport.</p> <p>The Karst topography, loss of habitat and loss of plants will be lost forever. However, during the M-C stage, with proper implementation of reclamation and mine closure plans (replanting, recontouring, and restoration and stabilization of stream banks, etc.), the topography of the project site will improve again gradually.</p>
14.	Landscape and Aesthetic Values	A-	A-	D	<p>Landscape and aesthetic/visual values will be changed significantly because of the limestone mining during the first two stages. However, during the M-C stage, restoration of vegetation under the reclamation and mine closure plan will improve the landscape and its aesthetic values to some extent.</p>
15.	Soil Erosion and sedimentation	B-	B-	B-	<p>For construction of buildings and site access roads and mine development processes, the topsoil and overburden are removed. During the all stages of limestone mining project, erosion and sediment will occur from site as well as waste dump areas. Deforestation, land disturbance involving excavation or dredging increased streambed erosion.</p>

ENVIRONMENT		STAGE			REASONS
		M-D	M-O	M-C	
16.	Changes of Surface Water/ Hydrological Conditions	B-	B-	B-	Degradation of groundwater and surface water quality can happen because of the soil erosion and sedimentation, spills/overflows from ponds during storm events; acid rock drainage potential, if any. The discharge of solid and liquid waste from the project site will be properly managed during all phases. The negative impacts will happen in all stages although the intensity/ size of impacts may differ depending on the nature/ workload of activities.
17.	Groundwater Conditions	B-	B-	B-	Increased potential for trace metals/other contaminants, if any. Lower of watertable, reduced well production, decreased stream; Potential releases of volatile organic compounds and hazardous substances which seep into the ground and affect the ground water quality.
18.	Environmentally sensitive areas (Protected Areas, IBAs etc.)	D	D	D	According to the field surveys, secondary desk studies, and hearings from FGD and KII, there is no environmentally sensitive areas in the project site and its surroundings. Thus, no part of such natural environment is affected by the proposed works. There are no historic sites, burial grounds, sacred or ceremonial sites, archeological and historical sites or structures or traditional cultural lifestyles and resources associated archeological.
19.	Flora, Fauna, Ecosystem and Biodiversity (Terrestrial)	B-	B-	B-	Land-clearing activities causes the habitat loss, tree loss and degradation and alteration associated with increased human activities for recreation or hunting in surrounding. All can result in reduction of wildlife habitat and plant communities can be impacted if they are gathered for food fuel or medicinal uses.
20.	Flora, Fauna, Ecosystem and Biodiversity (Aquatic)	B-	B-	B-	Changes in water quality affect aquatic resources by increasing sediment or toxic/hazardous materials to streams, decreasing the oxygen and changing the temperature in the water. It may result in changes in species or biological diversity of aquatic life in <i>Nga Wun Chaung</i> stream and other water bodies.
21.	Micro-climate	B-	B-	D	In general, due to the removal of trees, and natural vegetation (deforestation) will change the micro-climate of that particular project site.
22.	Global Warming	B-	B-	D	Exhaust and dust from vehicles, heavy machinery and operation of engines for electricity will increase the GHG emission, such as such as CO, CO ₂ , NO _x , N _x O, SO _x , VOC _x which are encouraging the global warming to some extent.
Environmental Pollution					
23.	Air Pollution	B-	B-	B-	Dust is created at all stages of the mining process, including land clearing, road construction, excavation, blasting, crushing grinding and transportation. Emissions from vehicles and mining equipment will occur during all stages of the project. Given the rural nature of the area in the project site, there are unlikely to be other significant sources of air pollution. Thus, at the operational stage of the project, increased

ENVIRONMENT		STAGE			REASONS
		M-D	M-O	M-C	
					vehicle traffic is not anticipated to degrade air quality significantly in the project area.
24.	Noise and Vibration	B-	B-	B-	The use of explosives for excavation, dredging and operation of machines and vehicles is common in all stages of a mine cycle, which create significant noise and vibration. However, no part of the community/ general public is exposed to noise and vibrations by the project since the project is situated in the remote and uninhabited hilly area. The machines used will be an advanced one with best quality which will produce the least amount of noise and gas.
25.	Emissions from Vehicles and Mining Equipment	B-	B-	B-	Particulate and gaseous air pollutant emissions are associated with vehicle and equipment exhaust. Particulate emissions, carbon monoxide, unburned hydrocarbons (volatile organic compounds), nitrogen oxides and sulfur dioxide result from fuel combustion in vehicles, heavy equipment (crushers and grinders), and generators associated with mining.
26.	Water Pollution	B-	B-	B-	There will be accidentally spill-over of oils, diesels especially in the storage areas and transfer from the filling tanks/ drums. It will drain to the nearby <i>Nga Wun Chaung</i> Stream and underground water and contaminated to the water quality and aquatic life. The sanitary waste from workers will cause water pollution, serious impacts to the environment. All sources should be maintained as a minor impact throughout the project period.
27.	Soil Contamination	B-	B-	B-	The spill-over of oils, diesels, and other solid and liquid waste can be produced to a certain amount but care will be taken by practicing appropriate solid and liquid management. The impact will be maintained as a minor issue. Soil Pollution during the operation phase, the contamination of soil and subsoil is expected as a result of leaks or spills as: <ul style="list-style-type: none"> • equipment containing lubricating oil and/or chemical additives used in the process will be placed in enclosed premises; and • fuel - oil (heavy and light fuel oil) used as main power source for the operation will be stored in dedicated storage tanks, in such a manner that any possible small leakages of polluting oil can be contained.
28.	Solid Waste	B-	B-	B-	During all stages of the limestone mining cycle, the solid waste will be produced from the work site. The general waste of construction materials are scrap metal and recyclable waste such as paper, wood etc. Food wastes and other solid wastes will come from the employees to a large extent. A proper waste management system will also be taken place for household waste of workers and etc. so that the impact will be maintained as a minor issue.

Source: EMP Study Team

Note: M-D: Mine Development, M-O: “Mine Operation Stage” and M-C: Mine closure” of limestone mining project stages -

- A (+/-): Significant positive/negative impact is expected: (A -: significant, unacceptable adverse impacts to people and their livelihoods, or because there will be an irreversible impact on the ecosystem)
- B (+/-): Not significant but some positive/negative impact is expected:(B-: not significant negative acceptable after mitigation measures are applied)
- D: No impact is expected: (The impacts are not significant)
- C: Unknown impact

7.2.1 Results of Assessment of Impacts

Based on the Myanmar “Mining Guidelines for Environmental Impact Assessment, July 2018 (Final Draft), Myanmar EIA procedures and guidelines and relevant laws and regulations, the three environmental components of social environment, natural environment and environmental pollution were taken into consideration during all stages of limestone mining project cycle. The results of identification and evaluation of impact assessment showed that the three stages of limestone mining [(M-D), (M-O), and (M-C)] have similar impacts except for the size / intensity of the impacts. Based on the activities of these three stages the following items were identified to have negative impacts (B-), not significant; but acceptable after mitigation measures are applied.

The anticipated items under these components were 28 number in total. Among these items, in all stages of limestone mining cycle, four (4) items of social environments, seven (7) items of the natural environment and six (6) items of the environmental pollution were found to have negative impact (B-), meaning that the impacts were not significant, it will be acceptable after mitigation measures are applied. In addition, two items of natural environment (i.e., “Topography and Geology” and “Landscape and Aesthetic Values”) of the project quarry sites will be significantly impacted, unacceptable adverse impacts because there will be an irreversible impact on the ecosystem during the M-D and M-O stages.

It was found that the limestone project will have positive effect on one item of “local economy and employment” item. No impacts (no significant impacts) are expected for eight (8) items.

The project will have positive impacts on “Social environment” – the item “Local economy such as employment and livelihood” since it will create employment, services and purchases of local community during all project stages. The project contractors and 24-Hour will apply the updated machineries and best methods to produce fewer negative impacts as much as possible. In other items considered, no serious impacts caused by the project during all stages were found. The detail information about the impact assessment is described as following.

(1) Social /Socio-economic Environment

{3} Land use and utilization of local resources

(i) M-D stage, (ii) M-O stage and (iii) M-C stage

The Project activities required a permission the Mining Department (MONREC). During both M-D and M-O, land occupation will be limited to areas categorized as the land that will be acquired for the needed of the Project. In particular, the limestone quarry occupied area is belonging to MONREC that already purchased, and 24-Hour is paying yearly taxes to the Forest Department (FD)and Department of Mines (DOM). Therefore, impacts connected with land occupation in terms of restrictions on the land use are considered negligible during the M-D and low during the M-O.

Possible negative impacts – Limestone mining may impact local land use. Clearly, land use on the mining site itself will be modified for the life of the mine, and in many cases, for years after mine closure. Some impacts may only occur during the life of the mine, and can be reestablished after mine closure, such as

livestock grazing, wildlife habitat, hunting, and agriculture. However, in some areas waste piles and open-pit excavations may not be reestablished for many years after mine closure. These impacts become long-term impacts. Other impacts can include those associated with roads and other ancillary facilities that may stay in place and be used after restoration. Land use in these areas can be impacted by visibility, noise, odor, air pollution, and water contamination.

The proposed limestone project is located in a remote area surrounded by the forest land. There is no agricultural land use and no inhabited areas in the AOI of the project. Thus, the impacts on change of land use and utilization of local resources for the community is anticipated to a very low extent. However, increased employees during M-D and M-O will increase pressures on natural resources and land uses in the vicinity of the mine. The activities in M-C stage activities such as removal of buildings, clean-up of workshops and etc. will cause negative impacts on the similar environmental issues with former two stages. During M-C there remain some employees but fewer in number than other two stages. Therefore, the impacts are assumed to be B- in all stages.

{4} Existing traffic conditions

(i) M-D (ii) M-O and (iii) M-C stage

Possible negative impacts – Temporary inconvenience of occasional traffic congestion to the local traffic could take place due to transport of heavy equipment and machines to the construction site in both stages. Similarly, the traffic will increase for transport of limestone to the collection site of Manoe Yone Village in Operation stage. During M-C there remain some traffic for transport of machines and other facilities and will have similar negative impacts but fewer in number and the workload is only temporary. Therefore, the impacts are assumed to be B- in all stages.

{11} Working condition / Occupational Health and Safety

(i) M-D (ii) M-O and (iii) M-C stage

Possible negative impacts – During all project stages, equipment emissions and fugitive dust, vehicle emissions will be significant. All of these can affect the workers' health. Adverse impacts on working condition including occupational safety could take place if the mitigation and safety measures are neglected by the constructors. This issue may also be associated with transport safety along access roads—and handling of dangerous goods, impacts to water quality and quantity, inadvertent development of new vector breeding sites, and potential for transmission of communicable diseases, infectious diseases, e.g., malaria, respiratory and gastrointestinal infections due to the rapid influx of labor. Therefore, the impacts are assumed to be B- in all stages.

{12} Natural hazard/risk

(i) M-D (ii) M-O and (iii) M-C stage

Possible negative impacts –There might be some risks from natural disasters and hazards identified during all project cycle are cyclones, flooding, mudslides and earthquakes. However, based on the historical records, there were very few such events in the project region. Mines can be hazardous environments and the possibility of fire, flood, explosion and collapse has the potential to simultaneously affect a large number of people. Careful work between HSE and Stakeholders is aimed at controlling these risks. It also includes risks from fire and storage and management of hazardous or toxic chemicals leaching out from containment. Therefore, the impacts are assumed to be B- in all stages.

{2} Local economy (employment and livelihood)

(i) M-D (ii) M-O and (iii) M-C stage

Possible positive impacts – Despite having negative impacts on the environment, mining operations have significant positive impacts on the economic and social dimensions development that cannot be ignored. The impact assessment results show that during all three stages of limestone mining, there will be positive impacts on local economy. The 24-Hour will present information on the number and type of employees that will be hired by the mine, during all phases of mine life, and the level at which the mine will be relying upon local businesses to provide goods and services. The Contractor will draw a local purchase and employment plan for giving priority to the local communities, encouraging the uplift of local livelihoods.

Temporary and permanent employment of local people as unskilled and skilled labor is anticipated during the M-D and M-O stages; there will be fewer laborers during M-C stage than the former two stages. The full-strength number of employees in the project site is estimated to be 268 in total. The expected number of workers for mining and crushing operations will be 165 workers, most will be hired from the surrounding villages. The skill workers hired from the local area will be employed in various positions depending on their ability. A workers' camp will be constructed in 24-Hour. company's office compound in Khe Chung Village, Bokepyin Township.

(2) Natural Environment

{13} Topography and Geology

(i) M-D stage, (ii) M-O stage

Possible negative impacts –The topography and geology will be disturbed by the activities of mining cycle starting from site preparation, removal of trees and other vegetation, up to the limestone extraction and transport. The Karst topography will be lost forever and loss of habitat, loss of plant will occur. The two stages, M-D and M-O, show negative impacts A -: significant, unacceptable adverse impacts because there will be an irreversible impact on the ecosystem.

(iii) M-C stage

Possible positive impacts - With the proper implementation of reclamation and mine closure plans (replanting, recontouring, and restoration and stabilization of stream banks, etc.) the topography of the project site will improve. Therefore, no negative impact on topography is expected or the impacts are not significant during the M-C stage.

{14} Landscape and Aesthetic Values

(i) M-D stage, (ii) M-O stage

Possible negative impacts –landscape and aesthetic/visual values will be changed significantly because of the removal of limestone hills. The two stages, M-D and M-O, show negative impacts A -: significant, unacceptable adverse impacts because there will be an irreversible impact on the ecosystem.

(iii) M-C stage

M-C stage includes activities such as backfilling of pits with waste rock, rehabilitation and revegetation. Provided the restoration of vegetation under the reclamation and mine closure plan will be properly undertaken. The landscape and aesthetic values will be improved. Therefore, M-C stage scores D, meaning that no impact is expected or the impacts are not significant during the M-C stage.

{15} Soil Erosion and Sedimentation

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts –For construction of buildings and site access roads and mine development processes, the topsoil and overburden are removed; erosion and sediment occur from site as well as waste dump areas. Deforestation, land disturbance involving excavation or dredging increased streambed erosion can be expected during all stages. Therefore, the impacts are assumed to be B- in all stages.

{16} Changes of Surface Water/Hydrological Conditions

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts –Degradation of groundwater and surface water quality can happen because of the soil erosion and sedimentation, spills/overflows from ponds during storm events; acid rock drainage potential, if any. When mine working (extraction) and M-O stage, mine water is pumped from *Nga Wun Chaung* and surface operations and often discharged to surface water. When operations cease, mine workings may overflow and untreated mine water and runoff from mined areas may be discharged. Secondary impacts of dredging to marsh productivity from sedimentation, which also can affect fresh water intakes. Therefore, the impacts are assumed to be B- in all stages.

{17} Groundwater Conditions

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts –Increased potential for trace metals/other contaminants, if any. Lower of water table, reduced well production, decreased stream, potential releases of volatile organic compounds and hazardous substances which seep into the ground and they can affect the ground water quality. Therefore, the impacts are assumed to be B- in all stages. However, the mine site is far away from the human settlements and farm lands, the impacts will not be significant in the residential areas.

{19} Flora, Fauna, Ecosystem and Biodiversity (Terrestrial)

(i) M-D (ii) M-O and (iii) M-C stage

Possible negative impacts –land-clearing activities causes the habitat loss, tree loss, degradation and alteration associated the destruction of vegetation, disturbance of migration corridors by mining activities of all stages and transport. Increased human activities for recreation or hunting in surrounding will also cause impacts to wildlife. All can result in reduction of wildlife habitat and plant communities. The impacts may increase if they are gathered for food, fuel or medicinal uses of the people. There will be general displacement from surrounding, otherwise undisturbed areas and disruption may increase during mating or nesting seasons due to increased noise and human activity. Therefore, the impacts are assumed to be B- in all stages.

{20} Flora, Fauna, Ecosystem and Biodiversity (Aquatic)

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts –During all stages, changes in water quality affect aquatic resources by increasing sediment or toxic/hazardous materials to streams, decreasing the oxygen and changing the temperature in the water. It may result in changes in species or biological diversity of aquatic life. Aquatic ecosystems can also be impacted if the mining operation increases resource demands (such as overfishing) or introduces other secondary impacts (washing or recreational use) that displaces species or disrupts habitats. The activity of dredging can create short

term increases in turbidity, which can affect aquatic species metabolism and interfere with spawning. Therefore, the impacts are assumed to be B- in all stages.

{21} Microclimate

(i) M-D (ii) M-O

Possible negative impacts –In general, due to the removal of trees, and reduced natural vegetation will change the micro-climate of that particular project site. Mining is an inherently invasive process that can cause damage to a landscape in an area much larger than the mining site itself. The effects of this damage can continue years after a mine has shut down, including the addition to greenhouse gasses, death of flora and fauna, and erosion of land and habitat. These are the reasons why mining is bad for the climate. Therefore, the impacts are assumed to be B- in M-D and M-O stages.

{22} Global Warming

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts –It was recorded that mining is currently responsible for 4 to 7 % of greenhouse-gas (GHG) emissions globally. Exhaust and dust from vehicles, heavy machinery and operation of engines for electricity will increase the emission of GHG, encouraging the global warming to some extent. Therefore, the impacts are assumed to be B- in all stages.

(3) Environmental Pollution

During the three stages of limestone mining, all environmental six (6) items as follows, such as Air Pollution, Noise and Vibration, etc.) under the environmental pollution considered were found to be negatively affected.

{23} Air Pollution – Dust

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – Dust is created at all stages of the mining process, including land clearing, road construction, excavation, blasting, crushing grinding, dumping and transportation. Dust will be generated during overburden, waste rock and ore removal as well as operation of vehicles on unpaved roads. As a result, human health and/or environmental problems may arise through direct inhalation, soil deposition, deposition on plants or accumulation within a water body. Therefore, the impacts are assumed to be B- in all stages.

{24} Noise and Vibration

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – Explosives and heavy machinery are used regularly at mining sites, resulting in potentially harmful amounts of noise pollution. Miners subject to high noise levels for extended periods of time may become permanently deaf. Noise also can affect wildlife by causing stress and disrupting behavior.

The use of explosives for excavation is common in surface mining and causes significant vibration. Damage to natural formations has been observed up to 500 meters away from blasting sites. Therefore, the impacts are assumed to be B- in all stages.

{25} Emissions from Vehicles and Mining Equipment

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – Particulate and gaseous air pollutant emissions are associated with vehicle and equipment exhaust. Particulate emissions, carbon monoxide, unburned hydrocarbons (volatile organic compounds), nitrogen oxides

and sulfur dioxide result from fuel combustion in vehicles, heavy equipment (crushers and grinders), and generators associated with mining. Emissions occur from operation of vehicles, heavy equipment, mining shovels or excavators, conveyors, crushers and grinders, and generators. These increase air pollution and promote global warming. Workers exposed to high concentrations of these gases risk serious illness and death. Therefore, the impacts are assumed to be B- in all stages.

{26} Water Pollution

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – There will be accidentally spill-over of oils, diesels especially in the storage areas and transfer from the filling tanks/ drums during all stages of limestone- mine cycle. It will drain to the nearby *Nga Wun Chaung* Stream and contaminated to the water quality and aquatic life. If waste water effluents are produced, it can cause serious impacts to the environment. Therefore, the impacts are assumed to be B- in all stages. To avoid and reduce the impact to always be a minor impact, the waste management plan (sedimentation pond, collection ditches, etc.) will be strictly followed.

{27} Soil Contamination

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – The spill-over of oils, diesels, and other solid and liquid waste can be produced to a certain amount during all stages of the project. Care will be taken by practicing appropriate solid and liquid management in the workshop, working with all machines and vehicles. The impact should be maintained as a minor issue. Therefore, the impacts are assumed to be B- in all stages. No part of the soil is affected by the proposed project activities if the contractors strictly follow the EMPs. Oil and grease will leak or spills from refueling facilities, workshops, fuel storage depots, and containment areas. and spill kits shall be kept on site and available with emergency response plans.

{28} Solid Waste

(i) M-D, (ii) M-O and (iii) M-C stage

Possible negative impacts – The general waste of construction materials are scrap metal and recyclable waste such as paper, wood etc. There will be food waste, plastic sups and bottles and many others if they don't follow a good housekeeping practice. Therefore, the impacts are assumed to be B- in all stages. Other waste management systems will also be taken place for household waste of workers and etc. In this way, the impact will be maintained as a minor issue.

7.3 Method and Approach to Designing Mitigation Measures

7.3.1. Design of Measures to Mitigation Future Impacts

For the major potential impacts of proposed limestone mining project mentioned in the above section, the mitigation measures will be considered in two parts, namely “Potential design measures” and “Best practices or management practices for mitigation measures”. These measures and practices cover all issues such as “Mine Site Environmental Good Practices, Pollution Control and Prevention, Biodiversity Conservation, Traffic, and Access control” and etc.

(1) Dust Control

(A) Potential Design Measures - Surface access roads and on-site roads with aggregate materials, wherever appropriate., Minimize disturbed areas

- (B) Best Practices - At a minimum the dust control measures would require the following best practices for mitigation measures -
 - Use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust and during earthmoving activities, prior to clearing, before excavating, backfilling, compacting, or grading, and during blasting.
 - Enforce speed limits to reduce airborne fugitive dust from vehicular traffic.
 - Reestablish vegetation of disturbed areas as soon as possible after disturbance
 - Keep soil moist while loading into dump trucks.
 - Cover dump trucks before traveling on public roads.
 - Cover all conveyors.

(2) Emissions Control

- (A) Potential Design Measures - Fuel efficiency, types of fuels, types of equipment, emissions controls, and equipment maintenance programs.
- (B) Best Practices –
 - At a minimum the program would address methods for reduction of greenhouse gas emissions and pollutants such as CO, CO₂, NO_x, SO_x, and VOC.
 - ⇒ Develop a monitoring program that ensures greenhouse gas emission are minimized.

(3) Sediment and Erosion Control

- (A) Potential Design Measures -
 - Identify and avoid unstable slopes and local factors that can cause slope instability (groundwater conditions, precipitation, seismic activity, slope angles, and geologic structure).
 - Minimize the planned amount of land to be disturbed as much as possible.
 - Use special construction techniques in areas of steep slopes, erodible soils, and stream crossings.
 - Identify and employ slope stabilization practices for use during mining.
 - Construct drainage ditches only where necessary. Use appropriate structures at culvert outlets to prevent erosion.
 - Do not alter existing drainage systems, especially in sensitive areas such as erodible soils or steep slopes.
 - Construct sedimentation structures near the disturbed area to impound surface water runoff and sediment.
- (B) Best Practices
 - Control erosion from vehicular traffic;
 - Construction will avoid cut/fill to the extent possible, minimizing area disturbed by roads and drill pads; buffer zones will be maintained near surface waters;
 - Construction will be limited to dry periods;
 - Slopes will be stabilized; appropriate management practices for stream crossing will be used.
 - Topsoil will be removed during mining and decommissioning activities and used to reclaim disturbed areas.
 - Disposal areas for excess excavation materials will be sited in approved areas to control erosion
 - Disturbed soils will be restored as soon as possible after disturbance.
 - Catch basins, drainage ditches, and culverts will be cleaned and maintained regularly.
 - Strip-mined or contour-mined areas will be backfilled or recontoured with excess excavation material generated during construction.
 - Stormwater and overall mine works drainage will be managed and treated to meet the applicable water quality standards specified in the EMP
 - Sanitary wastewater will be managed via reuse or routing into septic or surface treatment.
 - All pesticides used for the project will meet international standards for nonpersistent, immobile pesticides.

(4) Topsoil Management

(A) Potential Design Measures -

- Minimize vegetation removal.
- Design runoff control features to minimize soil erosion.
- Use special construction techniques in areas of steep slopes, erodible soils, and stream crossings

(B) Best Practices

Soil management program should include the following provisions:

- Save topsoil removed at the start of the project and use it to reclaim disturbed areas upon completion of mining activities.
- Restore or apply protective covering on disturbed soils as quickly as possible.
- Apply erosion controls to reduce soil erosion from vehicular traffic and other mining activities (e.g., jute netting, silt fences, and check dams).
- Stabilize all areas of disturbed soil using weed-free native shrubs and grasses

(5) Wildlife, Ecology and Vegetation

For the “Biodiversity Conservation”, The “Mitigation Measures” – to avoid, minimize, restore or rehabilitate, offset the negative impacts of the project the following measures will be applied.

(A) Potential Design Measures - Use existing facilities (access roads, graded areas) to the extent possible to minimize new disturbance.

- Use existing information on species and habitats and contacts with appropriate agencies to identify potentially sensitive ecological resources in the project area.
- Conduct pre-disturbance surveys and site facilities away from important ecological resources (e.g., water bodies, important upland habitats, sensitive species populations).
- Minimize the amount of land disturbance.
- Prevent water contamination so as to prevent impact on aquatic systems.

(B) Best Practices

- Educate workers regarding the important resources in the area and their protection.
- Schedule activities to avoid disturbance of resources during critical periods of the day /night or year (breeding or nesting season).
- Instruct employees, contractors, and site visitors to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship, nesting) seasons.
- Limit pesticide use to nonpersistent and apply in accordance with application permit directions
- Apply spill prevention practices and response actions to minimize accidental contamination of habitats.
- Include a site restoration plan that addresses both interim and final restoration requirements and that identifies revegetation, soil stabilization and erosion reduction measures.
- Reforest riparian zones with species appropriate to the native habitats and species.

(6) Transportation / Traffic and access control

For the mitigation of the impacts on “Traffic and access control”, the mitigation measures are as follows.

(A) Potential Design Measures -

- Prepare an access road siting study and management program incorporating road design, construction, and maintenance standards.
- Plan to use existing roads to the extent possible
- Develop a transportation program, particularly for the oversized and overweight components specific to a mine.

(B) Best Practices

- Limit traffic to roads indicated specifically for the project. Limit use of unimproved roads to emergency use only.
- Instruct and require all personnel and contractors to adhere to speed limits to ensure safe and efficient traffic flow.
- Limit mine-related vehicle traffic on public roadways to off-peak commuting times to minimize impacts on local commuters.

(7) Hazardous Materials

(A) Potential Design Measures -

- Prepare a comprehensive list of all hazardous materials to be used, stored, transported, or disposed of during all phases of activity.
- Develop a hazardous materials program providing for adequate storage, use, transportation and disposal (interim and final) for each item in the comprehensive list.
- Identify potential solid and liquid waste streams and develop determination, inspection and waste minimization procedures.
- Develop waste-specific management and disposal requirements

(B) Best Practices

- Describe procedures and responsibilities for hazardous materials determination, inspection and waste minimization.
- Identify specifics regarding local and national emergency response requirements.
- Include a spill prevention and response plan for storage, use and transfer of fuel and hazardous materials, including spill prevention measures, training requirements, material -specific spill response actions, spill response kits, and notifications to authorities.
- Develop a stormwater management plan to prevent off-site migration of contaminated stormwater or increased soil erosion.
- Periodically remove wastes for disposal at appropriate off-site permitted disposal facilities, if available.

(8) Conservation of water, energy, and borrow materials

Limestone mining generally uses significant amounts of resources such as water, land, carbon and energy, and often causes severe harm to the environment. The 24-Hour. Co., Ltd will follow the eco-friendly methodology as much as possible to reduce the use of water and energy by applying the advance methodology, such as solar energy. The borrow soils may be used in the M-C stage to revegetate and fillup the quarry site. The project proponent will apply the relevant mitigation measures for negative impacts to the ecosystems.

(9) Land Acquisition and Resettlement Planning

All the activities for the limestone production will be carried out within area granted for limestone mining of 24-Hour. Co., Ltd by the Department of Mines and FD (MONREC). Thus, neither land acquisition nor resettlement planning is expected for the project site and surrounding areas. The project site is situated in the remote and uninhabited areas of hilly region. The proposed project is located in a remote area surrounded by the forest land and most of them are degraded. There is no agricultural land use and no inhabited areas in the AOI of the project. Thus, the impacts will not directly fall on utilization of local resources by the community. No resettlement plan is required.

(10) Protection of Physical Cultural Resources

Based on the project site surveys, social economic surveys in study villages, FGD and KII done during the EIA study, it was noted that There are no cultural, religious and historical heritage sites in the project site and its proximity. Moreover, there is no

historical or cultural site or monument, burial grounds, sacred or ceremonial sites, archeological site in the project AOI and surrounding areas.

(11) Mine Closure Planning and Management

Land use on the mining site itself is modified due to the quarry operation of limestone production. Some impacts may only occur during the life of the mine, and can be reestablished after mine closure, such as replanting trees, livestock grazing, wildlife habitat, hunting, and agriculture. However, in many cases, waste piles and open-pit excavations may not be reestablished for many years after mine closure, which become long-term impacts. The 24-Hour company will apply a proper mine closure plan as described in detail in Chapter 11 of this EIA Draft Report.

7.3.2 Mine Site Environmental Good Practices

While positive impacts such as employment and community development projects are important, they do not off-set the potential negatives. We have found mining can negatively affect people by: forcing them from their homes and land. preventing them from accessing clean land and water.

Aside from supporting thousands of jobs, the mining industry provides raw materials, minerals and metals critical to our economy. They provide the foundations for modern living, innovation and engineering achievements.

Mining accounts for 4%–7% of global GHG emissions globally, directly, through operations and indirectly, through power generation. Use of electricity instead of diesel engines; shift to renewables, which can lower the mine's electricity costs and reduce volatility. 24-Hour. Co., Ltd has made a plan to apply the national grid for electricity.

The most widely adopted method of limestone mining is through opencast pits with bench formation. It causes widespread disturbance in the environment. The 24-Hr.Co., Ltd will adopt the well-formulated EMP which helps in mitigating the impacts of mining on the environment.

Despite technological advancements that have made the industry greener, mining still uses significant amounts of resources — water, land, carbon and energy — and often causes severe harm to the environment. The 24-Hour. Co., Ltd will follow the eco-friendly methodology as much as possible to reduce the negative impacts to the ecosystems. The following are the five ways of eco-friendly methodology in the mining industry which can reduce environmental impact and make its practices more sustainable.

1. Lower-Impact Mining Techniques.
2. Reusing Mining Waste.
3. Eco-Friendly Equipment.
4. Rehabilitating Mining Sites.
5. Shutting Down Illegal Mining.

In addition to these methods, the project will try to improving mining sustainability and safer working conditions through improved underground communication, automation, more sophisticated mineral and metal transportation, and emergency response measures which can be achieved by integrating technology into mining projects.

7.4 Community Health and Safety

In general, quarries may have a negative health impact to the community living in the proximity. Inhaling the dust from a limestone quarry is known to cause silicosis and pneumoconiosis. Local populations may suffer from changes to sleep patterns and the increased stress from the quarry can cause unique and unpredictable health concerns.

The project proponent will follow “Environmental, Health, and Safety Guidelines for Construction Materials Extraction” and General EHS Guidelines, World Bank Group, 2007, which provide specific guidance on prevention and control of community health and safety impacts that may occur during the proposed limestone project development. There will be issues on “General

site hazards, Disease prevention and Traffic safety”. The project will implement risk management strategies to protect the community, training of workers, implementing administrative controls into work processes and so on. For all these potential impacts, the preventive measure and recommendations described in the EHS Guidelines will be strictly followed by the Project Proponent.

During the project activities, the environmental impacts may occur such as “noise and vibration, soil erosion, air quality, disturbance to water bodies, solid waste and hazardous materials, and etc. The most important issue is Particulate matter (PM); the main sources include crushing–grinding, drilling, blasting, and transport. Impacts from PM emissions are related to its size (e.g., whether it is less than 2.5 microns in diameter), its main components (e.g., silica, silicates, carbonates), as well as to rock impurities.

For the “Community Health and Safety”, there will also be issues on “General site hazards, Disease prevention and Traffic safety”. In general, these issues primarily include the following:

- a) **Land Instability** – Large-scale spoil-material disposal, water ponds, or mined land areas may be susceptible to landslide or collapse that could cause catastrophic incidents in surrounding populated areas. Prevention measures to minimize community risks include —Geotechnical monitoring of slopes, disposal sites, and water drainage.
- b) **Water** – Limestone extraction projects can significantly alter surface and groundwater regimes that are used by local communities for potable water supplies, raising fish and other edible materials, irrigation, and source water for small businesses and industries. The health and well-being of communities can be affected by changes in water quality as a result of discharges from dewatering activities, stormwater discharges, reduced water availability from water diversion, and lowering of groundwater supplies.
- c) **Physical Integrity** – All structures should remain stable such that they do not impose a hazard to public health and safety. Physical hazards such as unguarded roads, quarries, and other openings should be effectively and permanently blocked from all access to the public.

It also includes risks from uncontrolled access to construction sites, exposure to waterborne, and exposure to increased traffic of materials transport vehicles. The Project will implement risk management strategies to protect the community, training of workers, implementing administrative controls into work processes and so on. For all these potential impacts, the preventive measure and recommendations described in the EHS Guidelines will be strictly followed by the Project Proponent.

- d) **Explosives Safety** – Blasting activities may cause accidental explosions and affect surrounding populated areas; the following measures will be followed.
 - Particular attention should be given to all explosives handling phases to prevent theft / improper use;
 - Blasting should be conducted according to a consistent timetable. If changes to the blasting timetable occur, nearby communities should be immediately informed of those changes;
 - Community awareness and emergency preparedness and response planning should be undertaken, including control of third-party access to blasting areas;
 - Vibrations caused by blasting have potential community impacts. Ensure that potential household damages caused by the project activities can be adequately identified and managed.
- e) **Mine Blasting Plan** – Blasting is a common and essential technique in mining engineering, but it can also have significant environmental impacts, such as noise, vibration, dust, fumes, and ground disturbance. A responsible mining engineer needs to assess and mitigate these impacts to ensure compliance with regulations, protect the environment, and maintain good relations with stakeholders. Blasting at mines and quarries causes ground vibration and air blast (vibrations through the air and noise) at levels which can cause objects in nearby residences to rattle, however, structural damage is most unlikely to occur. In a mine blasting plan, the following steps need to be considered.

(i) Identify potential impacts

Before planning and executing a blasting operation, it needs to identify the potential environmental impacts and their sources. This can be done by conducting a baseline study of the site conditions, such as topography, geology, hydrology, air quality, noise levels, flora and fauna, and land use. A Mine engineer also needs to consider the type, size, location, timing, and frequency of the blasts, as well as the characteristics of the explosives, such as energy, detonation velocity, and gas generation. By identifying the potential impacts, the blasting parameters and mitigation measures can be designed accordingly.

(ii) Monitor and measure impacts

To assess the actual impacts of blasting, the monitor and measurement will be done during and after the operation. This can be done by using various instruments and methods, such as seismographs, sound level meters, dust monitors, gas detectors, and visual inspections.

The measured values will be compared with the baseline values and the regulatory limits to evaluate the performance and compliance of the blasting operation. The monitoring results will be recorded and reported to the relevant authorities and stakeholders.

(iii) Implement mitigation measures

- To reduce the environmental impacts of blasting, appropriate measures will be applied before, during, and after the operation. This includes selecting explosives, blasting patterns, and initiation systems that optimize blast efficiency and minimize noise, vibration, dust, and fumes.
- Water sprays, dust suppressants, or covers should be used to reduce dust emissions from the blast site and haul roads.
- Blast mats, berms, or barriers should be employed to attenuate noise and vibration.
- Schedule blasts away from sensitive times or areas such as wildlife habitats, residential zones, or cultural sites.
- Communicate with affected parties and provide advance notice, warning signs, and access control to the blast area.
- Restoration and rehabilitation of the blast site and surrounding areas must take place after the operation.

7.5 Occupational Health and Safety

Occupational health and safety performance will be evaluated against internationally published exposure guidelines, and published by the Occupational Safety and Health Administration of the United States (OSHA), and etc. The 24-Hour will take into considerations for the following issues, but not limited to, -

- 1) Accident and Fatality Rates - The proposed project will try to reduce the number of accidents among project workers to a rate of zero. The accidents could result in lost work time, different levels of disability, or even fatalities. The working environment will be monitored for occupational hazards and it will be designed and implemented by accredited professionals, as part of an occupational health and safety monitoring program. A record of occupational accidents, diseases, and dangerous occurrences and other accidents will be maintained.
- 2) Respiratory Hazards - Occupational exposure to dust and fine particulates is associated with all phases of quarrying activities (e.g., shoveling, ripping, crushing, and etc.). Specifically, exposure to nuisance dust and silica dust is considered relevant to construction materials extraction activities. Long-term exposure to silica dust may cause silicosis. In addition to the prevention and control measures for dust generally described of this document, the following measures will also be followed.
 - Excavators, dumpers, dozers, wagon-drills, and other automated equipment that requires an operator should be equipped with air conditioned, dustproof, and soundproof cabs;
 - Use of personal breathing protection (e.g., masks, respirators), as described in the General EHS Guidelines.

- 3) Noise - Workers may be exposed to excessive noise levels during quarrying activities (e.g., shoveling, ripping, drilling, blasting, flame-jet cutting, transport, crushing, and grinding, among others).
- 4) Physical Hazards - Physical injuries may occur during construction material quarrying operation and maintenance activities (e.g., slips, trips and falls, falling rocks, impact with moving machinery such as front loaders, drillers, crushers, and belt conveyors). The prevention and control measures include the following:
 - Implementation of specific personnel training on work-site safety management;
 - Accurate assessment of the work site by rock scaling of each surface exposed to workers especially after blasting activities;
 - Adoption of natural barriers, temporary railing, or specific danger signals along rock benches or other pit areas;
- 5) Machine / Equipment Use & Safety - Hazards include exposure to vibration from portable drilling machines; hand / arm injuries from tools, flying rock associated with plaster blasting. Prevention and control measures include the following:
 - Use of hydraulic jacks and cushions for block splitting or block shifting;
 - Use of hydraulic breakers or hammers to avoid plaster blasting;
 - Use of proper drill benches or wagon drills, avoiding the use of portable and hand-held drilling equipment;
- 6) Explosives - Occupational safety hazards may be related to blasting activities resulting in accidental explosions. Prevention and control measures for explosion hazards include the following activities:
 - A consistent blasting schedule should be adopted, minimizing blast-time changes;
 - Specific warning devices (e.g., horn signals and flashing lights) and procedures should be implemented before each blasting activity to alert all workers and local communities in the surrounding areas.
 - Specific personnel training on explosives handling and safety management should be conducted;

7.5.1 Occupational Health and Safety Monitoring

The working environment and workers' health should be monitored for occupational hazards and diseases relevant to the specific project. Monitoring should be designed and implemented by accredited professionals, as well as applicable prevention or protection measures, as part of an occupational health and safety monitoring and prevention program. Facilities should also maintain a record of occupational accidents, diseases, and dangerous occurrences and other accidents.

7.5.2 Environmental, Health and Safety Management System (EHS-MS)

The 24-Hour shall form EHS –MS which include the occupational and social welfares for the workers and society. The Environmental, Health and Safety Policy Statement" will also be set up and the statement sets out the commitment of the 24-Hour to manage environmental, health and safety requirements effectively. The Statement involves -

- Establish methods to use energy more efficiently, reduce waste, and prevent accidents,
- Comply with laws, regulations, and organizational requirements applicable to their operations,
- Improve EHS performance continually,
- Conduct periodic assessments to verify and validate EHS performance.

The EHS policy statement defines what shall be achieved by 24-Hour and the staff members working at the project site and being responsible to the limestone mine extraction is a safe management 24-Hour is committed to provide and maintain a safe and healthy working environment and an environmentally friendly and sustainable operation of the mine site and to provide the information, training and supervision needed to achieve this. The EHS Policy Statement is implemented to achieve the goals such as "Zero fatalities and Zero accidents of workers, visitors or the public, Zero environmental concerns, risks or impacts".

The EHS Policy Statement of 24-Hour was also described in detail in Chapter 3, Section 3.9 of this EIA Report.

EHS procedures are required to be developed for the following activities expected to be needed for the safe operation of the mine site during all stages (M-D, M-O and M-C) and activities.

- Site access control and site security procedure;
- Health & safety protection for electrical works;
- Use of hazardous chemicals and materials;
- Risk assessment;
- Working at height; and working in confined spaces;
- Use of personal protective equipment;
- Emergency response;
- First aid; and etc.

7.5.3 EHS-MS Team

The EHS team will be formed with an EHS Manager, two EHS Advisors and workers. Above all is managed by the Plant Manager. The roles & responsibilities of the team are -

(i) EHS Manager – The EHS Manager will have the overall responsibility with respect to the supervision of the EHS organisation, the execution of the various EHS tasks and steps, means the implementation e.g., of all defined EHS procedures. The EHS Manager reports to the Plant Manager. EHS Manager is responsible to the followings:

- to implement the measures of the EHS Plan;
- to undertake risk assessments;
- to approve safe job analysis;
- to prepare work procedures and instructions;
- to provide training and induction on health & safety issues;
- to undertake EHS audits and workplace inspections;
- to prepare EHS reports;
- to prepare and revise the emergency response plan;
- to investigate incidents and accidents and etc.

(ii) EHS Advisor – The duties of the EHS Advisor are at least as follows:

- Representation of the Health & Safety Manager in case of his absence;
- Development and continuation of the operation schedule of the Project Implementation Consultant;
- Review and documentation of list of workers below 18 years;
- Communication with the appointed Contractor(s);
- Participation in Health & Safety Audits;
- Review of monthly reports and weekly reports;
- The EHS Advisor reports to the EHS Manager.

(iii) Workers – The responsibilities of workers are –

- All workers, working permanent or temporarily at site, must follow any approved and implemented EHS instructions and procedures
- They must report any non-compliances of actions and situations with the EHS Management System to the Plant Manager, the EHS Manager or the EHS Advisors.
- The workers shall keep their workplace and their accommodation tidy and clean with the overall aim to prevent any environmental, health and safety risks.

7.5.4 HSE Capacity Building and Trainings

Capacity building and trainings for performing routine production work or training for upgrading skills and boosting productivity will be organized and provided. At least, Fire fighting and First Aid Training will be conducted. The capacity building and training will be practical training for conducting monitoring and inspection and for assessment of the finding or observation. It will also cover other basic aspects such as:

- Conduct environmental awareness to the staffs/workers,

- Conduct safety program 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.

The employer shall carry out the training program in accord with the work requirement in line with the policy of the skill development team to develop the skill. The trainings inside as well as outside the project work site will be organized quarterly or biannually depending on the project's requirement. The relevant components of the trainings are - "Capacity Development and Training", "Training for Competency Management Standard", "Incident Management Standard", "Waste Management Plan" and etc.

The members involved in the operation processes, such as handling the machines, clean up or containment will have an adequate level of training and will wear Personal Protective Equipment (PPE). All personnel will be provided with safety training to ensure that all workers practice under safety operation and regulation of work, as per the 24-Hour.'s "Training and Competency". *Table 7.5* shows the intended training program during the implementation of the project.

Table 7.5 Training Programs for Occupational Health and Safety

No.	Training Program	Number / Types of Participants	Frequency	Outline of Training
1.	Occupational Health and Safety (OHS) Training	All workers	Induction and Weekly	Contents in health and safety management plan
2.	Awareness on Hazardous Waste Material	All Workers	Monthly	Types of hazardous materials, how to care when they are used
3.	Informing and Education of making sure to comply with "Dos" and "Don'ts"	All Workers	Induction and Monthly	Contractor's own instructions for the safety of construction camp and sites
4.	The use of appropriate Personal Protective Equipment (PPE)	All Workers	Induction and Monthly	Types of PPE, Usage of PPE, the advantages with PPE and disadvantages without PPE
5.	Provision of Traffic Safety Awareness	All workers and nearby communities	Induction and Monthly	Consciousness in workplace where large machinery vehicles - dumpers, backhoes, Trucks and excavators are used.
6.	Raising awareness of communicable and non-communicable diseases - HIV, AIDS, Hepatic B, C, TB and Seasonal Flu.	All site staffs and workers	Induction and monthly	Health knowledge about the harmful infections, how to protect oneself and care the colleagues.
7.	Skilfulness and emergency response procedure for the workplace violence harassment, accidents and injuries	All site staffs and workers	Induction and monthly	Procedures how to report about the incidents, Provision of emergency contact phone no. and email address, Making up social network group for quick linkage to each other and self - protection
8.	First Aid Training	All site staffs and workers	Induction and once per two months	Usage of First Aid Tool Kits and how to do first aid

CHAPTER 8:
RISK ASSESSMENT

8.1 Natural Hazards and Disaster Risk in the Proposed Limestone Mines

In general, disaster occurrence is seen in mining industry but it is less as compared to that of any other chemical and hazard plants. However, disasters like accidental situations of fire hazard, failure of building structure, falling of boulders etc. may occur that cannot be ignored. As the proposed limestone mining area is much above the flood level, there is no possibility of flooding of water at the mine site. However, the mine is situated in a hilly region, the failure of slopes or possibility of landslides cannot be ignored specially in rainy season. The precautions needed are boulder pitching, retaining walls, re-vegetation of slopes, counter trenching and garland drains, fencing etc, to avoid such chances. The other hazards that may occur are as follows:

Fire hazards: Adequate firefighting arrangement will be provided. Adequate number of fire extinguishers will be provided for stores and other service buildings.

Slope instability: The following factors govern mainly the risk of over burden dump failure: - Height of the benches; - Slope of the benches; - Slope of the foundation area; Nature of rock in the foundation area; - Depth of ground watertable in the area; and - Nature of overburden material.

Erosion & Sedimentation: The mine pit would receive water from the three sources, namely, direct precipitation over excavated area, surface run-off from the surrounding area and seepage from the strata. There shall be construction of Garland drains & Settling tanks which shall be cleaned periodically to avoid silt formation & smooth discharge of water during monsoon season.

Road Accidents: A sufficient arrangement for illumination of roads including haul road will be made. Road crossings will have properly planned and designed to prevent vehicular accidents.

Falling of Boulders: During blasting in hard formation, there is every possibility of falling of boulders, which may cause injury to workman. Necessary precaution shall be taken by wearing helmets and providing necessary barricades during blasting to restrict injuries due to boulders.

Blasting Hazards: For proper blasting and minimizing the adverse side effects due to blasting, viz. noise, ground vibration, back-breaks, air blast, fly rocks, etc., the precautions will be applied as much as possible to avoid dangerous situations.

8.2 Disaster Management Plan

In order to take care of above-mentioned hazards/disasters the following control measures will be adopted in the limestone mine site.

- All safety precautions and provisions of Myanmar Mines Law (2015) and Myanmar Mining Rules and Environmental Impact Assessment Guidance for the Mining Sector (2018) and international Mine Regulation Act will be strictly followed during all mining operations;
- Entry of unauthorized persons will be prohibited;
- Firefighting and first aid provisions in the mines office complex and mining area will be ensured;
- Provisions of all the safety appliances such as safety boots, helmets, goggles, ear plugs/muffs etc. will be made available to the employees;
- Training and refresher course for all the employees working in hazardous premises;
- Working of mine, as per approved plans and regular updating the mine plans;
- Handling of explosives, charging and blasting will be carried out by competent persons only;
- Provision of magazine at a safe place with fencing and necessary security arrangement;
- Regular maintenance and testing of all mining equipment as per manufacturer guideline.

8.3 Assessments of Hazards and Associated Risks in Limestone Mining Activities

The assessments of possible hazards and associated risks in proposed limestone mining activities (such as Drilling, Blasting, Loading and etc.) are presented in the following *Table 8.1*. The relevant mitigation measures are also described.

Table 8.1 Assessments of hazards and associated risks in proposed limestone mining activities

Activity	Hazard			Risk		Mitigation Measures
	Descriptive nature	N/AN / E	D/ ID	Frequency (HUL/ UL/ L/)	Consequence	
Drilling	Exposed to high level noise	N	D	L	Hearing impairment	Ensure engine of drilling machine is tuned
	Exposed to dusty environment	N	D	L	Dust related diseases	Use wet drilling system / dust extraction system with drilling machine; Use dust mask
Blasting	Struck by fly rock	N	D	HUL	Serious physical injury	Use updated technology, Take proper shelter if present within damage
	Exposed to dusty environment	N	D	HUL	Dust related diseases	Pre-wet the surface; Use delay detonators; Optimize mix of ANFO and explosives topped with saw dust / sand, use dust mask
	Exposed to high level noise	N	D	HUL	Hearing impairment	Use ear muffs/ear plugs
	Exposed to excessive vibration	N	D	HUL	Damage to civil structures	Use hydraulic rock breaker to avoid secondary blasting; Delay detonation technique as per SOP
Loading	Struck by rolling big boulders	N	D	HUL	Serious/ fatal injury and equipment damage	Maintain recommended bench height, width and slope (avoid under cutting); Provide protective guard in front of vehicle cabin; Wherever necessary do face dressing from top
	Struck by fall of objects	N	D	HUL	Serious physical injury	Provide protective guard in front of cabin & ensure careful operation
Transportation By tippers	Accidental runaway or fall of vehicle	AN	D	HUL	Serious/ fatal injury and equipment damage	Ensure good condition of brake system by proper checking and Testing; Apply emergency Steering; Provide training to drivers for safe operation of equipment; Ensure that rear view mirrors are provided; Use audio visual alarm; Provide spotter
	Exposed to high level noise	N	D	L	Hearing impairment	Use ear muffs/ear plug
	Fire in engine due to overheating	N	D	L	Equipment damage	Ensure proper engine cooling system; Keep ready suitable fire extinguisher

	Pedestrian struck by flying stone due to tire edge	N	D	L	Serious/ fatal injury	Keep the haul road free from stone pieces
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Abbreviations: -

Occurrence	Impact	Frequency
N=Normal	D=Direct	HUL= Highly unlikely
AN=Abnormal	ID= Indirect	UL= Unlikely
E=Emergency		L=Likely

8.4 Risk Analysis

Risk analysis is a vital part of the workplan of the project proponent; it's used to assess what could happen, the likelihood of it happening, and how the 24-HourCompany can manage them effectively. Risk analysis aims to identify potential risks and then determine their likelihood, impact, and severity.

Risk assessment is the first step in risk analysis—it's when the Company identifies the risks that could affect the project. Risk assessment focuses primarily on safety and hazard identification, proactively controlling the evaluation of risks. However, risk analysis goes a step further and assesses those risks' impact, likelihood, and severity. To perform a Risk Analysis, the following steps will be undertaken –

- Step 1: Identify the Risks - Identifying the relevant risks to the proposed project. The project proponent needs to understand what could go wrong and the consequences. Then, a risk register will be used to list all of the identified risks.
- Step 2: Analyze the Risks - After identifying, all possible risks need to be analyzed, which involves understanding how likely each risk will occur and what impact it would have if it did occur. A risk matrix will be applied to help this step.
- Step 3: Evaluate the Risks - After the risks have been analyzed, they need to be evaluated because it involves deciding which risks the project proponent will take and which ones will avoid or mitigate.
- Step 4: Develop a Risk Management Plan - Once the risks have been evaluated, a risk management plan will be developed. This plan should detail how the Project will avoid or mitigate the risks you have identified.
- Step 5: Take Action – Taking action involves implementing risk mitigation strategies or setting up contingency plans.

8.5 Management of the Proposed Limestone Mine

Risk management is the process of identifying, evaluating and controlling risks at workplaces.

It entails:

- i) Risk assessment of any work activity;
- ii) Control and monitoring of such risks;
- iii) Communicating these risks to all persons involved
- iv) OSH risk management involves the assessment of risks associated with any work activity or trade, control and monitoring of such risks, as well as communicating these risks.

Risks obtained are generally classified by five different mining processes - blasting and drilling, digging, loading & haulage, crushing, and maintenance. After allocating risks, they are assessed by applying four different risk indexes such as probability, casualty, facility loss, and discontinuity respectively. Risk needs to be properly identified, before it may be estimated, and later responded to adequately. This is a prerequisite for effective risk management in limestone mining companies conducting their activities in Myanmar.

The objectives of risk assessment are to –

- Reduce risk at source
- Take responsibility for managing their own safety outcomes Assess risk to safety and health of any persons who may be affected by their undertaking, and
- Identify hazards and risk of injuries/accidents

The Employer/ project proponent (24-Hr Co., Ltd) shall do the following:

- Conduct risk assessment to OSH risk posed to any persons arising from their undertaking,
- Eliminate the risk where possible, or if not take measures to control the risk such as: substitution, engineering controls, administrative controls, including safe work procedures, and provision and use of suitable personal protective equipment.

For effective disaster management, it is necessary to evaluate risks at the mines in a careful manner, evaluate and then take steps for mitigating them. Whatever the 24-Hour. Co., Ltd will plan to do, “Safety of the people” shall assume the paramount importance in the midst of all its planning. In the Risk Management Plan, following procedures will be set out -

- Step-1: Identification of disaster risks,
- Step-2: Identification of persons at risk,
- Step-3: Removal of hazard,
- Step-4: Evaluation of the risk,
- Step-5: Control Measures to be taken,
- Step-6: Maintaining assessment records,
- Step-7: Review the assessment,

The major processes for risk management are as follows –

1) Risk identification

Through examination of the Mining Plan and consultation with the 24-Hour. Co., Ltd, all accident scenarios have been identified that could result in environmental risk. Following scenarios fall under Maximum Credible Accident Scenario:

- Fire in Diesel tanks / vehicles,
- Accidents due to explosives storage / blasting,
- Accidents by Heavy Earth Moving Machinery,
- Mine Inundation during heavy rainfall / cloud burst,
- Failure of limestone mine benches.

2) Risk assessment process

Risk assessment should deal with risks posed by both natural hazards and mining industrial hazards associated with each project phase. The risk assessment should begin with an identification of hazards. A chronology of natural hazard events and industrial accidents that have occurred during the life of the mine is to be prepared. Estimates of damage and loss of life are to be included. A description of the Mine Operator’s and Government responses to each natural hazard event or industrial accident is to be included. Recommendations for improvement are to be developed.

The following steps / processes and activities are set out for the Risk Assessment Process, shown in [Table 8.2](#).

Table 8.2 Risk Assessment Process in Proposed Limestone Mining

Preparation	<ul style="list-style-type: none"> ▪ Form team ▪ Gather relevant information ▪ Identify tasks of each process
Risk Assessment	<ul style="list-style-type: none"> ▪ Hazard identification ▪ Risk analysis ▪ Risk evaluation

Risk Control	<ul style="list-style-type: none"> ▪ Obtain employer’s or management’s approval ▪ Implement risk control measures ▪ Communicate hazards identified and their controls ▪ Regular audits or inspections
Record keeping	<ul style="list-style-type: none"> ▪ Made available upon request ▪ Kept for at least 3 years
Review	<ul style="list-style-type: none"> ▪ Monitoring and review on a regular basis

Source: www.wshmyanmar.com

3) Risk mitigation measures

In order to take care of the risks identified above, the following mitigating measures will be taken in the mine area (*Table 8.3*).

Table 8.3 Risk Mitigation Measures for Proposed Limestone Mining

Risk Identification	Risk Mitigation Measures
Fire in Diesel Tanks / Vehicles	Sufficient fire extinguishers will be installed at selected locations on surface like Mine office, Electrical Sub-stations, Workshop, Garage, Diesel Depot, Magazine, etc. Besides, sufficient number of water hydrants with sufficient hose pipes will be made available in the surface for fire protection.
Slope Failure	Mining operation will be carried out strictly as per the approved Mining Plan, the height and width of bench and the slope of the benches will be maintained as per the approved plan. Visual checks of the inclined bench surface will be carried out on routine basis to see for cracks, fissures, water seepage, etc.
Blasting	To ensure safe blasting following measures will be adopted: - <ul style="list-style-type: none"> ▫ The use of Non electric system of initiation of the blast holes by using Excel detonators and connectors. It ensures reducing the ground vibration and fly rock problem. ▫ Use of ground vibration and air blast monitoring instrument to monitor the blasts. The instrument reveals efficiency of the blasting activity. ▫ Complete evacuation of the area falling within 300m of the blast site by sounding siren and by sending guards to avoid any exposure of the human beings and other animals to the danger associated with blasting. ▫ All the blast shall be carefully planned and executed under proper supervision. ▫ No secondary blasting will be done. All the big boulders will be broken using Hydraulic Rock Breaker, thereby eliminating the risk of flying fragments associated with secondary blasting.
Heavy earth moving machineries HEMM	All the accidental scenarios due to the heavy earth moving machineries will be minimized ensuring following mitigation measures: - <ul style="list-style-type: none"> ▫ Good condition of the brake system by proper checking and testing ▫ Apply emergency steering ▫ Provide training to drivers for safe operation of equipment ▫ Ensure that rear view mirrors are provided, Use audio visual alarm ▫ Provide spotter, Provide mirrors at the curve edge of roads

Sabotage of Explosives:	Suitable explosives van duly licensed by the Controller of Explosives will be utilized for daily transportation of explosives. The storage, transportation and use of explosives are carried out with complete safety, in accordance with the Myanmar Explosive Act 1& Rules.
Mine Inundation	To mitigate inundation due to rainfall, dewatering pump will be installed at the mine pit. The accumulated water in the working pit will be pumped out into empty / vacant pit or discharged into the canal passing through the lower side of the area.

8.6 Natural Hazards and Disaster Risk

Typical natural hazards in Myanmar include floods, storms and cyclones, droughts, landslides, earthquakes, and UXO. UXO is not a natural hazard but is included here as it is a hazard not related to the design and operations of a Project. The coastal area, the Tanintharyi Region, is particularly prone to several impacts of tropical cyclones and related strong winds, heavy rains, storm surges, and associated weather. Myanmar coast was hit by cyclones almost every year after 2002 except southern coast. Among the three parts of coastal area, Rakhine coast is the most vulnerable area to tropical cyclone compared to the others. The cyclones in the Bay of Bengal have hardly hit the southern coast in Mon State and Tanintharyi Region in the history of Myanmar (Myanmar INC Report, 2012).

However, flood occurrence commonly happened in the Tanintharyi Region, like many other regions of Myanmar. It was noted that there were serious floods in 2015, 2018 and 2021 in Tanintharyi Township which led to casualties and damage to roads, infrastructure and agriculture farms. Moreover, Tanintharyi recorded 253 mm of rainfall on 19 July 2023 which surpassed 232 mm figure recored in July 2021. Heavy rains and strong winds caused landslides and falling trees in Kawthaung, Dawei and Myeik Towns (Source: Xinhua, 19-7-2023). Therefore, the proposed limestone project should prepare for the likelihood of natural hazard, such as heavy rains, floods, land slide, slope instability, etc.

For natural hazards, risk assessment approach is –

- i. Identify of types of natural hazards and disasters based on historical records and analysis of likely hazardous geologic and atmospheric events;
- ii. Consider future climate change scenarios and implications for frequency and consequences of natural hazards; and
- iii. Estimate spatial patterns, frequency, duration and intensity of the natural hazard.

8.7 Mining Industrial Hazards

Typical mining industrial hazards commonly found are as follows –

Landslide and slope failures; Fire; Explosions; Chemical spills, leakages, and other unintended release of chemicals or radioactive materials; Electrical failures, equipment malfunctioning; and Mechanical and structural failures, equipment malfunction and Heavy Earth Moving Machinery (HEMM) including trucks and tippers.

Among these, the proposed limestone project may have the more possibility of landslide and slope failures since it is located in the hilly areas of Tanintharyi which have high annual rainfalls (around 3,000 – 5000 mm), and the proposed region has historical records of heavy rains, landslide and floods. The risk assessment approach for the “Mining Industrial Hazards” needs to practice the following steps.

- i. Identify types of industrial hazards based on the project design and layout, use and handling of hazardous materials combined with case studies, and literature search;
- ii. Analyze cause and effect events that might lead to industrial hazards, and the probability of occurrence; and
- iii. Analyze the severity of industrial hazards including spatial patterns, frequency, duration and intensity of the hazards.

The following are the potential hazards identified for the proposed limestone project basing on the Tasks / Activities / Work places involved and control measures to be taken for each hazard for elimination or reduction of risk involved (*Table 8.4*).

Table 8.4 Potential hazards identified for the proposed limestone project and control measures

Identified Hazards	Mechanism	Control	Action
1. Inundation	Catchment Area water during Rains	All around dump's drains are to be prepared to collect the rain water from the catchments of the dumps; In case of any siltation or damage, the drain may cause water entry into the quarry; Sufficient height bund shall be maintained all along the edge of the quarry to prevent inadvertent entry of water	De-siltation will be done every year before onset of monsoon and whenever required during monsoon; Sufficient height bund shall be maintained all along the edge of the quarry to prevent inadvertent entry of water
2. Slope Stability	Failure of Pit Slope when the depth is more and intercepted by number of faults	The overall pit slopes vary from 70° to 33°. This has been done to ensure safe pit slope for the prevalent strata conditions.	The movement of the slope shall be observed by installing monitoring station; Surveyor should ensure frequently.
3. Sliding	Sliding of dump slopes / edges	Not to allow excess dump heights or merging of any two dump decks; The height of each deck is limited to 30 m and overall dump height shall not exceed e.g., 120 m; Not to allow any Dumpers / Tippers to move over the un-consolidated the dump edge / slope.	Top of the dumps up to the edges shall be thoroughly compacted to prevent any possible ingress of rain water and to provide a gentle slope towards toe drains; No movement of Dumpers / Tippers is allowed over the edge of un-consolidated dump /dump having excess height.
4. HEMM movement	Failure of vehicle stability resulting toppling.	Ensure placement and movement of HEMM only on the stable and level ground.	Not to allow any HEMM movement within a distance of 5 m from the edge; Provide stable and level ground at loading point for placement of HEMM. of blasted / loose bench; Unloading of material shall be done over the stable dumps at a distance of minimum 3 m from the edge
		Run the HEMM with in permissible speed limits; Using good quality tyres	Ensure by surprise checks whether the HEMM is being operated within the speed limits; Arrange speed locking over HEMM where ever it is possible; Replace worn out tyres in time with good quality tyres.

	Run over by vehicles / HEMM	Persons/ conveyance vehicles to maintain a safe distance on haul roads and 50 m at loading and unloading points from working HEMM; Prevent un-authorized drivers.	To develop awareness among employees to maintain a minimum distance of 30 m on haul roads and 50 m at loading and un- loading points from moving and working HEMM; Insist all Operators / drivers to wear identity cards while they are on duty.
		Persons to maintain a safe distance from moving vehicles. Prevent boarding / alighting the moving vehicles.	To ensure no person shall be allowed to enter within a distance of 30m of moving vehicles; Develop awareness among the employees not to board / alight from moving vehicles/ HEMM
	Sliding of dumpers / tippers / dozers at dump edge	Restrict the deck height to 30 m only; No HEMM shall be allowed to work over the edge of any unconsolidated dump	To ensure that the height of each deck doesn't exceed 30 m under any circumstances; To deploy a spotter for guiding the tippers / dumpers at unloading point on elevated platform.
	Simultaneous operations at loading and un-loading points.	Not to allow more than one operation at the face at a time. The following are considered as (separate) individual operations. i) Drilling, ii) Charging & Blasting, iii) Dozing, iv) Grading v) Loading and vi) Un loading	To maintain a minimum distance of 50 m between the places of i) Drilling & Loading ii) Charging & Loading; To maintain a minimum distance of 15 m between drilling and charging operations
	Spillage of boulders from loaded tippers / dumpers	Avoid over loading of tippers / dumpers. To control speed of the vehicles. To avoid sharp curves	Educate all operators not to over load the dumpers / tippers; Ensure the loading is up to the brim level of the tippers / dumpers; Ensure strict implementation of code of traffic rules; Haul roads shall be formed without sharp curves.
	Stoppage of HEMM / vehicles on active haul roads due to break-down.	Break down equipment from active haul roads must be attended immediately and repair / remove at the earliest possible. To provide protection against break down equipment an active haul roads.	To keep emergency steering mechanism in order. So that operator himself can remove the equipment; Engineers / Technicians must repair / remove the equipment at the earliest possible.
5. Drilling	While changing drill barrels / rods	Ensure proper holding of drill barrels, while loading / unloading (Attachment / Detaching) on the drill mast.	Drill operator should ensure.
6. Blasting	While transportation	Transport the explosives and accessories in vehicle approved under explosive rules; Standard Operating Procedures (SOP) should be followed	Transportation of explosive should be done under the supervision of competent person

	While blasting	Avoid blasting during cloudy days and when the wind is blowing towards structures; All loose debris will be cleared off from the blasting site; A free face will always be maintained; In multi row blasting, greater relief will be provided between rows using suitable delay intervals; Proper use of different type of relay / delay detonator for proper sequencing of the blast will be used.	Blasting in charge should ensure.
7. Electricity	Switching on power when persons are at Work; Dragging of cable by hoisted body of dumper, the Transmission lines / cables cross the haul roads.	Shut down procedure shall be strictly implemented. Identification of cables and switches shall be displayed; Transmission lines /cables shall only be laid on 12-meter height towers, as per The Electricity Authority Regulations,	Supervisors having valid electrical supervisory certificate only shall be deployed on the jobs.
8. Fires	Spontaneous heating in the crushing and/or blasting areas, etc.	Sufficient water spraying arrangement will be provided by using water sprinklers / through pipe lines	Separate Fire fighting crew shall be trained for fighting the fires.

8.8 Erosion and Sedimentation

The mining facility should develop land disturbance control measures to achieve a reduction of sediment load carried in runoff on an average annual basis, as compared with no sediment or erosion controls, until the site is stabilized. The erosion and sediment control / best management plans will be used alone or in combination to meet the sediment reduction goal, or as required by the site's regulatory framework.

The main potential erosion hazard for top soils is site clearance ahead of infrastructure developments such as haul roads, hard stands, pipes and access tracks. In addition, early in the rehabilitation process while returned top soils are awaiting the re-establishment of vegetation. The disturbed rock and earth from mines are major sources of dust, erosion, sedimentation and contamination.

Control erosion and sedimentation will take consideration the followings -

- Slopes of more than 20 degrees,
- Site dewatering, water should not be in a manner that causes off-site erosion or sedimentation,
- Sites where actual or potential severe erosion problems discharged warrant corrective action,
- Each mine facility should conduct inspections and audits on a regular basis to ensure that land disturbance is minimal and within the Site environmental management plan.
- All site developments and land disturbances shall be implemented to best fit of the terrain, minimize exposed area, and retain as much existing vegetation as possible,
- Runoff from areas adjacent to the site should be diverted around disturbed areas; all land disturbance activities on the site should be conducted in accordance with the approved environmental management plan.
- To the maximum extent practicable, the areas of bare soil exposed at any time should be minimized.

- Sediment should be contained on-site through best management practices,
- Earth storage piles should be protected with perimeter controls such as silt fence, a or temporary stabilization,
- Discharges should be to locations that do not adversely impact adjoining properties or natural waterways,

8.9 Soil Erosion and Sedimentation Protection Plan

To mitigate soil erosion and sedimentation, 24-Hour will implement a “Site Soil Erosion Sedimentation Protection Plan” as part of the CEMP according to the engineering and vegetation measures defined in the EMP. The Plan will include the following measures for control of erosion and sedimentation due to the mining activities, but not limited to -

- Restrict clearing to areas essential for the works,
- Minimize length of time soil is exposed,
- Direct run-off from cleared areas to sediment dam,
- Surplus earth and rocks shall be used for filling at sites defined in plans (e.g., for road construction),
- Excavation width and depth should be minimized to reduce spoil generation.
- Duration of open trenches should be minimized, and backfill should commence immediately after completion,
- Use settling ponds, silt fences and screens to prevent sediment transport,
- Strip and stockpile topsoil, and cover temporary soil stockpiles,
- Properly slope or re-vegetate disturbed surfaces, such as compacted trenches and cut banks,
- Slope stability must be undertaken and drains and sediment barriers must be installed as necessary and maintained until final reinstatement is completed,
- All the necessary precautions shall be taken to prevent damage due to erosion and siltation during project operation. These precautions shall include temporary drainage berms, scour checks, riprap and the like,
- After each heavy rainfall, and daily when intermittent rainfall occurs, the project manager together with the mine engineers shall inspect the state of all erosion and siltation control works, in order to ascertain any deficiency and take the corrective action as deemed suitable,
- Mulching, revegetation, sediment fences, check dams and grass / rock filter for the exposed subsoils,
- Sedimentation dams, gully trap dams which act as settling areas to ensure that soil eroded from the rehabilitated area does not pass beyond that area,

CHAPTER 9:
CUMULATIVE IMPACT ASSESSMENT

9.1 Assessment of Cumulative Impacts

Cumulative impacts result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones. For practical reasons, identification and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concerns and/or concerns of affected communities.

Under the EIA Procedure (2015), a cumulative impact assessment may be required as part of the environmental impact assessment. The decision on whether a cumulative impact assessment should be made at the scoping phase. The decision will depend on whether the Project is likely to contribute significantly to cumulative impacts and/or whether cumulative impacts originating from other developments are likely to significantly affect the Project.

Cumulative impacts need to be assessed in mining under the following conditions - i. when series of mining developments occur within an area will impact the same environmental or social components (perhaps common water bodies or watercourses, wildlife populations, community health, community loss of access to assets, or multiple land takes); or ii. when a large mining project requires major infrastructure investments (e.g., power transmission lines, major roads needed to provide to access the site, new towns), to support mining operations.

9.2 Identifying Cumulative Impacts

The EIA Procedure requires an EIA investigation to consider cumulative impact (Article 53). The Procedure gives the definition of cumulative impacts as – In general, cumulative impacts can be defined as “the changes to the environment caused by a proposed project in combination with other past, present, and reasonably foreseeable projects or human activities”.

Cumulative effects are those effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what a project proponent undertakes. Cumulative effects can result from individually minor, but collectively significant actions, taking place over a period of time.

Mining projects can contribute to cumulative effects when their effects overlap with those of other activities in space, or time, or both. Effects can be either direct or indirect. Direct effects are those that occur in the same place and at the same time and are a direct result of the proposed action. Indirect effects can occur at a distance from the proposed action, or the effects may appear sometime after the proposed action occurs. If there are projects like upstream timber harvest, upstream water sewage plant, a series of mining and hydropower projects on the same water body, they may affect water quality, in addition to the effects on water quality from the proposed project. It can also have a significant effect on the quantity and flow of water downstream potentially contributing to increased risk of flooding, erosion and sedimentation, loss of fish habitat and the like.

9.2.1 Identifying resources that have potential for cumulative impacts

Resources which may require the analysis of cumulative effects were identified through the results of Focus Group Discussion (FGD), Key Informant Interviews (KII) and village social surveys conducted during the Scoping stage of this EIA process. The information was also collected from site visits, and public interest in a particular resource; and through consultation with the agencies and non-governmental organizations (NGOs) familiar with or responsible for those resources.

Based on the site surveys, secondary documents from relevant organizations in the Tanintharyi Township, it was observed that there are no any other similar ongoing or previous projects such as mining development, timber harvest, near the project site and in its AOI. In addition, it was noted that there were no upcoming projects in surrounding area, either. Therefore, cumulative impacts of the Project and other existing economic activities or projects will not be discussed in the study area.

9.3 Existing and future private and public projects and developments

The 24-Hour was granted a license to mine the concessions of 2,880 acres (11.6552 km²) in Tanintharyi Township, Tanintharyi Region. Although there are no other similar projects existing, at present, near and around the proposed limestone site, three series of limestone mining

developments will occur within an area which will impact the same environmental or social components.

The mining concessions include Block – 1 for 2200 acres; Block – 2 for 200 acres; and Block – 3 for 480 acres. The Geological Ore Reserved (P-2 Probable Ore Reserve) showed that the Block-3A will produce 73 million tons total production within the mine life of Thirty (30) years with the production rate of 2,250,000 ton/ yr. It was estimated that the development of mining in Block – 3, test-run for blasting and crushing will be completed during 2024 and limestone production is expected to start in December, 2025.

The 24-Hour will start mining from the Block – 3 (A) and during the production of limestone crushed rocks, there is a possibility of limestone production begin in Block – 2 and then the Block – 1. The quarry sites are situated at *Paung Ni Kyauk Taung*, lie near the eastern side of the upstream of *Nga Wun Stream*. It flows from south to north and enters into the Tanintharyi River. The nearest point from the Block-2 to the stream is about 300 meters away, while those from Block-1 and Block-3 are 1840 meters and 650 meters, respectively (Chapter 4). Therefore, no significant negative impacts on the *Nga Wun Stream* and the cumulative impacts of these limestone mining areas are not considered.

Although it is a large mining project, the project proponent will install only a minor infrastructure investment (e.g., power transmission lines, roads needed to provide to access the site, workers camps, etc.), to support mining operations. Moreover, the distances of Block – 1 and Block– 2 from the Block– 3 are 7.4 km and 11.7 km, respectively, beyond the AOI of 5 km, assuming that there will not have the cumulative impacts on each other mine sites.

Following the general approach outlined in the Good Practice Handbook on Cumulative Impact Assessment and Management prepared by International Finance Corporation (2013), during the process of identifying environmental and social impacts and risks, the project Proponent recognizes that - (i) their activities may not contribute to cumulative impacts on valued environmental and social components on which other existing or future developments may also have detrimental effects, and (ii) mitigation measures will be designed to avoid and/or minimize these impacts to the greatest extent possible. Therefore, the cumulative impact assessment will be conducted in this EIA study.

CHAPTER 10:
**COMMUNITY ENGAGEMENT AND COMMUNITY
DEVELOPMENT**

10.1 Community Engagement

Community engagement is a critically important requirement throughout the EIA process and life of mine. Successful community engagement and community development is important and no mining project should be allowed to proceed without having included extensive community engagement in the process. Community engagement builds on local knowledge and utilizes participatory processes to analyse the concerns of interested and affected parties.

In relation to the requirement of Corporate Social Responsibility (CSR) of the project, and also partly as per the requirement of IFCs “Environmental and Social Standard 10: “Stakeholder Engagement and Information Disclosure”, the project proponent held two stakeholder meetings within the project area, at the Scoping Stage and EIA Stage, prior to the commencement of the mining works. Information on the construction and extraction works intended to carry out, heavy equipment, transportation on site is required to disclose. It was also informed that the project proponent commits to bear the responsibility and transparency of the project implementation as a whole. It is also important to disclose, as a part of CSR, the project proponent is intending to form a team of stakeholder engagement during the period of the implementation of limestone operation stages (M-D, M-O and M-C).

The project proponent will establish, within its organization, a Grievance Redress Unit for which any suggestions, comments, claims and complaints made by the general public. During the stakeholder engagement session, the existence of the Grievance Redress Unit, its telephone number and e-mail address were informed to the participants of the meetings. The 24 -Hr. Co., Ltd. ’s project information disclosure for this project will consist primarily of sustainability reporting, and disclosure of environmental, social and health reports as per regulatory requirements. Sustainability reporting is a practice of disclosing outcomes and results in the context of the organization’s commitments, management approach, and organizational performance on economic, environmental, and social issues. It will develop a “Sustainability Reporting Guideline” which will generally consist of the following indicators, but not limited to,

- Energy use; Water withdrawal; GHG emission and air emission;
- Discharge to water and waste; - Spill to the environment; - Environmental complaint
- Environmental expenditure and investment, and etc.

Consultation is only one part of the necessary engagement between the communities and the project. Building long term relationships with those affected by their mining activities can improve the identification and management of risks, as well as facilitate the long-term viability of mining operations. Meaningful community engagement should be an ongoing, systematic, interactive process. It will begin prior to mine planning and continue as a sustained process throughout the life of a mine into closure and post closure activities.

It must be inclusive. The EIA process ensured that all members of a community had the opportunity to engage and influence decision making not only in the planning stage but also throughout the life of a mine. This will include marginalized and vulnerable people in communities such as elderly, women and people with disability.

Meaningful community engagement requires full and transparent information disclosure by the project proponent. The project proponent is responsible for providing the information on all material matters that will affect communities and their livelihoods. Relevant information about the nature of the project were disclosed and disseminated in a way that is timely, understandable, culturally acceptable and accessible.

10.1.1 Results of Consultation and Activities

1) Methodology and approach

Public Consultation Meeting (PCM) and Public Disclosure (PD) for EIA were conducted at two different stages (EIA scoping stage and draft EIA report stage) in order to collect opinions and feedback through the public engagement and disseminate information about the project and EIA study. Information on the Project and scope of the EIA Study was disseminated to the public, and then comments and opinions were collected and incorporated into the Scoping Report.

The PCM and PD for the second stage of EIA was conducted at the time of preparations of draft EIA report. Information about findings of environmental and social impact assessment study and proposed mitigation measures were disseminated to the general public that are directly or indirectly affected by the Project. In addition, their feedback and opinions were obtained which were reflected in the EIA Report together with their comments and request on the environmental and social mitigation measures, Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP).

The following information were clearly stated by the project proponent. The quarry site is located in Tanintharyi Township; villages are situated far away from the quarry site (more than 20 miles) so that they all will have no direct negative impacts of environmental pollution. The limestone mining will begin at the Block 3 area, and the produced limestone will be collected near the area, at the foot of the hill. There will be no much earth /soil waste produced from limestone mining; except for the rock residues waste, all of which will be used in road construction inside the project. The limestone will be sold at the mine site at market / current price: the customers will come and buy at the mine site. Therefore, limestone transport activities will not be done by the 24-Hour.

2) Summary and Results of PCM at Scoping Stage

The primary objectives of the PCM were to incorporate the opinion and suggestions of the public and all other stakeholders at the project planning stage to ensure wider acceptability of the Project. The key objectives, among others are – to engage in a participative exercise with PAPs, stakeholders and local communities and obtain expertise and local, traditional wisdom and knowledge from them in order to plan–mitigation measures, and to facilitate periodic opportunities to the principal stakeholders to offer their inputs on all key components of the project.

For the PD, the project information was announced through the relevant authorities, namely Township GAD and Village Tract GAD officials and communities' leaders. The announcement letters were posted on the notice boards of Tanintharyi Township GAD office and Village Tract GAD offices of Chaung Nauk Pyan and Ma Noe Yone Villages. Executive summary of EIA scoping report in Myanmar language and “Comment forms” were provided at the disclosure places. The disclosure period was (15) days in total (15th December-29th December 2021). The poster of PCM announcements were also posted in these villages. The presentation and handout were prepared in Myanmar Language. The explanation was also provided in Myanmar Language.

The PCM meetings were held as the following schedules.

- (i) PCM at Township level: General Administrative Department (GAD) Office, Tanintharyi Township on 20th December 2021: Total 17 persons (10 Males and 7 Females) attended,
- (ii) PCM at Village level: Project Office of 24 -Hr. Mining and Industry Co., Ltd. at Khe Chaung Village, Ma Noe Yone Village Tract, Bokpyin Township on 23th December 2021: Total 49 persons (31 Males and 18 Females) attended.

(i) PCM at Township level

The local authorities suggested the 24-Hour to undertake the mining operations in accordance with the rules and laws of ECD and Department of Mining. They also urged the EIA team to make efforts for a quality EIA report which will represent a reference of operation manual to the project proponent. The company was also requested to emphasize on the local development activities. If the 24-Hour company gives more jobs to the locals, local purchase, using more local products, several local businesses will improve. The ECD officer and FD officer gave an additional explanation on the ESIA procedure and forest conservation activities, and forest replantation for mine closure plan. Through the PCM, the local authorities were well aware of the project developments and they expected the project's positive impact will improve the livelihoods of the region, to a considerable extent.

The company assured that the proposed project will be implemented according to the commitment stated in the EMP. It will strictly follow the mitigation measures of emission of dusts not to have negative impacts on the environment and the community. The mine closure plan will be implemented to rehabilitate the mine site and reduce the impacts on the natural forest ecosystem. During the project implementation, the company will support the community through the CSR program.

(ii) PCM at Village level

For the village level PCM, four villages in Tanintharyi Township (Chaung Nauk Pyan, Chaung Lamu, Aye Thar Yar, and Ta Pa Lat) and three villages in Mandaing Sub-Township (Khe Chaung, Taung Nge, Ywa Thar Yar) were invited to attend the meeting. The consultation and feedback showed that most participants had no worries about negative environmental and social issues identified by all stakeholders. Since the nearest village from the project is Ma Noe Yone village which is about 20 miles from the Block 3 quarry site, no impacts of direct pollution from the quarry were expected. The waste water discharge from the project was raised and the issue was settled by the project manager saying that the nature of the limestone production would not produce waste water, and the siltation to the nearby stream will also be mitigated by construction of collection ditches around the quarry and sedimentation pond before flowing down to the stream.

The attendees demanded to create more job and put more CSR budget allocation. The company assured for the jobs and supports to school, health clinics, religious affairs and so on. The attendees were well informed about the project and the company promised they will work in transparency during project operations. The villagers were assured that they will have direct jobs as workers in various quarry operations and the indirect jobs with food and material supply and transport and services, etc. They were also pleased with the GRM program through which their worries and affected issues will be solved in a quick manner.

The attendant lists and detailed discussion of individual participants and the company (question and answer session) for the Township level and village level PCM were described in the Scoping Report.

3) Summary of Consultation at EIA Stage

(1) Identification of PAP and Other Stakeholders

Public Consultation Meeting (PCM) and Public Disclosure (PD) for EIA were conducted for the government organizations at Myeik District and for the village community, the PCM was held at three villages. In order to collect opinions and feedback of the public and to disseminate information on the Project and EIA Study, the PCM and PD were conducted at draft EIA report stage during Dec., 2023.

The Myeik District level meeting was organized at Grand Jade Hotel in Myeik. All concerned government departments, including the academic institution – Myeik University, were invited. To give the information about the proposed project, four villages in Tanintharyi Township (Chaung Nauk Pyan, Chaung Lamu, Aye Thar Yar, and Ta Pa Lat) and three villages in Mandaing Sub- Township (Khe Chaung, Taung Nge, Ywa Thar Yar) were invited to the PCM at village level. For the village level PCM, the Online – video call meetings were held at three villages during 6 – 7 Sept., 2023.

Date and Venue

- i) PCM at District level on 5th Sept., 2023 at Grand Jade Hotel, Myeik
- ii) PCM (Online – video call) at Village level on 6th, 7th and 7th Sept., 2023 at Ye Phyu, Chaung Nyauk Pyan and Khae Chaung villages

a) Agenda

- 1) Registration
- 2) Opening Remarks by Director, General Administrative Department (GAD), Myeik District, Tanintharyi Region
- 3) Project Explanation by Project Director, 24-Hour Mining and Industry Co., Ltd
- 4) Result of Environmental Impact Assessment at EIA Final Report stage by GGG Co. Ltd
- 5) Question and Answer

b) Expected Participants & Invitation Method

- PCM was conducted two times; one in Grand Jade Hotel in Myeik,
- Relevant Government Authorities and related Government Organizations at Myeik District and representatives and interested persons at village level.
- Local residents and community representatives in District level and village level.
- Project Proponent/ Developer
- Anyone interested

c) Comment – form Submission Method

Persons who want to provide comments or suggestions can be submitted with the comment form provided at the disclosure places or by e-mail or by phone or by Project Proponent’s website. The comment forms were distributed to the participants during the meeting and collected them later.

d) Special Considerations to Socially Vulnerable Groups

- Feedback forms were provided to the participants so that the people who hesitate to speak out in public can share their views and comments.
- Assistants helped the participants to fill out the form in case the participant needs assistance in writing/reading.
- Female assistants were also available for the female participants who need any assistance.

e) Language Used

The presentation and handout were prepared in Myanmar Language. The explanation was also provided in Myanmar Language

f) Announcement Method

- Public disclosure information was announced through the relevant authorities, communities’ leaders and also posted the notice letter about the information of PD and PCM matters on the notice board of the GAD offices of Myeik District,

village level GAD offices at Ye Phyu, Chaung Nyauk Pyan and Khae Chaung villages.

- Public disclosure period was from 21st August to 4th Sept., 2023 (15 days in total) before the public consultation meetings.
- Executive summary of EIA Final (draft) report in Myanmar language was delivered to the GAD offices.
- Comment forms are also provided at the disclosure places.
- Contact persons' information is provided in the executive summary report for further contact if necessary.
- The announcement for PCM was made via Project Proponent's website, as shown in *Fig. 10.1*.

g) Participants

- (i) PCM at District level: Total 16 (Male: 12; Female:4)
- (ii) PCM at Village level: Total 59 persons (Male:37; Female 22)

For the PCM of both levels, the lists of participants were described in the following tables. The Participant Lists in PCM at Grand Jade Hotel in Myeik were shown in *Table 10.1*. The participant lists in On-line meetings at three villages were described in *Table 10.2*, *Table 10.3*, and *Table 10.4*, respectively.

The photo documentation of Myeik PCM event was presented in Plate 10.1 and that of Village level PCM were shown in Plate 10.2.

The attendants' signatures and comment forms of Myeik PCM and Village PCM were described in the *Annex 10.1* and *Annex 10.2*, respectively.

The On-line Video -presentation by the EIA Team members were also attached with this EIA draft report.

(2) Summary of consultation and feedback

(i) Myeik District Level PCM

The ESIA study had detail interactions with the related government department officials to assess their recommendation and perception about the project. The Myeik District meeting was organized at Grand Jade Hotel in Myeik on 5 Sept., 2023. The staffs from various government organizations were 16 numbers in total, including 5 women and 11 males. Generally, they recommended that the project proponent take care of environmental pollution to control under the limitations. The summary of findings from the event was as follows -

The local authorities of Myeik District level are well aware of the project development and they are looking forward to the start of the project operations. They expected the project's positive impact will improve the livelihoods of the region, to a considerable extent. All stakeholders were engaged in a meaningful dialogue and they are well informed prior to the decision of the project proponent. During the meeting, the participants discussed in person with the project proponent and EIA team members. In addition, they submitted the comment forms after the meeting.

It was noted that most participants of government officials welcome the proposed lime stone project, which will bring about the economic development from the Tanintharyi Township rural areas to the Tanintharyi Region. The GAD officer emphasized on the occupational health of workers long-term affected by the dust and noise pollution. The site engineers and responsible persons should urge the workers to strictly follow the mine safety rules and regulations, such as wearing PPE, taking care with use of explosives for blasting and etc.

The participants from Myeik University pointed out that although the limestone production stage has no significant negative environmental impacts comparing with the next cement production, the project proponent should take

commitments on mitigation measures as stated in the EMP. There will be long-term impacts on natural environment, flora, fauna and wildlife of the limestone ecosystem. For every development program, there will be negative environmental issues, therefore, the project proponent should try to create the win – win situation for the communities. Since the proposed project is for 30 - 50 years production, the impacts on community health and safety issues and impacts on agricultural lands were also discussed. The recommendations from ECD and FD were to mitigate and soil erosion and sedimentation problems at the quarry site. The 24-Hr Company said they had already plan for construction of collection ditches around the quarry site and sedimentation pond to collect the sediments (soil, earth, rocks, etc.). The design and map those measures for erosion and sedimentation prevention and control was described in this EIA draft report.

(ii)Village Level PCM

Online PC meetings were organized at Ye Phyu Village and Chaung Nauk Pyan and Khae Chaung villages on 6, 7 and 8 Sept., 2023, respectively. The participants were 21, 20 and 18 people, respectively; a total of 59 persons (Male:37; Female 22). The participants came from ten villages, around the project area of Tanintharyi and Bokepyin Townships, namely Ye Phyu, Chaung La Mu, Ta pa Lat, Shan Inn Taw, Chaung Nauk Pyan, Aye Tha Yar, Khae Chaung, Ywar Thar Yar, Ma Noe Yone and Taung Nge villages.

They were gathered at the meeting points and U Khin Zaw Hein, Project Manager and U Kyaw Zin Latt, Project Engineer, facilitated the meetings. The video presentation about EIA assessments, environmental and social impacts were explained by the EIA team members. The questions about the project description raised by the participants were answered by the project manager and engineer. Concerning the EIA processes and some environmental and social issues, the EIA team members who were standing by at the Grand Jade hotel and gave quick responses to the audience through Viber calls. (Note: The outsiders were not allowed to go to villages for the safety issues)

Almost all participants wanted to know the job opportunity and some were interested in making contracts for supply of construction materials. Some villagers wanted to sure not to pollute the *Nga Wun* Stream and dusts and gases coming out from the project. Some were worried about the negative impacts on their agriculture and orchard plantation. A few villagers wanted to confirm that there will be no land grabbing / confiscation occur for the project by the company. Some villagers demanded to support the education and medical care of the community. The project proponent assured that the jobs will be given to the local villagers as many as practically possible for low-skill and medium - skill workers. The company will give priority to the local purchase so that the small-scale business and SME will develop in these areas. The local young graduates will be considered for the high-skill labor and administrative staffs of the company.

It was assured that the CSR programs, such as education, infrastructure and social welfare will be continued by the 24- Hour company during the project operation. The EIA Team and Project manager and engineer answered their questions and explain more about the mitigation measures for the impacts of the project. It will result in a good relation with the local communities and will eradicate their fear and apprehensions on the project. In conclusion, based on the results of the PCM at villages, the local community believed that the 24 - Hour company will help them improve their economy and while mitigating the negative impacts of the mining operation.

(iii) Comment / feedback forms

To collect more information of the meeting participants related with the proposed project, the comment/ feedback forms were distributed during the both PCM at district level and village levels.

In the District level, out of the 16 participants, the ten (10) comment forms of the staffs from various government organizations were gathered. In the meeting, almost all participants discussed in detail. Moreover, their ideas and recommendations were similar with what they said during the meeting. Therefore, the summary of their comments written in the comment forms was not described here. The participant list and their comments of Myeik PCM were attached in [Annex 10.1](#).

Due to the travel restrictions for the safety issues in the region, “in person / actual PCM” with EIA team and the community could not be held. The village virtual/ On-line PCM were organized at Ye Phyu, Chaung Nauk Pyan and Khae Chaung village on 6,7, and 8 Sept., 2023, respectively. It was recorded that the total participants were 21 (Male: 13, Female: 8) in Ye Phyu PCM; 20 participants (Male: 16, Female:4) in Chaung Nauk Pyan and **18 participants** (Male: 8, Female: 10) in Khae Chaung village PCM. After the meeting the comment forms were distributed for their opinion survey to fill the forms and collected them. The list of participants and their comments of the Village PCM were shown in [Annex 10.2](#).

Generally, their responses, comments and opinions to the proposed project were homogeneous to some extent. Most of them asked to create jobs and support for educational and social development. Most participants agreed to the project while some were worried about the pollution. The following were the summary of comments mentioned in their “Comment Forms”.

- Most respondents said that they agree with the project since they expect that it will bring more jobs creations.
- Some asked to assign local young graduates and engineers in the project and give contracts to the local contractors.
- Many of them want village all-round development, such as, clinic, schools, libraries, provide ambulance and more nurses.
- Some asked to help access the electricity national grid line, better mobile and internet systems.
- Upgrade the local youth, to increase awareness, knowledge and education, help village libraries,
- Build a development fund for villages use them in necessary places,
- Support to establish village medical care center and more nurses, midwives,
- Give jobs to the youth –villages graduate, encourage the educated persons in villages,
- Qualified local youth assigned for permanent laborers,
- Upgrade the schools, the project can give benefits to the community,

The concerns about the project and their recommendations were –

- Some recommended the company take care not to damage their farm/ orchard lands.
- They agree the project unless it disturbs their farm land; if it does, give compensation to the farmers,
- Some villagers strongly suggested the 24-Hour to take measures to reduce the negative impacts, such as water pollution to *Nga Wun* Stream, dust pollution to the roads.
- Not to affect the environment and wildlife of the surroundings by the project,
- Some advice to the local authorities to monitor the company works in line with the environmental conservation.

(iv) Announcement for PCM at Project Proponent's website

24-Hour Mining and Industry ကုမ္ပဏီလီမိတက်၏ လုပ်ကွက် (၃) ကွက် စုစုပေါင်း မြေဧရိယာ (၂၈၈၀) ဧကတွင် ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှုစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ပြုလုပ်ရန်နှင့် စပ်လျဉ်း၍ ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲ အစည်းအဝေးဖိတ်ကြားခြင်း

24-Hour Mining and Industry Co., Ltd သည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီး ဌာနမှ လုပ်ကိုင်ခွင့်ပြုချက်ရရှိထားသော၊ သိန်ခွန်းကြိုးဝိုင်းအတွင်းရှိ စုစုပေါင်းမြေဧရိယာ (၂၈၈၀) ဧကတွင် ထုံးကျောက်သတ္တု တူးဖော်ထုတ်လုပ်မှုစီမံကိန်းအား အကောင်အထည်ဖော် ဆောင်ရွက်မည်ဖြစ်ပါသည်။ အဆိုပါစီမံကိန်းသည် တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် တည်ရှိပါသည်။

24-Hour Mining and Industry ကုမ္ပဏီသည် အဆိုပါစီမံကိန်းကြောင့် ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment- EIA) ကို သယံဇာတနှင့် သဘာဝ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ညွှန်ကြားချက်များနှင့်အညီ ပြုလုပ်သွားမည်ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၏ လုပ်ငန်းအခြေအနေများနှင့် စပ်လျဉ်း၍ ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲပြုလုပ်ပြီး သဘောထားမှတ်ချက်များ တောင်းခံသွား မည်ဖြစ်ကြောင်း အသိပေးအပ်ပါသည်။ အဆိုပါအများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးပွဲ အစည်းအဝေးများအား အောက်ပါအစီအစဉ်အတိုင်း ကျင်းပမည်ဖြစ်ပါသဖြင့် စိတ်ဝင်စားသူ မည်သူမဆို တက်ရောက် ဆွေးနွေး နိုင်ပါရန် လေးစားစွာ ဖိတ်ကြားအပ်ပါသည်။

အစည်းအဝေးအစီအစဉ်

စဉ်	နေ့ရက်	အချိန်	နေရာ
၁	၅.၉.၂၀၂၃ (အင်္ဂါ)	၁၀: ၃၀ - ၁၂: ၀၀	မြိတ်မြို့၊ Green Jade Hotel
၂	၆.၉.၂၀၂၃ (ဗုဒ္ဓဟူး)	၀၁: ၀၀ - ၀၂: ၃၀	ရေဖြူကျေးရွာ၊ စီမံကိန်းရုံး
၃	၇.၉.၂၀၂၃ (ကြာသပတေး)	၁၀: ၀၀ - ၁၂: ၃၀	ချောင်းနောက်ပြန်ရွာ၊ စီမံကိန်းရုံး
၄	၈.၉.၂၀၂၃ (သောကြာ)	၀၉: ၃၀ - ၁၁: ၃၀	ခဲချောင်းကျေးရွာ၊ စီမံကိန်းရုံး



Figure 10.1 Announcement for PCM at Project Proponent's website

Table 10.1 Lists of Participant on PCM at Grand Jade Hotel, Myeik on 5th September, 2023

Sr.	Name	Designation/	Department	Mobile No.	Signature
1	U Win Naing Oo	Assistant Director	General Administration Department	09-420750655	
2	U Kyi Lwin	AD	ECD	09-440229771	
3	Daw Ingyin Khaing	Assistant Director	DOA (Department of Agriculture)	09-250466441	
4	U Myint Soe	District Manager,	DALMS (Dept. of Agricultural Land Manag. and Statistics)	09-400506280	
5	Daw Myo Myo Hlaing	District Officer	Department of Health	09=250094976	
6	U Aung Ko Ko Kyaw	Assistant Director	Dept.of Road & Transport	09-02668771	
7	U Zaw Min Ko	Assistant	ECD	09-667294821	
8	Dr. Soe Moe Lwin	Pro-Rector	Myeik University	09-5047370	smlwin.sm@gmail.com
9	Dr. Htun Zaw	Professor, Geography Dept.	Myeik University	09-5607054	Drhtunzaw.yue@gmail.com
10	U Soe Than Naing	Asst. Manager	No-2 Mining Enterprises	09-49003810	
11	Dr. Nandar Myint Maung	Professor Geology Dept.	Myeik University	09-25312964	
12	Dr. Ohnmar	Professor, Botany Dept.	Myeik University	09-24851150	
13	U Myint Swe	Asso.Professor, Geology Dept.	Myeik University	09-22926504	
14	Dr. Aye Aye Cho	Professor Zoology Dept.	Myeik University	09-5155147	
15	U Han Zaw Htun	Lecturer, Geography Dept.	Myeik University	09-22533171	
16	U Thet Pi Soe	Demonstrator, Geology Dept.	Myeik University	09-74967760	

Table 10.2 List of Participants of On-line PCM organized at Ye Hpyu village (Thein Khun Village Tract, Tanintharyi Township

Sr.	Name / National Registration Number	Male/ Female	Age	Livelihood/ Farmer/ Worker, etc.	Address/ Village	Signature /Mobile Number
1	Daw Le Le Htay 7/LaPaTa(N)093686	F	42	Dependent	Ye Hpyu Village	09-946562688
2	Daw Htay Htay San 6/TaLaYa(N)036323	F	36	Grocery shop	Ye Hpyu Village	09-761573142
3	U Hla Min Naing 6/TaThaYa(N)101873	M	33	Driver	Ye Hpyu Village	09-686821421
4	Daw Khin Mar Yu 6/TaThaYa(N)050642	F	38	Grocery shop	Chaung LaMu	09-452624021
5	Daw Mya Mya Mu 6/ TaThaYa (N)053051	F	28	Dependent	Ta Pa Lat Village	09-254336322
6	Su Su Sandy Win 6/ TaThaYa (N)073390	F	26	Nurse	Thein Khun	09-94131349
7	U Min Ko Oo 6/ TaThaYa (N)111536	M	26	Carpenter	Ye Hpyu Village	09-676068055
8	Daw Wai Wai Htite 6/TaThaYa(N)04048	F	37	Dependent	Chaung LaMu	09-769254524
9	Daw In Kyu 7/LaPaTa(N)093686	F	42	Daily wage	Ta Pa Lat Village	09-672115160
10	Ngu War Lwin 6/T TaThaYa (N)078260	F	27	Betel shop	Chaung La Mu	09-892670091
11	U Tint Lwi Oo 6/TaThaYa(N)038377	M	42	Orchard	Ta Pa Lat Village	09-426227566
12	U Ye Lwin 6/TaThaYa(N)053198	M	31	Mechanic	Chaung La Mu	09-662374037
13	Ye Naung Soe 6/TaThaYa(N)056131	M	39	Cycle repair	Chaung La Mu	09-42038790
14	U Nay Win 6/MaSaYa(N)090651	M	64	Grocery	Ye Hpyu Village	09-263902830
15	U Wai Yan Htun 6/TaThaYa(N)090701	M	20	Daily Wage	Ta Pa Lat Village	09-650601225
16	U Htay Zaw 6/TaThaYa(N)06584	M	35	Mason	Shan Inn Taw	09-650369053
17	U Than Soe 7/PaKhaNa(N)242304	M	67	Betel grower	Ye Hpyu	09-421721686
18	U Soe Thu Yein 6/TaThaYa(N)055913	M	18	Farmer	Chaung La Mu	09-67806038
19	Naing Naing Aung 6/TaThaYa(N)085571	M	25	Orchard	Ye Hpyu Village	09-669396890
20	U Thu Ya Htun 6/TaThaYa(N)043272	M	30	Grocery	Ye Hpyu Village	09-453624019
21	ThiHa Zaw 6/TaThaYa(N)101865	M	25	Daily Wage/ casual worker	Chaung La Mu	09-675010171

Table 10.3 List of Participants of On-line PCM organized at Chaung Nauk Pyan village (Thein Khun Village Tract, Tanintharyi Township)

Sr.	Name / National Registration Number	Male/ Female	Age	Livelihood/ Farmer/ Worker, etc.	Address/ Village	Signature /Mobile No.
1	U Than Soe 6/TaThaYa(N)057428	M	47	Chairman, Chaung La Mu village	Chaung La Mu village	09-453642466
2	Daw Hnin Thazin 14/AMaNa(N)109202	F	43	Dependent	Chaung Nauk Pyan	-
3	U Nan Win 9/ZaKaNa(N)075596	M	25	Orchard	Aye Tha Yar	-
4	U Thein Htike Oo 6/TaThaYa(N)085578	M	19	Daily wage/ casual worker	Aye Tha Yar	09-898493142
5	U Kyaw Myint 6/SaMaKa(N)012362	M	64	Orchard	Chaung Nauk Pyan	09-899266573
6	U Taik Aung 5/WaPaTa(N)114939	M	40	Driver	Aye Tha Yar	09-429641561
7	Nyi Nyi Min Thant 6/TaThaNa(N)101881	M	20	Daily wage	Aye Tha Yar	09-885953112
8	Hla Min Naing 6/TaThaYa(N)105773	M	35	Carpenter	Chaung Nauk Pyan	09-686821421
9	Cho Cho Win 6/KhaMaKa(N)012376	F	32	Sewing	Chaung Nauk Pyan	-
10	Win Naing 6/KaThaNa(N)080813	M	35	Motor Cycle repair shop	Chaung Nauk Pyan	09-451863962
11	Nya Aung 8/HaTaKa(N)178655	M	36	Orchard	Tar Pa Lat	09-445106181
12	U ToeTerHtun 6/TaThaYa(N)040862	M	39	Driver	Chaung Nauk Pyan	09-400936119
13	U Sai Kyaw Thu 6/TaThaYa(N)099876	M	23	Landless/ casual worker	Chaung Nauk Pyan	09-453704299
14	Daw Tin Cho Aye 6/TaThaNa(N)101887	F	35	Grocery shop	Aye Thar Yar	-
15	Ma Nu Nu Win 6/TaThaYa(N)055226	F	30	worker	Chaung Nauk Pyan	09-889085646
16	U Lwin Moe Oo 6/KhaMaKa(N)010164	M	25	Orchard	Aye Tha Yar	-
17	Ko Thet Naing 6/TaThaYa(N)210091	M	47	Trader	Chaung Nauk Pyan	09-445613213
18	San Myoe Kyaw 6/TaThaYa(N)181041	M	22	Daily wage	Chaung Nauk Pyan	09-899266577
19	San Chit Maung 6/TaThaYa(N)101845	M	18	Bus Spare	Aye Tha Yar	-
20	Pyae Shan Thaw 6/TaThaYa(N)038482	M	30	Motor cycle Workshop	Chaung Nauk Pyan	09-450652191

Table 10.4 List of Participants of On-line PCM organized at Khae Chaung, Byokepyin Township

Sr.	Name	Male/ Fe- male	Age	Livelihood/ Farmer/ Worker, etc.	Address/ Village	Signature /Mobile No.
1	U Hla Nyunt Aung 10/PaMaNa(N)007877	M	51	Orchard	Khae Chaung	09-757576410
2	U Khin Maung Win 6/BaMaNa(N)023657	M	40	Carpenter	Ywar Tha Yar	09-777130370
3	Hla Myo Aung 10/PaMaMa(N)041158	M	56	Teacher	Khae Chaung	09-958478672
4	U Min Lwin 6/KaSaNa(N)097889	M	35	Mason	Ma Noe Yone	09-692359929
5	U Htun Min 6/PaThaNga(N)005090	M	26	Driver	Khae Chaung	09-967509572
6	Daw Ohnmar Win 6/TaThaYa(N)041521	F	29	Sewing	MaNoeYone	09-986756533
7	Daw Soe Yu Win 6/PaKaMa(N)004128	F	28	Dependent	Khae Chaung	-
8	May Thin Gyan 6/TaThaYa(N)10211	F	33	Grocery	Khae Chaung	09-963093522
9	Daw Than Aye 6/PaKaMa(N)001191	F	56	Dependent	Ma Noe Yone	-
10	Ma Thae Hpyu 6/TaThaYa(N)102818	F	33	Grocery shop	Khae Chaung	
11	Daw Mya Mya Win 6/BaMaNa(N)009128	F	61	Grocery shop	Ma NoeYone	-
12	Soe Lwin Htay 6/TaThaYa(N)036569	M	47	Chairman VT, GAD	Taung Nge	0962222599
13	Ma Than Htwe 6/BaMaNa(N)034530	F	36	Grocery shop	Khae Chaung	09-963671835
14	Daw Than Ye 6/BaMaNa(N)015421	F	45	Betel Trade	MaNoeYone	09-959314190
15	Ma Zin Mar 6/BaMaNa(N)011423	F	52	Sewing	Ywar Tha Yar	09-711535331
16	Moe Thuza 6/PaTaMa(N)007658	F	19	Grocery shop	Khae Chaung	09-670445350
17	Aung Kyaw Sein 6/BaBaNa(N)013211	M	56	Orchard	Khae Chaung	09-793548105
18	Maung Myo Lwin 6/TaThaYa(N)102480	M	32	Daily Wage worker	Ma Noe Yone	-

		
<i>Opening speech by the Myeik District GAD</i>	<i>Project introduction by 24-Hr.Co., Ltd</i>	<i>EIA general process explained by the EIA team leader</i>
		
<i>Environmental survey and findings by the EIA team member</i>	<i>Social survey and findings by the EIA team member</i>	<i>Suggestions by the Pro-Rector of Myeik University</i>
		
<i>Questions and suggestions raised by the Professor of Geology Department</i>	<i>Questions and suggestions raised by the ECD</i>	<i>Participation of audience</i>
		
<i>Suggestions by a participant</i>	<i>Suggestions and questions by a participant</i>	<i>Suggestions and questions by a participant</i>

Plate 10.1 Photo documentation of Public Consultation Meeting (PCM) at Grand Jade Hotel, Myeik on 5th September, 2023



Explanation by project engineers at Ye Phyu Village - U Khin Zaw Hein and U Kyaw Zin Latt



A participant raised a question - Online PC meeting at Ye Phyu Village on 6th Sept., 2023 (21 Participants)



Question and answer session during Online PC meeting at Khe Chaung on 8 Sept., 2023 (28 Participants)



Questions by a participant at Online PC meeting at Chaung Nauk Pyan on 7 Sept., 2023 (19 Participants)



Questions and suggestions by a participant Online PC meeting at Khae Chaung on 8 Sept., 2023 (28 Participants)

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ တစ်ခုသစ်ရိုတိုင်းဒေသကြီး တစ်ခုသစ်ရိုမြို့နယ် သိမ်းချွန်ကျေးရွာအုပ်စု ပေါင်းစုံကျောက်တောင်သေတွင် ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှုစီမံကိန်း

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ရန်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) ဆစ်ရင်ဆင် အတွက် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း

ကျွမ်းကျင်သူများ ။ ၆.၉.၂၀၂၃ (၅ နာရီအထိ)
ကျွမ်းကျင်သူများ ။ ၆.၉.၂၀၂၃ (၅ နာရီအထိ)
ကျွမ်းကျင်သူများ ။ ၆.၉.၂၀၂၃ (၅ နာရီအထိ)

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အား ဖိတ်ခေါက်ခြင်း

သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်စေမှုဆိုင်ရာ ဝန်ကြီးဌာန (MONREC)

အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ်)

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံးစံများ (၂၀၂၁ ခုနှစ်)

အမျိုးအမည်	အချိန်	အကြောင်းအရာ
အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း	၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ ၂၀ ရက်နေ့၊ နံနက် ၈ နာရီ မှ နေ့လယ် ၁၂ နာရီ	အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း
အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း	၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ ၂၀ ရက်နေ့၊ နေ့လယ် ၁၂ နာရီ မှ နေ့လယ် ၃ နာရီ	အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း

ပထမဦးဆုံး	အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း	အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း
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Online PC meeting presentation on 6th Sept., 2023 by Dr. Khin

Online PC meeting presentation on environmental surveys by Willium

Online PC meeting presentation on social survey and assessment by Ms. Theiant

Plate 10.2 Photo documentation of Online PCM at Ye Phyu, Chaung Nyauk Pyan and Khae Chaung villages on 6th – 8th September, 2023

10.1.2 Community Engagement Plan

Based on the results of PCM at Scoping stage and EIA draft Report stage, and the social and household surveys in the project areas, a community engagement plan will be carefully developed. It involves a series of steps, namely (i) stakeholder identification; (ii) stakeholder analysis; (iii) engagement strategy; (iv) proposed consultation and participation activities; (v) procedures for disclosure and dissemination of information; (vi) a grievance redress mechanism; and (vii) a program for joint environmental and social monitoring and reporting to communities.

During the EIA process, a stakeholder analysis and stakeholder engagement plan were conducted to ‘map’ the extent and the diversity of the community likely to be impacted in some way or other by the proposed limestone mining project. Meaningful participation will ensure communities have the opportunity to influence and impact decisions about the project proposal during the EIA process and also throughout the whole mine life cycle.

It also requires full and transparent information disclosure by the project proponent. The project proponent is responsible for providing the information on all material matters that will affect communities and their livelihoods. Relevant information about the nature of the project were disclosed and disseminated in a way that is timely, understandable, culturally acceptable and accessible.

The community engagement plan includes the following -

- the stakeholder and potential affected people analysis
- the results of consultations during the EIA preparation
- a community engagement strategy
- proposed consultation and participation activities
- procedures for disclosure and dissemination of information
- a grievance redress mechanism
- a program for joint environmental and social monitoring and reporting to communities
(if agreed by the Proponent and community)

A summary of all public consultation and disclosure activities conducted since the planning of the limestone mine started were incorporated into the EIA. The results of consultations and other community engagement activities are to be documented. A summary of the main public issues and concerns and the Mine Operator’s response to address the issues and concerns is to be presented.

10.2 Community Development

The purpose of community development is to bring people together to work towards a common goal, improving the quality of life in their communities. It's a powerful tool that addresses social and economic issues, promotes inclusivity and diversity, and empowers communities to take action. The planning process consists of a public participatory and usually interactive form of town or neighborhood planning and design in which diverse community members (“stakeholders”) contribute toward formulation of the goals, objectives, planning, fund/resource identification and direction, and etc.

The proposed limestone project can also be assumed as a community development project which will be strengthening a local region, at least the Tanintharyi Township, in several different ways. The project will provide socio-economic benefits which can refer to benefits offered to a community as a whole and can include long-term impacts on the prevailing economic conditions, various levels of education, the family unit, or employment levels, among others.

Since the people living around the proposed project are located in rural areas and very often remoteness. Based on the findings of social survey, most are living in poverty, lag behind in terms of education, health, economy, livelihood and etc. Most villages have no access to the national grid lines, as well as proper road access. Therefore, the community will likely lack information about the project and its potential consequences. They have little understanding of the information

that they can demand from the mining company, or the ways to improve their economy associated with the project.

On the other hand, the mining company will have much more information on the technical aspects of mining and potential impacts. They will have access to more expertise than the community. Community development will include contributing to communities so that they are better able to engage in the EIA process of the project. To achieve this, communities need to have the capacity to engage and articulate their development aspirations and concerns about a mining proposal in a meaningful way.

10.2.1 Community Development Plan

Soon after the limestone project start, the 24-Hr.Co., Ltd will write a “Community Development Plan” to cover the above-said villages. Firstly, it will identify the needs of the community. It will begin by conducting a need assessment to understand the challenges and opportunities facing the community. This could include interviews with community members, focus groups, or surveys. The plan will encourage on community driven development (CDD) as being based on concepts of participation, transparency, barrier removal, accountability, local power, and enhanced capacity.

The community development program will consist of the following four main elements:

- (i) Education - The company will help communities to improve education system through constructing and repairing school buildings and provide grants to students to obtain better education. Support to school children for school fees, school utensils and uniforms; giving awards annually to the outstanding school children,
- (ii) Infrastructure development - The company will improve infrastructure through repairing and improvements of village roads and drainage, and providing water supply and electricity supply.
- (iii) Health care - The company will provide medicines, hiring nurses for treatment for patients for local communities. At times, the company will introduce a mobile clinic system and raises awareness and knowledge through seminars on infectious diseases. It will provide some HRD education programs such as WASH, COVID 19 and other communicable disease.
- (iv) Social welfare - The company’s social welfare assistance will target the elderly and women and people with disability of the community. As the social welfare for the community (including employees and workers of limestone mining project), the 24-Hour. Co., Ltd will take care for creating a peaceful and enjoyable working environment of the company.

The company will also create a Small and Medium Enterprise (SME) support program. It will support and encourage to form some SME’s (such as rice mill, production of food stuff – vermicelli, rice noodles, etc. SMEs will be generating jobs in the local communities.

A Grievance Redress mechanism (GRM) unit will be formed in the company worksite for dealing with complaints, disputes and grievances during the project implementation. During the EIA process the responsible government officials will work with the project proponents to make sure there are open communication channels to respond to concerns and questions.

CHAPTER 11:
MINE CLOSURE PLAN

Mine Closure Plan (Rehabilitation and Mine Closure Stage) is an integral part of the mining cycle. It is to be investigated and planned for before a mine begins to operate. Mine sites must be rehabilitated and stabilized so they are suitable for a sustainable land use that is compatible with the surroundings. Closure must meet all regulatory requirements in the conditions of the Mining License. In addition, human resource management and community engagement is required.

The activities under the M-C stage are a part of the EMP and it is assumed to have the same impacts as the M-D and M-O stages and it may entail parameters similar to those at all stages. All the potential negative impacts will be mitigated and reduced by following the mitigation measures, Environmental Management Plan and Environmental Monitoring Plan.

The 24-Hour will prepare a M-C plan with the following four objectives:

- (i) to protect public health and safety,
- (ii) to alleviate or eliminate environmental damage,
- (iii) to achieve a productive use of the land, or a return to its original condition or an acceptable alternative and
- (iv) To the extent achievable, it needs to provide for sustainability of social and economic benefits resulting from the development and operations of the limestone operation project.

11.1 Activities for Rehabilitation and Mine Closure Stage

During the activities of mine closure and rehabilitation stage, the mitigation measures need to be conducted. The activities will involve the removal of equipment and machinery installed at the project site, and disposal of the old used items and materials. Upon the closure, equipment for utilities will be sold for reuse elsewhere. When the equipment is found to be non-usable, it will be scrapped. For dismantling the buildings, old machines and facilities, the proponent will follow the guidelines of “Waste Handling and Management System” and will inform the Tanintharyi City Development Committee and follow their guidance. Spent oil will also be generated during dismantling. Spent Oil will be generated but will be insignificant amount. During this time, pollution of air and water quality will occur. Increase in particulate matter due to dismantling of the project site and transportation, storage and disposing of mechanical parts, and etc. Similarly, it will contaminate to the nearby *Nga Wun* Stream and underground water in case of the rain water carries them. However, they all will be a temporary and minor impact. The hazardous waste remaining shall be disposed in a sustainable manner. There are no residual impacts from the M-C stage.

The project site will be rehabilitated and stabilized so it is suitable for a sustainable land use that is compatible with the surroundings. Closure and Post Closure must meet all regulatory requirements in the conditions of the EMP. In addition, human resource management and community involvement and consultation are required. Rehabilitation activities will include - decommissioning the mine, providing surface drainage and erosion protection across the entire site, greening to ensure self-sustaining vegetative cover, meeting water quality standards, and minimizing post-closure maintenance requirements. During the implementation period of the closure and post closure stage (starting from dismantling to the rehabilitating of the project site) care will be taken to reduce the environmental pollution and the accidents.

The Plan will include activities for progressive rehabilitation of the site over the life of the mine. This will minimize the effort and cost for the final rehabilitation. The Mine Closure Plan is to include requirements for periodic updating. It will be updated within two years of the start of operations. Thereafter, it should be updated every five years. Five years before mine closure, a Post Closure Plan is to be submitted with the Mine Closure Plan. The Post-Closure Plan also includes activities for post-closure monitoring and maintenance of all mine facilities, including surface and underground mine workings, leach pads, and waste disposal facilities. It is to include a plan and financing for long-term monitoring and maintenance.

11.2 Mine Reclamation and Closure Plan (MRCP)

Closure and post-closure activities should be considered as early in the planning and design stages as possible. The project proponent (24-Hour) will prepare a Mine Reclamation and Closure Plan (MRCP) in draft form prior to the start of production. A mine closure plan that incorporates

both physical rehabilitation and socio-economic considerations should be an integral part of the project life cycle and should be designed so that-

- Future public health and safety are not compromised
- The after-use of the site is beneficial and sustainable to the affected communities in the long term;
- Adverse socio-economic impacts are minimized and socioeconomic benefits are maximized.

The MRCP should address beneficial future land use (this should be determined using a multi-stakeholder process that includes local communities, traditional land users, civil society and other impacted parties). It must be previously approved by the relevant national authorities, and be the result of consultation and dialogue with local communities and their government representatives.

The closure plan should be regularly updated and refined to reflect changes in mine development and operational planning, as well as the environmental and social conditions and circumstances. Records of the mine works should also be maintained as part of the post-closure plan. It includes appropriate aftercare and continued monitoring of the site, pollutant emissions, and related potential impacts. The duration of post-closure monitoring should be defined on a risk basis; however, site conditions typically require a minimum period of five years after closure or longer.

11.3 Reclamation Strategies

To prevent landslides and other damages, an undisturbed natural barrier will be provided beginning at the elevation of the lowest bench to be mined and extending from the out slope for [X distance - determined by the Ministry] to assure stability. The barrier will be retained in place to prevent slides and erosion. At anytime a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment, the person who conducts the surface mining activities will notify the Ministry by the fastest available means and comply with any remedial measures required by the Ministry. Restoration efforts, including but not limited to backfilling, grading, topsoil replacement, and revegetation, on all land that is disturbed by surface mining activities shall occur as contemporaneously as practicable with mining operations. For stabilization of surface areas, the following practices will be conducted -

- (a) All exposed surface areas will be protected and stabilized to effectively control erosion and air pollution attendant to erosion,
- (b) Rills and gullies, which form in areas that have been regraded and topsoiled, and
- (c) Topsoil will be replaced; and the areas will be reseeded or replanted.

For the “Open Cut Mine Reclamation”, for the proposed limestone project, the following processes will be considered.

1) Backfilling and grading

Rough backfilling and grading for surface mining activities will be completed within [X period of time] after the ore has been removed from the pit. Disturbed areas will be backfilled and graded with aims to -

- (a) Achieve the approximate original contour,
- (b) Eliminate depressions except if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation in small depressions or (previously mined highwalls) of this section,
- (c) Achieve a post-mining slope to prevent slides,
- (d) Minimize erosion and water pollution both on and off the site; and
- (e) Support the approved post-mining land use.

2) Revegetation

Following the backfilling and regrading, the slopes shall be prepared for an appropriate seed mixture designed for the mine site and final land use. The seed mixture will consist of native / local species without noxious weeds. Weed-free straw or other type of mulching material shall be placed over seeded areas to retain moisture and reduce erosion. Seeding shall be done at the appropriate time of time of year (monsoon season) to ensure rapid growth. Long-

term revegetation monitoring of reclaimed areas will be done annually over the life of the project and up to [five years] after closure to ensure revegetation meets project specific performance standards.

Long-term revegetation monitoring will consist of the following –

- collecting annual data over the life of the project and for [five years after closure] on existing and newly restored areas;
- documenting trends in vegetation parameters over time;
- identifying areas where revegetation may be failing;
- and providing recommendations for maintaining revegetated areas.

3) Cultivation plan for rehabilitation of proposed limestone project

The project site will be rehabilitated and stabilized so that it is suitable for a sustainable land use that is compatible with the surroundings. The old quarry sites and reserved area/ buffer zones will be yearly planted for greening and rehabilitation plans. The native tree species will be carefully grown in nursery beds and then transplanted, such as Pyinkado (*Xylia xylocarpa*), Kanyin (*Dipterocarpus baudii*, *Parkia spp.* (Thit-lein), *Madhuca spp.* (Kan-Zaw), *Pongamia pinnata*, and etc.

During the first ten years (within Year 1 – Year 10) the above-mentioned local plant species will be planted in 20 acres. The planting spacing (line and row spacing) of the forest type trees will be 10 ft. x 10-ft. In general, an acre can accommodate about 430 plants. Taking into consideration of nursery management and cultivating management, including chemical fertilizers, it will cost 0.1 million MMK per acre. A 30-year plan includes fulfilling the total of 2,000 acres (145,000 plants) with the estimated total cost of MMK 300 million. After the plantation, the management of the plants, such as gap filling, weeding, watering and new planting, etc. will have to be done during the whole mining life.

Table 11.1 Plantation Plan for mine closure and rehabilitation

Period (Year)	Area covered	Numbers of plant per acre	Estimated costs MMK (millions) per acre
1 – 10	50 acre/ year: 500 acres	22,500	0.1
10 – 20	50 acre/ year: 500 acres	22,500	0.1
20 – 30	100 acre/ year: 1000 acres	100,000	0.1
Total	2,000 acres	145,000	200 million

11.4 Financial Guarantee

Prior to the commencement of mining operation, the 24-hr.Co., Ltd will lodge a financial guarantee or security deposit to cover the full cost for rehabilitation or restoration. The financial guarantee or security deposit shall be made in a form acceptable to the Ministry and be subject to regular review and financial audit to ensure that the financial guarantee is sufficient to cover the full cost of rehabilitation or restoration as provided for in the Mine Closure Plan. Provision for this financial guarantee is to be included in the Mine Closure Plan.

A contribution to a Mine Closure Fund will be established in a State- owned bank at the rate of at least 2% of the investment amount throughout the mine life (according to the Rule 185e). The 24- Hr. Co., Ltd has been preparing to deposit 3% of annual profit in the bank, which will be used at the time of mine closure phase. The Rule 186 also requires responsibility for mine clean-up and may only commence mining after the company deposit a bond or guarantee. The 24-Hour will provide a Mine Closure Plan within 90 days of commencement of operation, to be drawn up with the involvement of affected communities. This Closure Plan will be reviewed every five years, and approved by the Ministry a year before the end of commercial production, with monitoring reports every three months.

Mine Closure Plan will include the following detailed plans to be implemented.

1. Management plan for piling and disposal of overburden and topsoil from the beginning of mining activities,
2. Prevention plan to prevent mining cliffs from collapsing,

3. In the case of open-pit mining, a management plan to replenish with fertile soils in the old Mine Out Pit Areas and Caves,
4. Management plan to check the wastewater quality from nearby streams or near the project area,
5. Regular inspection plan for the occurrence of contaminated soil near the project area,
6. Elimination of used machinery / vehicles and residential buildings in the mine closure phase,
7. Rehabilitation plan to replant trees on the project area,

Mine closure planning has to be done at the starting point of the mining operations and needs periodic review and revision during its life cycle to cope with the market due to geo-technical constraints, safety and economic risks, social and environmental challenges. Permanent closure is the removal, mitigation, or chemical stabilization of all of the sources of pollutants at the mining facility. Reclamation includes activities, such as regrading and revegetating, to return the mine site to a productive post-mining land use. For this purpose, the 24-Hour will take care of reclamation of the land through proper landscaping and replantation to become the nearest to the original state land. The quality of air, water and terrestrial and aquatic biodiversity will recover to their previous state before mining operation. The following [Table 11.2](#) describe the tentative cost for activities of mine closure and post closure environmental monitoring.

Table 11.2 Tentative costs for Mine closure and Reclamation Plan

No	Activity	Amount (Kyats in milliom)	Remarks
1	Dismantling of structures		To be included in final mine closure plan.
	Service Buildings		
	Worker camp		
	Industrial Structures like, Workshop, Field substation, etc.		
	Permanent Fencing of mine void and other dangerous area		
2	Grading of highwall slopes		
	Levelling and grading of highwall slopes		
3	OB Dump Reclamation		
	Handling/Dozing of OB Dump into mine void and preparation of Internal dump for reclamation.		
	Technical and Bio-reclamation including plantation and post care.		
4	Landscaping		
	Landscaping of the open space in leasehold area for improving its aesthetic and eco value	5.0	
	Plantation over cleared area obtained after dismantling.	2.0	
	Plantation around the quarry area and in safety zone.	2.0	
5	Post Closure Enviroental Monitoring/Testing of Parameters for three years		
	Air Quality – once a year for 3 years (3 mil/yr.)	9.0	
	Water Quality – once a year for 3 years (1.5 mil/yr.)	3,0	
6	Entrepreneurship development (vocational/ skill development) Training for sustainable income of affected people		
7	Miscellaneous and other mitigative measures		
8	Post Closure Man power cost for supervision		To be included in final mine closure plan

CHAPTER 12:
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

12.1 Institutional Arrangements for Implementation of the ESMP

The effective environmental management will include (i) an environmental and social management plan (ESMP); (ii) well trained environmental professionals; and (iii) sufficient financial resources. Institutional arrangements identify the people needed to implement the EMP. It shows the environmental staffing positions and the project specific responsibilities of environmental staff.

For the implementation of ESMP systematically, the 24-Hour formed ESMP team of was formed which includes the following persons as shown in *Table 12.1*. Their roles and responsibilities are for the management system to operate the mining operations in good practices and to strictly follow the procedures described in the ESMP. Similarly, the responsible contractors should follow the national and international guidelines of Good Practices and ESMP set up for the proposed project.

Table 12.1 Implementation Team for ESMP

Name	Nationality & National Registration Card No.	Address of residence, Phone and Email	Designation
U Tin Tun Zaw	12/MaGaTa(N)035530	Address: Project site Office, Yay Phyu Village, Tanintharyi Township, Tanintharyi Region, Mobile: 095125724 Email: skbz.zone1@gmail.com	Project Operation Manager 24-Hour
U Khin Maung Win	12/MaYaKa(N)065572	Address: Project site Office, Yay Phyu Village, Tanintharyi Township, Tanintharyi Region, Mobile: 095030718 Email: Shwekanbawza.zone2@gmail.com	Project Engineer 24-Hour
U Kyi Min Hteik	12/KhaYaNa(N)000004	Address: Project site Office, Yay Phyu Village, Tanintharyi Township, Tanintharyi Region, Mobile: 09698173732 Email: agro24zone1@gmail.com	Project Manager 24-Hour
U Hla Myint Thein	12/LaWaNa(N)127357	Address: Project site Office, Yay Phyu Village, Tanintharyi Township, Tanintharyi Region, Mobile: 09450910764, Email: atroagro@gmail.com	HSE manager 24-Hour
U Khin Zaw Hein	Senior Geologist, Project site Engineer	Address: Project site Office, Che Chaung Village, Bokeyyin Township, Tanintharyi Region, Mobile: 09259194621 Email: atroagro@gmail.com	Project site manager 24-Hour
Two Senior engineers of the Contractors	-		Overall processes for ESMP

12.1.1 Environmental and Social Management Systems (ESMS)

The 24-Hour shall form ESMS which include the occupational and social welfares for the workers and society. Many features of effective Environmental Health and Safety (EHS) management could be found in typical management practices. The ESMS should ensure the provision of an environmentally friendly, safe and healthy working environment. The Environmental, Health and Safety Policy Statement” will also be set up and the statement sets out the commitment of the 24-Hour to manage environmental, health and safety requirements effectively. The Statement involves -

- Establish methods to use energy more efficiently, reduce waste, and prevent accidents,
- Comply with laws, regulations, and organizational requirements applicable to their operations,
- Improve EHS performance continually,
- Conduct periodic assessments to verify and validate EHS performance.

The ESMS will be established at a Mine Level. They are required for the proposed limestone operation projects, which are guided by following three key principles.

- i. Avoid, minimize, restore, or offset impacts, and enhance positive impacts and
- ii. Prepare an Environmental and Social Management Plan (ESMP); and
- iii. Implement the ESMP and monitor its effectiveness.

The EHS Policy Statement is implemented to achieve the goals such as “Zero fatalities and Zero accidents of workers, visitors or the public, Zero environmental concerns, risks or impacts”.

The following Figure (Fig. 12.1) shows the institutional arrangements needed for the ESMS of the proposed limestone project.



Figure 12. 1 Structure of EHS Management System

12.1.2 Roles and Responsibilities for ESMS

The roles and responsibilities of key staff with regard to the ESMS are described below

- 1) **Project Manager:** The Project Manager is responsible for ensuring that the overall Project is executed fully in accordance with applicable EHS requirements. Specific requirements include:
 - Ensure that adequate resources are assigned to all phases of the project to enable the objectives to be met,
 - Ensure that the Policy, Plans and Procedures are established and implemented; and
 - Report any incidents to Contractor management and to Employer. The Project Manager has the ultimate responsibility for reviewing suitability of and approval of the project ESMP plans and also monitoring its implementation and effectiveness.
- 2) **Construction Engineer:** The Construction Engineer reports to the Project Manager, and he is the first responsible for the general respects of the Plan and locally applicable Plans, procedures, rules and regulations, by Contractor and Subcontractors involved.
- 3) **Construction Supervision Consultant (CSC)-** It will engage the CSC and contract an external monitoring consultant (EMC) to conduct independent verification of EMP implementation and environmental impact monitoring results during the construction and operational stages of the project. Each works contractor will submit monthly progress reports to the CSC. These reports will include reporting on EMP implementation performance.

4) **ESMP Officer and EHS Officer** - Reports operationally to the Construction Manager and he is responsible for ensuring that the requirements are met during the Construction phase of the project.

5) **Workers**

All workers, working permanent or temporarily at site, must follow any approved and implemented EHS instructions and procedures independent if the instructions are provided as a written or verbal instruction. They must report any non-compliances of actions and situations with the EHS Management System to the Plant Manager, the EHS Manager or the EHS Advisors. The workers shall keep their workplace and their accommodation tidy and clean with the overall aim to prevent any environmental, health and safety risks.

12.1.3 Staffing and Reporting Requirement

The 24-Hour will appoint sufficiently qualified persons to act as the Environmental Engineer and the Occupational Safety and Health (OSH) Engineer, who will act as first point of contact for environmental, safety, and grievance response. It will also hire a construction supervision consultant (CSC) and contract an external monitoring consultant (EMC) to conduct independent verification of EMP implementation and environmental impact monitoring results during the construction and operational stages of the project. The EMP should include weekly reporting by the Contractor; and monthly reporting by the CSC. CSC will conduct “Monthly inspection and monitoring reports” and then he will draft semi-annual environmental monitoring reports.

The Contractor’s responsibility is for “Weekly inspection and monitoring reports” and “Quarterly and semi-annual environmental monitoring reports Semi-annual environmental monitoring reports (including health and safety) submitted to ECD and Department of mines. Work contractors are responsible for implementing the mitigation measures during all limestone operation stages. Contractors will require responding to the environmental management and monitoring requirements defined in the EMP. The EMP should include weekly reporting by the Contractor; and monthly reporting by the CSC. The CSC will draft semi-annual environmental monitoring reports.

Before the project starts the Contractor will prepare a Contractor EMP, CEMP consistent with the EMP. The CEMP will include all mitigation measures and monitoring requirements to be carried by the Contractor. The necessary environmental sub-plans are listed below (but not limited to).

- Sedimentation and Erosion Control Action Plan
- Occupational Health and Safety Action Plan
- Local Hiring and Local Purchasing Action Plan
- Grievance Redress Mechanism Action Plan
- Waste Handling and Management Action Plan
- Traffic Management Action Plan
- Emergency Contingency Response Action Plan

During the project implementation, the EMP members of 24-Hour will take care of these emissions as a daily basis for the self-monitoring process. The major responsibility of implementation of CEMP is taken by the Project Constructor team; however, the ESMS team will also cooperate with them as necessary. The 24-Hour also needs to supervise the following requirement related with EMP.

- Supervise contractors and their compliance with the EMP and their CEMPs;
- Conduct regular site inspections;
- Act as local entry point for the project GRM unit,
- Coordinate implementation of the capacity building and training program related to environment;
- Coordinate the preparation of the semi-annual environment monitoring reports and submit them to ECD
- Prepare inputs to the quarterly project progress reports, and etc.

12.2 Summary of Environmental and Social Impacts

The results of impact assessment showed that all stages of limestone mining, (M-D), (M-O), and (M-C) have similar impacts, except for the intensity (Summary [Table 7.4](#) of Evaluation of Impact Assessment in Chapter 7). Out of the total anticipated items (28), four (4) items of social environments, seven (7) items of the natural environment and six (6) items of the environmental pollution were found to have negative impact (B-), in all stages – meaning that the impacts were not significant, which will be acceptable after mitigation measures are applied.

Under the “Social Environment, land use, traffic conditions, occupational health and safety natural hazard/risk, were assessed to be negative impact (B-). Similarly, “Natural Environment” namely, soil erosion and sedimentation, surface water, groundwater, biodiversity (terrestrial and aquatic) were considered to have negative impact (B-). The assessment results showed that the “Environmental Pollution” which includes air pollution, noise and vibration, emissions from vehicles and mining equipment, water pollution, soil contamination, and solid waste will also have negative impact (B-). However, “Topography and Geology” and “Landscape” of the project quarry sites will be significantly impacted due to the deforestation and habitat loss from road and site construction and quarrying. The negative impacts A- is estimated at the M-D and M-O, unacceptable adverse impacts because there will be an irreversible impact on the ecosystem. M-C stage will have possible positive impacts – because of the replantation and rehabilitation processes under the Mine Closure Plan.

In addition, the limestone project will have positive effect (A +) on “local economy and employment” item while no impacts (no significant impacts: D) are expected for eight (8) items. During limestone mining, there will be positive impacts on local economy. The 24-Hour will rely upon local businesses to provide goods and services. The company will emphasize on local purchase and local employment, encouraging the uplift of local livelihoods.

12.3. Mitigation Measures

The activities conducted in three stages of limestone mining, M-D, M-O and Reclamation and Mine Closure (M-C) are almost the same and their impacts on social, natural environment and pollution show more or less similar, except that the intensities of impacts may vary from each stage depending on the nature of the work activities. the M-C stage is only a short term and temporary comparing with other two stages. For each negative impact, mitigation measures were examined for respective items in order that the project can achieve intended objectives by avoiding, minimizing or reducing accompanied environmental impacts. To avoid and minimize the negative impacts and to restore or rehabilitate, offset, or enhance to become to the natural conditions, the mitigation measures will be carried out for all stages. The proposed mitigation measures for the potential impacts were presented in the following [Table 12.2](#).

Table 12.2 Mitigation measures for the potential negative impacts of proposed limestone project for all stages

<i>Social environment</i>	<i>Mitigation Measures</i>
Land use and utilization of local resources	(1) The practices include measures such as reducing water and energy consumption, minimizing land disturbance and waste production. (2) Careful management of any activity involving land disturbance that could adversely affect the land use and avoid degradation of landscape or landscape features, (3) Prevent soil, water, and air pollution at mine sites, and conducting successful mine closure and reclamation activities.
Traffic condition	(1) Inform the construction work and schedules to villagers (2) Time shift of construction work, avoiding the time of school busiest hour (starts and ends), (3) Educate the traffic safety and manner to construction workers and drivers (4) Raise the traffic signal and arrange watchmen on the approach road, if necessary, (5) Equip covering to prevent scattering of dust, rocks and other materials from the truck, (6) Ensure good condition of brake system by proper checking and (7) Provide training to drivers for safe operation of equipment; Ensure that rear view mirrors are provided.

Occupational health and safety	<p>(1) Contractors and EMP team will comply with requirement of Labor Law and Labor Safety Law of Myanmar.</p> <p>(2) Preparation of occupational safety management plan and educate the safety measures to construction workers. (3) The installation of safety equipment and management of hazardous materials (4) Any worker and persons who enter into construction sites have to wear PPE (4) Monitoring health condition and occupational safety of workers through medical examination regularly, (5) Preventive measures to control air pollutants emission.</p> <p>(6) Suitable planning and management to prevent and minimize the number of accidents, (7) Enlighten workers and local residents to prevent accidents by training and adequate notice.</p> <p>(8) Prepare emergency action plan for accidents. (9) Workers need to be trained and provided with health and safety equipment</p>
Natural Hazard/ Tropical Cyclone and floods	<p>(1) Prepare emergency action plan for hazard and public security risks.</p> <p>(2) Implement “Emergency Response Plan, (3) Continued work between HSE and Stakeholders is aimed at controlling these risks.</p>
Natural environment	Mitigation Measures
Topography and Geology	<p>(1) Minimize the planned amount of land to be disturbed as much as possible.</p> <p>(2) During the M-C stage, with proper implementation of reclamation and mine closure plans (replanting, recontouring, and restoration and stabilization of stream banks, etc.), the topography of the project site will improve.</p>
Landscape and Aesthetic Values	<p>(1) To achieve a productive use of the land, or a return to its original condition, the following measures will be used. (1) The project site will be rehabilitated and stabilized so that it is suitable for a sustainable land use that is compatible with the surroundings;</p> <p>(2) Providing surface drainage and erosion protection across the entire site,</p> <p>(3) Refilling the ground for the safety and esthetic purposes,</p> <p>(4) Replanting the site with local / native trees species such as Pyingado, Thityar, Thitlein, Kant-zaw, <i>Pongamia spp.</i></p>
Soil Erosion and sedimentation	<p>(1) Mining operation carried out strictly as per the approved Mining Plan, - the height and width of bench and the slope of the benches will be maintained as per the approved plan.</p> <p>(2) Install sediment ponds for minimizing sediment discharged into the <i>Nga Wun</i> stream.</p> <p>(3) Adhering to Erosion and sedimentation Control Plans (ESCPs) for protecting water quality and for minimizing soil loss, both across the landscape and into watercourses,</p> <p>(4) Construct collection drainage ditches only where necessary. Use appropriate structures at culvert outlets to prevent erosion.</p>
Changes of Surface Water/	<p>(1) Follow the proper waste disposal, (2) Control the discharge of oil-containing wastewater (i.e., bilge water, etc.), (3) Strictly follow the Erosion and Sedimentation Control Plans</p>
Biodiversity (Terrestrial)	<p>(1) Reduce land clearing to the areas as much as necessary. (2) Prohibit hunting, fishing or collection of natural products by employees and contractors. ((3) The trade of species of fauna and flora will be prohibited.</p>
Biodiversity (Aquatic)	<p>(1) Avoid overfishing (2) Schedule activities to avoid disturbance of resources during critical periods of the day /night or year (breeding or spawning season),</p> <p>(3) Apply spill prevention practices and response actions to minimize accidental contamination of habitats</p>

Environmental pollution	Mitigation Measures
Air Pollution (dust)	(1) Water sprinkling will be done in mines area and sorting area and during transportation. (2) Transportation will be done with covered trucks. (3) Use machines and vehicles in good running condition and equipped with good exhaust emission system and filled with good quality fuel. (4) Educate the workers for prevention or minimize air pollutants generation, (5) Qualitative monitoring by physical observation all the time, and quantitative measurement will be conducted by the “Monitoring Team” biannually and as per required.
Emissions from Vehicles and Mining Equipment	(1) Emissions Control Program - Fuel efficiency, types of fuels and equipment, emissions controls, and equipment maintenance programs. (2) Develop a monitoring program to minimize GHG emission (3) Install modernized models of machines, (4) Carry out routine inspection and preventive maintenance for all machinery (5) Collection of complaints from surrounding areas.
Noise and Vibration	(1) Apply the updated equipment and facilities with low emissions of gases, noise and vibration. (2) Control noise level within 90 dB (A) at 1 m distance, Encasement of noise generating equipment. (3) Personnel working near high noise level generating sources will be provided with ear muffs. (4) Effective preventive maintenance and vibration measurement of all rotating equipment and transport system for noise reduction. (5) Setting staff to take care of the complaints.
Water pollution	(1) To prevent any wash off from dumps the toe wall, garland drains, settling tanks will be constructed. (2) Control water pollutants discharge or spillover of diesel oils and etc. during construction work. (3) They will be discharged to the drainage after simple treatment by filter or stored in a drum for later disposal. (4) Inspection daily of behavior of workers and give instruction them to acquire good manners (5) Prohibit any discharge of hazardous waste into the stream.
Soil Contamination	(1) To prevent leakage and soil contamination as well as human contact, the soil and gravels heavily contaminated with hazardous materials will be removed. Then, they will be sealed in drums, and stored in the strict management area for hazardous wastes. (2) Used oil and oil-contaminated waste shall be stored separately with labels for disposal. (3) Dispose hazardous waste at the licensed treatment facilities in accordance with the law of Myanmar
Solid waste	(1) Proper disposal of solid waste to carry out possible preventive measures, (2) Follow concept of 3R (Reduce, Reuse and Recycle) to the plan. (3) Enlighten awareness of waste management to workers and employees. (4) Separate and store each type of waste into appropriate containers having clear labels. (5) Dispose non-hazardous waste at the waste disposal site approved by the City Development Committee.

12.4 Measures to Mitigate Future Impacts

The 24-Hour will design mitigation measures, as a second priority, to avoid, minimize, restore and rehabilitate, or offset adverse future environmental and social impacts. It will also design the programs or activities to enhance the project’s positive benefits.

Environmental and Social Management and Sub-Plans are to be prepared for each Project stage. The Management and Monitoring Sub-Plans shall address and satisfy all relevant environmental and social management and monitoring issues such as but not limited to noise, vibrations, waste, hazardous waste, wastewater and storm water, air quality, water quality, erosion and sedimentation, biodiversity, occupational and community health and safety, cultural heritage, employment and training, and emergency response. The following [Table 12.3](#) shows the detailed management plan for future impacts.

Table 12.3 Management Plan to mitigate for future impacts

Potential Impact	Management Plan	Specific Action / Records	Responsible Person	Annual Estimate Budget (USD)	
Disturbance to air quality	Low speed for vehicles (max. speed of 40 km/h) including in vicinity of villages	24 -Hour to provide specific training to drivers	24 -Hour Project Manager	-	
	Watering of access roads to control dust, ensure inspection and maintenance vehicles equipped with water spraying for frequent application.	Dust Management Plan	Project Manager	-	
	Bag filters are installed at every transfer point and limestone crusher for dust control. Conveyor belts will be covered to reduce fugitive dust emissions during transportation				
	Regular and periodical maintenance of vehicles to prevent smoke pollutants				
Generation of sound for the use of machinery	Maintenance of machinery as recommended by manufacturer	Review and tracking of the maintenance program for vehicles	Facilities Manager	-	
	Periodical maintenance of equipment and machinery.	Maintenance record	Facilities Manager	-	
Noise emissions in line with National EQEG	Undertake noise monitoring every 6 months. Monitoring to be conducted for 24hr period (day and night).	Monitoring Record	Project Manager	-	
Blasting management procedures	Use of explosives will be announced to the community and workers. Letters are provided to Village Tract Leaders (24-Hours in advance). Warning signs shall be posted and public notification system to be developed prior to the blasting event. A whistle is blown three times prior to using explosives and guards ensure no one enters the area, Blasting activities at the quarry will be restricted to daytime with approved schedule.	Project Manager	Log of letters	-	
Disturbance of water quality	A Water Management Plan will be prepared to meet the requirements of the Myanmar EQEG, A sedimentation pond and collection ditch will be built at the base of the mountain to control run-off water within quarry area, There is no generation of effluent from mining activities. Wastewater generated from offices, canteens, and staff accommodation is treated by sewage system. The storage for fuel and lubricants/oil is a closed building, and it is protected from rainwater.	Provision of service tank sewage from toilet facilities	HSE Manager	-	

Generation of waste	Mine Waste: Topsoil / rocks generated from mine will be directly utilized for access road construction and tree replantation, Classification of waste according to its type, appropriate storage and correct final disposal, and they will be reused in land reclamation at the mine site.	Waste Management Plan developed and implemented by all workers/ Waste generation log	Facilities Manager	Included in operation costs which approximately 25,000 USD.
Proper waste management and disposal	Domestic waste: Waste will be disposed of in line with the Waste Management Plan. The waste produced during activities will be properly disposed of in a small pit and buried. Recyclable waste e.g., plastic, wood scrap, metal scrap, paper etc. should reused/ recycled as much as possible. Non-recyclable wastes will be transported to a Township Development Committee approved landfill site	Waste Management Plan/ Waste generation log	HSE Manager	-
	Maintaining hygienic conditions in canteens and toilets. Control disposal of any solid wastes and exclude and isolate to avoid discharge in water courses.	Waste Management Plan	HSE Manager	-
Water resource supply to mine facilities.	A Water Management Plan will be prepared to meet requirements of the NEQEG	Identification of streams close to the mine area to define which has the highest capacity to supply the needs of the project/ Water Management Plan	Project Manager	Included in operation costs.
Effluent Discharges in line with EQEG	Undertake water quality monitoring every 6 months at 5 sites; one in village and four on site.	Water Management Plan	Project Manager	-
	Service tank and water pit are separated from drainage and storm-water	Waste Management Plan/ Layouts Photo Log	Facilities Manager	-
	Start water monitoring and management plan to ensure any discharge meets necessary standards.	Water Management Plan	Project Manager	-
Community Engagement and Development	Local Employment Local Economic Development Grievance Mechanism Corporate Social Responsibility (CSR) Program			
Occupational Health and Safety	HSE unit will be formed Health Care Facilities provided Ear plugs and other personal protective equipment (PPE) to be worn by all workers.	Ensure PPE is provided to all workers, and include in training/ Health and Safety Management Plan.	Facilities Manager	Approximately 2,000 USD for personal protective equipment .
Water for human consumption.	For workers, water consumption is preferable from a third party and in compliance with necessary standards.	Inventory of water and purchases	HSE Manager	-

Fire hazard and other natural hazards	Develop firefighting and evacuation plan	Installation of firefighting equipment and drill every three months/ firefighting and Evacuation Plan	Project Manager	An additional 3,000 USD for fire-Fighting equipment
Biodiversity conservation	Minimize vegetation clearance and habitat disturbance by demarcating the clearing boundaries in the mine site. No employees will be allowed to collect, hunt or fish for natural resources. The trade of species will be prohibited. Environmental awareness training to be given to all workers for the preservation of local species	Contracting documentation	Project site Manager	Include in Mine closure plan
Rehabilitate disturbed land	Replant on exposed soils to strengthen against erosion soon after completion of mining activities- progressive / phase-by-phase activities.	Land Management Plan/ Revegetation Plan	Project Manager	Include in Mine closure plan
Land use right, granted by authority	Mining activities will be restricted to work areas that will be clearly demarcated	Demarcation of mine site - Installation of signals and barricades to demark works areas.	Project Manager	-
Modification of the land use, if necessary, e.g., road expansion in some areas	Create Land Use Agreement with individual land users, covering access, use of land and compensation in advance of the start of activities.	Land Use Agreement	Project Manager	-
	Consult with local authorities and land holders to obtain permission for access in advance of the start of activities.	Project Manager	Meeting minutes.	-

12.5 Emergency Response Plans

Emergency response plans are to be designed to deal with accidental spills, slope failures, fires, explosions, cyclones, unforeseen weather events, earthquakes, volcanic eruptions and other events.

Emergency response plans include information on –

- i. emergency resources (e.g., fire-fighting equipment; spill clean-up equipment; first aid supplies; medical clinics; emergency vehicles),
- ii. communication systems,
- iii. administration of the plan,
- iv. emergency response procedures (e.g., emergency notification, evacuation, fire suppression, spill clean-up; medical support) and etc.

24-Hour will set up an “Emergency & Crisis Management Plan” which includes “Emergency Management Team (EMT)” & Crisis Management Team (CMT). The Plan covers all operations and activities carried out by the company, including accidents of Operational, Security, Occupational Health and Personnel Incidents.

(1) Firefighting system

Accident like fire outbreak could be expected given the nature of the work. It is important to install a fire-Fighting system during the construction period. The purpose of this system is to distribute fire-Fighting water throughout the processes of proposed limestone operation.

The system is sized for a single risk requiring the largest water quantity and one hydrant full open. That risk can be, inside the project enclosure, of the oil tanks, nearby areas. The system will include two fire pumps driven by a diesel engine) and the project site will also be equipped with portable or wheeled fire extinguishers.

General emergency procedures -

- 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, fire engines, firefighting vehicles, (Regularly check the firefighting facility, its readiness; ponds to be always filled with water
- Organize the drills regularly and assess the effectiveness of drills and training, assess the readiness, quick response and quick evacuation processes
- Provide First Aid Training and facility to some workers
- Display addresses and phone numbers of Fire Fighting Brigade, Ambulance Service,
- Hospital's emergency department, police station etc. so that everyone can see easily

(2) Storm and flood / An earthquake

Evacuation of workers and important materials in a timely manner, taking shelter at appropriate place, to higher ground for flood; to reliable shelter for storm.

- First aid treatment, if necessary,
- Provision of temporary shelter, water and food,
- Rescue operation during disaster and aftermath
- Implement rapid relief programs,
- Implement follow-up rehabilitation program

(3) For an accident at work place or sudden illness

- For an accident, immediate first aid treatment and quick admission to the hospital,
- For sudden illness like cholera, diarrhea immediate treatment and admission to hospital necessary,
- Snake bites or injury caused by poisonous insects, animals, etc., also need immediate treatment and admission to the hospital.

(4) Climate change threats

The threats that mining companies face because of climate change remain urgent. Forecasts, including Myanmar, indicate that climate hazards such as heavy precipitation, drought, and heat will get more frequent and intense, increasing the physical challenges to mining operations. Therefore, mining companies must prepare for climate hazards, such as frequent droughts and floods, altering the supply of water and disrupting operations. Even in areas with low water stress, certain water-intensive mining processes can be jeopardized.

12.6 Environmental Quality Standards for the Proposed Limestone Mine

The project proponent always needs to be compliance with Environmental Quality Standards. The standard values of mining activities are the same as Myanmar National Environmental Quality (Emission) Guidelines, December 2015, which are described in the Chapter 3, in Section 3.8. "National Guidelines and Standards" in this EIA Report. All impacts should not exceed the levels presented in the NEQEG.

The EIA Report listed these environmental standards to (i) assess impacts; (ii) design mitigation measures; and (iii) compare with baseline environmental monitoring data. The quality standards generally include the following -

- i. Effluent Standards for Mining Sites;
- ii. Effluent Standards for Work Camps, Sanitary Facilities, Domestic Wastewater;
- iii. Ambient air quality standards;
- iv. Ambient Noise Standards; and
- v. Blasting Standards

12.7 Environmental Monitoring Requirements

The Mine Operators of the proposed project are responsible to engage in Environmental Compliance Monitoring, which is also self-monitoring of the implementation of all the commitments in the ESMP and/or the Environmental Compliance Certificate (ECC). Mine Operators will be employed with qualified and social environmental staff; and a budget will be provided for supervision and monitoring ESMP implementation. The Operators will submit monitoring reports periodically to the Department of Mines and ECD. The reports are required to be disclosed to the public. The ESMP is to be used throughout the mine life cycle. It will guide the mine manager, mining company staff, and contractors in the implementation of environmental and social management measures.

As detailed in Myanmar’s NEQEG, 2015, “projects shall engage in continuous, proactive and comprehensive self-monitoring of the project and comply with applicable guidelines and standards”. In compile with these Guidelines, projects shall be responsible for the monitoring of their compliance with Myanmar Mining Guidelines.

Monitoring is required in order to demonstrate compliance with legal limits of Myanmar’s NEQEG, and 24-Hour Project requirements. It will also provide verification of the overall design and effectiveness of the implemented mitigation/control measures. Examples of key aspects to be monitored by the Project are - Produced water; Sewage and gases. Considering mitigation measures against negative impacts in the EMP, environmental monitoring plan (EMoP) which supports implementation of the measures, was prepared as shown in the following *Table 12. 4*.

Table 12.4 Indicative Environmental Quality Monitoring Programs

Environmental Component or Issue	Location	Objective	Frequency and timing	Monitoring Responsibility
Surface Water Usage and Water Transfers	At water sources/ <i>Nga Wun</i> Stream	<ul style="list-style-type: none"> • Monitoring of water usage and water transfers 	Mine dependent;	Department of Mines, Mining Enterprise, and Mining Operator
Surface Water Quality	At onsite and offsite water bodies affected by the mine	<ul style="list-style-type: none"> • Detecting changes in surface water quality • Checking for compliance with Water Quality Standards 	Surface Water analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator
Groundwater Quality	At sensitive receptors/ sample village wells	<ul style="list-style-type: none"> • Detecting changes in ground water quality • Checking for compliance with Groundwater Quality Standards 	Ground Water analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator
Air Quality	At sensitive receptors/ Mine site/ access road	<ul style="list-style-type: none"> • Detecting changes in air quality • Checking for compliance with Air Quality Standards 	Daily / Mine dependent/ Air quality analysis - Twice a year	DOM, Mining Enterprise, and Mining Operator

Noise and Vibration	At sensitive receptors/ Mine site/ access road	<ul style="list-style-type: none"> • Detecting changes in noise levels • Checking for compliance with Noise Standards 	Daily / Mine dependent	DOM, Mining Enterprise, and Mining Operator
Erosion and Sedimentation	At risk prone areas/ Mine site/ access road	<ul style="list-style-type: none"> • Checking for erosion potential • Estimating rates of erosion 	Daily in rainy season/ Mine dependent	DOM, Mining Enterprise, and Mining Operator

Note: Sensitive receptors include residential households, temples, monasteries, mosques, and hospitals/health clinics near the mine, mine access roads, and transportation routes.

12.8 Cost estimate for EMP and EMoP

The EMP Team and monitoring team will organize and conduct a biennial site visit of monitoring during the project implementation period. The 24-Hour. has set up the allotment budget of 10,000,000 (Ten million) Kyats for the implementation of EMP and EMoP for one year. The costs of implementation of mitigation measures are included within 24-Hour.'s operation costs, and are therefore not possible to individually specify for the time being. Provided that the allotted budget is insufficient, some more budgets will be used to cover the EMP and EMoP activities. The analysis of physical parameters for the environmental impact, such as the measurement of air, water and soil quality will be conducted every year and whenever necessary. The budget for the general estimation for EMP and EMoP was described in the following *Table 12.5* and the cost will also be bore by the 24-Hour.

Table 12.5 Estimated Environmental Management Plan and Monitoring Cost per year

Item	Cost (MMK) in millions per year
Monitoring analysis cost for Air Quality, Noise & Vibration (Bi-annual)	6.0
Monitoring analysis cost for Water Quality (surface and ground water) (Bi-annual)	4.0
Cost for Community Engagement and Development	3.0
Support to Occupational Health and Safety PPE, trainings, medical checkup, etc.	3.0
Cost for Community Health and Safety measures – Seminars / workshop on health education such as COVID-19, AIDS, contagious diseases, etc.	2.0
Cost for Emergency Response Plan – training and simulation for fire and other natural hazards	2.0
CSR	5.0
Total	25

12.9 Capacity Development and Trainings

The capacity building training of the 24-Hour aims for the process of developing and strengthening the skills, instincts, abilities, processes and resources its organization and related communities. These trainings will be practical training for conducting monitoring and inspection and for assessment of the finding or observation. It will also cover other basic aspects such as:

- Conduct environmental awareness to the staffs/workers,
- Conduct safety program 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.

Therefore, mentoring, on-the-job training, and the knowledge that individuals gain from experience in their field is what builds strong capacity over time. The 24-Hour will organize several numbers of Training regularly during all the mining cycles depending on the requirement and Standard Operating Procedures (SoPs), strategies and plans will be produced.

Moreover, project staffs and contractors will have responsibility for EMP implementation, coordination, supervision and reporting, and they need capacity building and strengthening. It

needs some staff with the required environmental expertise. All parties involved in implementing and supervising the EMP must understand the goals, methods, and practices of project environmental management.

The capacities of EMP management team to coordinate environmental management will be strengthened through a set of measures:

- i. Appointment of a qualified environment specialist including GRM and coordination of environmental impact monitoring, training, reporting, etc.;
- ii. Contracting of environmental specialists and construction safety engineers under CSC; and
- iii. The contracting of an External Monitoring Consultant (EMC) to guide and CSC and contractors in implementing the EMP and ensure compliance with the national and international mining rules and regulations.

Training – The company responsible staffs, contractors will receive training in CEMP preparation, EMP and CEMP implementation, supervision, and reporting, the Grievance Redress Mechanism, protection measures in legally protected sites, and construction safety. Training will be facilitated by the environmental specialists under the CSC services.

The tentative training plan as shown in shall be reviewed by the CSC based on a training needs assessment and refined in their technical proposal. The cost for this program, estimated at \$3,000 will be included in the CSC contract. In addition, each works contractor will conduct daily tool box briefings and monthly trainings on construction site safety and environmental protection requirements for all construction staff. The tentative ESMP-related training programs were shown in the [Table 12.6](#).

Table 12.6 Tentative ESMP-related Training Program

Training	Attendees	Contents	Times	Period (days)	No. of persons	Cost (\$/person /day)	Total Cost (\$)
ESMP, EMP requirements and responsibilities CEMP preparation, implementation	Project staff, contractors	Environmental Conservation Law (2012); National Environmental Quality (Emission) Guidelines (2015); ESMS, EMP requirements and procedures, roles and responsibilities, monitoring, supervision and reporting procedures, review of experience	Twice – Once prior to, and once after one year of project implementation	2	10	25	500
Biodiversity protection measures in or near legally protected sites	Project staff, contractors	The Environmental Conservation Rules (2013) - Chapter XI EIA Procedure and penalties in case of non-compliance	Once prior to, and once after 6 months of project implementation	2	20	25	1,000
EMP monitoring and reporting requirements Monitoring methods,	Project staff, contractors	Data collection and processing, reporting systems, occupational health & safety during all stages	Once (at beginning of project construction)	1	10	25	250

Grievance Redress Mechanism, Public consultation	Project staff, contractors	Roles and responsibilities, procedures, review of experience (after 12 months)	Twice - Once prior to, and once after one year of project implementation	2	10	25	500	
Occupational and community health and safety	PMU, contractors	Construction safety requirements, procedures and responsibilities; key regulations	Twice - Once prior to, and once after one year of project implementation	2	15	25	750	
							Total estimated cost:	3,000
Notes: The daily rate per person includes costs for course material preparation, rental of training facilities, and food								

12.10 Grievance Redress Mechanism (GRM)

In case of any concern, question or complaint related to the limestone mining project by 24-Hour., people can send the message through a grievance letter, telephone or any other communications. The 24-Hour will distribute the grievance forms at several entities, namely: Village Tract Administration's office; Ethnic leaders' houses, and 24-Hour administrative offices in Ye Phyu Village and Khae Chaung village. The grievance form can be written in Myanmar and or any ethnic language. If a person is not skilled in writing, the other person e.g., a relative, the ethnic leader or village administrator, will be allowed to fill in the form or write a letter for that person. To organize the GRM, firstly and formally communicate with the entities listed above and introduce them to the objective of the GRM (which is allowing the people to place their grievances regarding the project in a formal way and assuring everyone will receive an answer).

The grievance forms together with grievance boxes will be placed the above listed entities / locations. The entities will contact the 24-Hour whenever a grievance is placed. For additional communication measures, the company will install the billboards or simple paper posters mentioning the GRM information in the strategic places within the villages to inform the people that a GRM is available. The strategic places are, for example - the entrance to the limestone project site, main village road crossings, market place, Village Tract Administration offices of Chuang Nauk Pyan, Khae Chaung and Ma Noe Yone Villages.

The 24-Hour. will actively monitor the GRM by contacting the entities once per month to be sure whether a grievance has been placed or not. The company will provide an answer to any grievances / complaints received within a short period of time by a citizen that placed the grievance. The claims / complaints may be, for example, some effluent or engine oil and fuel from the limestone mine site contaminating into the stream, very loud noise, significant emissions of dusts and gases generated from the mine site or limestone transport vehicles. The assigned unit or responsible people will take care, as soon as possible, any suggestions, comments, claims and complaints made by the general public.

The GRM shall treat all grievances the same way, that is, not allowing or promoting discrimination based on age, gender, income level, ethnicity, religion or others. All grievances shall be treated confidentially by the 24-Hour. The company will keep a dedicated register for the grievances received and the answers provided, with indication of dates of reception and answer.

12.11 Corporate Social Responsibility (CSR)

The 24-Hour. Co., Ltd has been conducting several CSR activities for social welfare to the local communities since the preparation of limestone mining project began and there are a number of ongoing CSR activities under several other projects, such as “Oil palm Plantation and Crude Oil Palm factory” in Tanintharyi Township. These activities have the objective to uplift the quality of life of the local people and to gain favorable relations from all stakeholders in the project area. The CSR program consists of three main sectors, namely “health, education and community development sectors”. All CSR activities are conducted in compliance with the existing rules, regulations and guidelines set by the local authorities. The following are the details of CSR activities which have been completed and some are currently on going at a yearly basis.

- The 24-Hour. Co., Ltd hired two teachers for each of Primary School of Chaung Nauk Pyan and Chaung Lamu villages. Each of them was provided with a monthly salary of 180,000 Kyats.
- The 24-Hour. Co., Ltd provided school furniture [cost about 4,000,000 (Four million kyats)] to the Primary School at Chaung Nauk Pyan village.
- The 24-Hour. Co., Ltd also built a Buddhist ordination hall (*Thein*) in the Chaung Nauk Pyan village’s monastery (cost about 12,000,000 Kyats).
- For the health care, the 24-Hour. Co., Ltd established a clinic for workers near the Oil Palm plantation project office and supported the medicines to a Sub- Health Center at the Ye Phyu village in Tanintharyi Township, on the Myeik- Kawthaung Highway. About fifteen villages nearby the project site and along the Highway, such as Chaung Lamu, Aye Thar Yar and Chaung Nauk Pyan villages of Tanintharyi Township and Ywa Tha Yar, Khe Chaung and Manoron villages of Bokpyin Townships have received the health care services from these work-site clinic and Ye Phyu village clinic.
- Generally, the 24-Hour. Co., Ltd has allocated annual budget of approximately 5,000,000 Kyats (Five million Kyats) for CSR activities to all villages associated with the company’s projects - oil palm plantation and limestone mining. As these industries develop, the contribution to the CSR will be duly increased. It will allocate 2% of the profit of the business to establish a fund for local communities, such as upgrading schools and school facilities, and health care and other rural development activities.

CHAPTER 13:
CONCLUSION

The EIA Study was conducted for the proposed limestone mining development in Paungni Kyauk Taung area of Tanintharyi Township to comply with the requirements of the EIA Procedures of MONREC. This report demonstrates that the 24-Hour Mining and Industry Co., Ltd understands the environment and social setting of the project area and it has properly assessed the key potential environmental and social impacts associated with the proposed Project. A project-specific EMP and EMoP will present as a tool to manage impacts associated with the Project and ensure legislative compliance and standards of good practice during the project period.

The potential project impact assessment showed that the “Topography and Landscape” will have significant negative impacts due to the quarrying for limestone karst. However, the mitigation measures, such as minimizing the land to be disturbed as much as possible, and implementation of reclamation and mine closure plans (replanting, recontouring, and restoration and stabilization of stream banks, etc.), will improve the topography and land scape to the nearness to its original state. It was also observed that the project will cause negative impacts, but not significant on the items such as “Soil erosion and sedimentation, Air quality, Surface Water quality, Biodiversity (Terrestrial and Aquatic), etc. These impacts can easily be reduced if the appropriate measures are undertaken to address impacts. For example, the measures to protect air quality are “Low speed of vehicles, Limestone grinding mill using bag filters, Water-sprinkling of access roads, systematic and safe blasting, and etc

To maintain the water quality safe, the measures are – such as, prevent engine oil and fuel and any oil spills, plan and manage to prevent the contamination of soil and groundwater, install collection ditches and sedimentation ponds at the foot of the quarry site to prevent erosion and sedimentation to the Nga Wun stream and other natural streams. In addition, waste from limestone mines and solid and liquid waste from field camps should be disposed of at the designated spot. For the biodiversity conservation, workers will be provided with environmental awareness training; no employees will be allowed to collect, hunt or fish for natural resources, the trade of flora and fauna species will be prohibited. In addition, the workers will be given occupational health and safety training; workers need to adhere to mine safety measures and wear the personal protective equipment (PPE) while working at the mine site.

The company will assign responsible contractor and supervisors to advice and support for EMP, EMoP processes and occupational health and safety issues. When some significant adverse impacts are anticipated, and diligent implementation of the EMP by work contractors, to be closely monitored and verified by an independent, external environmental monitoring consultant, will try to mitigate possible impacts and risks to acceptable levels.

Provided that the recommended mitigation measures are properly implemented, the environmental and social impacts of the proposed project would be managed in a professional way and acceptable manner. Moreover, the proposed limestone development will bring significant positive impacts to the Tanintharyi Township level as well as the regional economy due to the Company’s large investment in mining industry. Local purchase and local employment plan, CSR activities will contribute job opportunities and incomes to the local communities, encouraging the uplift of local livelihoods.

It is a fortune that the limestone krast are concentrated in the Paungni Kyauk Taung area, eastern side of *Nga Wun* Stream valley. The proposed project site is located in a degraded forest with low biodiversity and no cultural heritage sites and no potential or expectation for the tourism. Likewise, due to its low fertility and ragged hilly areas, mostly uninhabited, the development of agriculture, including animal husbandry, cannot be well developed in these areas. Thus, this area is particularly suitable for the limestone production. If the proposed mining project takes place, the long-term benefits of the projects are employment of young local people and income to local communities.

The positive impacts of the project include improvement of the livelihoods of local population in terms of direct and indirect employment from the new limestone mining and related operations such as transportation, food supplies, equipment rentals, retail business and etc. The CSR initiatives by the 24- Hour Co., Ltd will result in having a good relation with the people in the project area and will eradicate their fear and apprehensions on the project. The local community will improve in health care and children education through the CSR programs. In this regard, this EIA Report highlights that the project is feasible from an environmental and social point of view, without any significant adverse impacts. and it will have positive impacts on the livelihoods of the local community.

Table 6.35 Income distribution of Respondents

No.	Item	Name of Villages					Remark (Total)
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
1	Lower income group: <3,000,000	5	11	9	0	0	25 (43%)
2	Middle income group: 3,000,000 - 6,000,000	5	2	9	1	0	17 (29%)
3	Higher income group: > 6,000,000	1	7	4	2	2	16 (28%)
	Total respondents						58

Source: Social Survey Team, December 2021

(viii) Education status

According to the study, most people are literate who had school education, as shown in the *Table 6.36* and *Fig.6.5.4* below. Out of the total number 58 households with 278 total household members, 208 people had school education. The people with Primary level education and Middle school level are more in number (69 and 78 numbers, respectively) while people with High school level are fewer (52 persons), comparing with the three education levels.

The University levels of graduate, and graduates of some profession (Diploma and certificates) were also found in the study villages.

Table 6.36 Educational Status of Households

No.	People with education level	Name of villages					Total
		Ma Noe Yone	Khe Chaung	Chaung Nauk Pyan	Ta Pa Lat	Aye Thar Yar	
	Primary	8	26	26	2	7	69
	Middle	15	24	27	7	5	78
	High	14	15	14	6	3	52
	University level	1	2	0	0	0	3
	Other Graduates	0	4	1	1	0	6
	Total HH with education						208

Source: Social Survey Team, December 2021

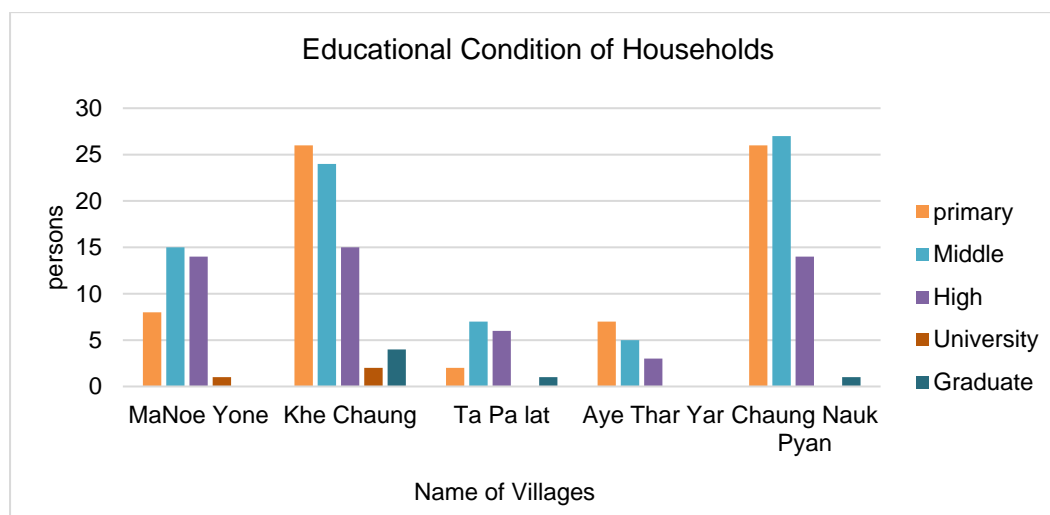


Figure 6.22 Educational level of households

During the household survey, the education and health facilities of the study areas were documented.

The Basic Education High School was located in Ma Noe Yone VT while Chaung La Mu VT had no High School level, but it had Middle Schools and Primary Schools.

There are one Basic Education Middle School and four Basic Education Primary Schools in the Chaung La Mu Village tract. Total number of teachers were 32 in Ma Noe Yone VT and 20 teachers in Chaung La Mu VT. The ratio of teachers and students ranged from the Primary Schools of Ma Noe Yone VT 1:13 in Ma Noe Yone VT to 1:63 in the Middle Schools of Chaung La Mu VT (*Table 6.37*).

Table 6.37 Education and health status of the study area

No.	Village Tract/ School	No. of Schools	No. of Teachers	No. of Students	Teacher/ Student Ratio
1	Ma Noe Yone VT				
	High School	1	10	515	1:51
	Middle School	3	15	327	1: 22
	Primary School	2	7	89	1:13
	Total	6	32	935	1:29
2	Chaung La Mu VT				
	High School				
	Middle School	1	11	629	1:63
	Primary School	4	9	407	1:45
	Total	5	20	1099	1.55
Health centers in Village Tracts					
		Number			
1	Ma Noe Yone VT				
	Hospital (16-bed)	-			
	RHC (Rural Health Center)	2			
	Maternity and Child Care center	-			
2	Chaung La Mu VT	0			

(ix) Public health care facilities and health condition

The 2014 Myanmar Census, Tanintaryi Township has three public hospitals, two public clinics, and twenty-two local health centers. Public health and health status are determined based on the source of food, source of drinking water, management of wastewater, toilet system, solid waste management, medical history and current status of public health services.

Regarding the public health condition of the 58 sample households surveyed, most respondents usually go to public hospitals and health care centers depending on their health problems. According to the finding, it was noted that complaints related to health conditions were - insufficiency of doctors and nurses, high cost of medical care expenses, and far and inconvenient location of public healthcare centers.

Higher expenses and less accessibility of medical centers were more important problems for respondents in the survey area. All villagers had to go to the rural health center (RHC) at Khae Chaung village in Ma Noe Lone village Tract. There was no RHC in Chaung La Mu VT (*Table 6.37*) Most respondents said the common disease was flu. Others were related with heart diseases, hypertension, and diabetes, digastric and etc. It was noted that the severity/ causality of COVID 19 was not severe comparing with other townships. and COVID 19 vaccination program was also completed in all study villages.

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏
 တနင်္သာရီတိုင်းဒေသကြီး တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်း
 ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ရန် (EIA) အစီရင်ခံစာအတွက်
 ဒုတိယအကြိမ် ဌာနဆိုင်ရာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း
 (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)

အမည်အစားတက်ရောက်သူများစာရင်း

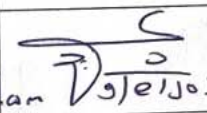
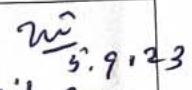
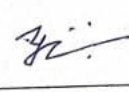
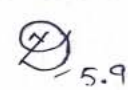
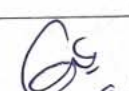

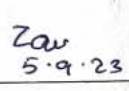
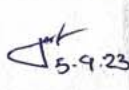
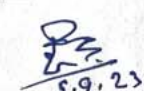
၅. ၉. ၂၀၂၃

စဉ်	အမည်	ရာထူး	ဌာနအမည်	ဖုန်းနံပါတ်	လက်မှတ်
၁	ဦးကြည်လွင်	AD	ECD	၀၅-၄၄၀၂၂ ၅၇၁၁	
၂	ဦးစော်မင်းကို	ဒုတိယဦးစီးမှူး	ECD	၀၅၆၆၇၃၅၄၆ ၃၁	
၃	ဒေါ်မင်ကြည်စိန်	ဒု - ညွှန် မှူး	စိုက်ပျိုးရေး	၀၅၃၅၀၃၆၆ ၄၄၁	
၄	ဦးမြင့်စိုး	ခရိုင်ဦးစီးမှူး	လက်မှု/လက်	၀၅. ၃၀၀၅၀၆၂၈၀	
၅	ဒေါ်မျိုးမျိုးကျော်	ဦးစီးဌာန	ခရိုင် ကျေးဇာတိ	၀၅၃၅၀၅၄၄၇၇	
၆	ဦးစောင့်ကျော်ကျော်	AD	လက်မှု	၀၅-၄၀၃၆၆၈၇၇၁	
၇	ဦးဝင်း နိုင်ကျော်	AD	ခရိုင်/ကျေးဇာတိ	၀၅၄-၃၀ ၇၅၀၆၅၅	
၈					
၉					
၁၀					
၁၁					

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 (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)

အစည်းအဝေးတက်ရောက်သူများစာရင်း

၅. ၉. ၂၀၂၃

စဉ်	အမည်	ရာထူး	ဌာနအမည်	ဖုန်းနံပါတ်	လက်မှတ်
၁	Dr. ဒိုးမိုးလွင်	ဒုတိယပါမောက္ခ	မြန်မာ့အလင်း စီမံကိန်းဌာန	၀၉၅၀၄၇၃၇၀ smlwin.sm@gmail.com	 ၅.၉.၂၀၂၃
၂	Dr. ထွန်းလေး	ပါမောက္ခ၊ ယဇ္ဇီ (၄၄၄၅၆)	မြန်မာ့အလင်း စီမံကိန်းဌာန	၀၉၅၅၀၃၀၅၄ drhtunzaw.yue@gmail.com	 ၅.၉.၂၀၂၃
၃	ဒေါ်စေးစေးခိုင်	ပါမောက္ခ ၄၄၄၅၆	သတ္တုဇလ	၀၉၅၅၅၅၅၇၇	
၄	Dr. ခင်မြင့်မောင်	ပါမောက္ခ၊ ဌာနမှူး ဘူမိဗေဒ	ဘူမိဗေဒ မြောက်တက္ကသိုလ်	၀၉၄၂၅၃၁၂၁၉၆၁	 ၅.၉.၂၀၂၃
၅	Dr. ဥမ္မာ	ပါမောက္ခ၊ ဌာနမှူး ဗဟိုဌာန	ဗဟိုဌာန မြောက်တက္ကသိုလ်	၀၉၄၂၄၈၅၅၅၀	 ၅.၉.၂၀၂၃
၆	ဒေါ်ဖြူစေ့	ဘူမိဗေဒ ဘူမိဗေဒဌာန	ဘူမိဗေဒဌာန မြောက်တက္ကသိုလ်	၀၉၄၂၃၅၂၆၅၀၄	 ၅.၉.၂၀၂၃
၇	ဒေါ်ဟန်လေးထွန်း	ကထိက ပထဝီဝင်ဌာန	မြောက်တက္ကသိုလ်	၀၉၄၂၃၅၃၃၁၇၁	 ၅.၉.၂၀၂၃
၈	ဒေါ်သက်စိုစို	သုတေသန ဘူမိဗေဒဌာန	မြောက်တက္ကသိုလ်	၀၉-၄၇၄၆၆၇၇၆၀	 ၅.၉.၂၀၂၃
၉	ဒေါ်ဦးသန်းဦး	၈/၀၀၀၆၆၆၆၆	ဒုတိယအကြီး ဗဟိုဌာန	၀၉-၄၄၇၀၀၃၈၁၀	 ၅.၉.၂၀၂၃
၁၀					
၁၁					

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် ဌာနဆိုင်ရာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

- ၁။ အမည် ----- ဦးမြင့်ဆွေ -----
- ၂။ ဌာန/အလုပ်အကိုင် ----- တွဲဖက်ပါမောက္ခ၊ ဘူမိဗေဒဌာန၊ မြိတ်တက္ကသိုလ် -----
- ၃။ ဖုန်းနံပါတ် ----- ၀၉၄၂၃၅၂၆၅၀၄ -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

အားလုံး ဖွဲ့စည်းတင်ဆောင် တာဝန်ရှိ ပုဂ္ဂိုလ်များနှင့် ဆွေးနွေးမှုများ ၏ တင်ပြလာမှုများ ကုမ္ပဏီ
၏ စာရေးဆရာ စာရေးဆရာမတို့ပါသည်။

ကုမ္ပဏီ၏ ဂုဏ်ထူးဆောင်များနှင့် ပူးပေါင်း၍ နိုင်ငံ၏ လိုက်နာကျင့်သုံးရမည့်
စည်းကမ်းများနှင့်ညီညွတ်စွာ ဆောင်ရွက်ပါမည်။

ကုမ္ပဏီ နှင့် တက္ကသိုလ်၊ ဘူမိဗေဒဌာနတို့ ဆွဲနုတ်ဆောင်ရွက်ပါမည်။

5.9.2023

ဦးမြင့်ဆွေ
တွဲဖက်ပါမောက္ခ
ဘူမိဗေဒဌာန၊ မြိတ်တက္ကသိုလ်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
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စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

- ၁။ အမည် ----- ဒေါက်တာ မေးမေးခိုင်
- ၂။ ဌာန/အလုပ်အကိုင် ----- သတ္တုဗဒ္ဒဌာန၊ ရွာမို့၊ ပါမောက္ခ
- ၃။ ဖုန်းနံပါတ် ----- ၀၉၅၅၅၅၅၅၇

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

၇: ကွဲကားသော Action Plan တွင် ဒေသအခြေစိုက်ရေး လုပ်ငန်းစဉ်

၅: များစွာပင်ပန်းစေမှု မရှိစေရန် သတ္တုတူးဖော်ရေး နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု

လျှော့ချရေးစာတမ်း ပြင်ဆင်မှု: ကျွန်ုပ်တို့၏ habitat Loss နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု

မထိခိုက်စေရန်: ပတ်ဝန်းကျင်ထိခိုက်မှု နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု: ကျွန်ုပ်တို့၏ ပတ်ဝန်းကျင်ထိခိုက်မှု

မထိခိုက်စေရန်: ပတ်ဝန်းကျင်ထိခိုက်မှု နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု: ကျွန်ုပ်တို့၏ ပတ်ဝန်းကျင်ထိခိုက်မှု

ကောင်းမွန်စွာ ဖြစ်ပေါ်စေရန် ရည်ရွယ်ချက်ဖြင့် ပြင်ဆင်ပါရန်။

လေးစားစွာဖြင့်
Aye
 Dr. Aye Aye Cho
 Prof (Head)
 Dept of Zoology
 Myeik University

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
 တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
 ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
 ဒုတိယအကြိမ် ဌာနဆိုင်ရာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)
 စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။


၁။ အမည် ----- ဒေါက်တာနန္ဒာမြင့်မောင် -----

၂။ ဌာန/အလုပ်အကိုင် ----- ပါမောက္ခ၊ ဌာနမှူး၊ ဘုမ္မိဗေဒဌာန -----

၃။ ဖုန်းနံပါတ် ----- ၀၇ - 425312964 -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဘိလပ် မြေ စက်ကွဲအထိ တည်ဆောက်မည်ဆိုလျှင် ရေ အရည်အသွေးကို
 မြစ်ရောင်းကို စွန့်ပစ်မည်
 အထူးဂရုပြုစေရန် ပါတယ်။ လုံခြုံရေးကောင်းမွန်လျှင် မြစ်တစ်ကွေ့လှိုင်
 ချွန်မြေအနုနှင့် ကျောက်မြေ မထုတ်မီ အသေးစိတ်တိုင်း တာမူများကို
 ပူးပေါင်းဖြည့်လုပ်ချင်ပါသည်။ ရောင်းစာချိန် ကျောက်မြေ နေရာများတွင်
 Moulinet Est ဂြိုဟ်တပ်ဆိုသည့် သစ်ကြားရေ သက်သေများကို
 တည်ရှိစေချင်ပါသည်။


 ၁၇.၁၁.၂၀

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် ဌာနဆိုင်ရာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

- ၁။ အမည် ----- ခေါင်စောညွန့် -----
- ၂။ ဌာန/အလုပ်အကိုင် ----- ဥက္ကဋ္ဌ၊ ဌာန၊ မိမိတို့ (၄၄) နှစ် -----
- ၃။ ဖုန်းနံပါတ် ----- ၀၇၄၂၄၈၅၁၁၅၀ -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

 ၀၅။ ဤ အကြံပြုချက်များ၏ habit လေး ဖြစ်သွားခြင်းကြောင့် အခြားအရာများတွင် အခြားအကြံပြုချက်များ
 ခြင်းများဖြင့် ဖြစ်လာမည်ဖြစ်ကြောင်းအကြောင်းအရာများတွင် အခြားအကြံပြုချက်များ
 ကျင့်သုံးခြင်းဖြင့် အခြားအရာများတွင် အခြားအကြံပြုချက်များဖြင့် အခြားအကြံပြုချက်များ
 များဖြစ်သော mercury, cadmium များပါ မပါမပါ စားသုံးမှုများဖြင့်
 စားသုံးမှုများ

CS
5.9.2023

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
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စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- ဦးမာန်စင်္ကြာ -----

၂။ ဌာန/အလုပ်အကိုင် ----- မတင်ဝင်မှုမှူး၊ ဓာတ်လျှပ် -----

၃။ ဖုန်းနံပါတ် ----- ၀၉၄၂၃၃၅၃၃၂၇၂ -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေသခံ၊ လူမှုရေး စီးပွားရေးစက်မှုအဖွဲ့အစည်းအဖွဲ့အစည်းများ၏အကြံပြုချက်များ -----

ကျေးရွာအုပ်စုနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အဖွဲ့အစည်းများ၏အကြံပြုချက်များ -----

ရွာထဲမှ အကြံပြုချက်များ -----

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
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ဒုတိယအကြိမ် ဌာနဆိုင်ရာများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- ဦးသက်နိုင် -----

၂။ ဌာန/အလုပ်အကိုင် ----- သာယာဝတီ-၂၀၂၃-၂၀၂၄ ဖြစ်စေရန် -----

၃။ ဖုန်းနံပါတ် ----- ၀၉-၉၅၅၅၅၅၅၅ -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

----- လိုအပ်သည့်အချက်အလက်များကို ဖြည့်စွက်ပေးရန် -----

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
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စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- ဒေါ်မျိုးမျိုးဝင်း -----

၂။ ဌာန/အလုပ်အကိုင် ----- ကျန်းမာရေး ဦးစီးဌာန ----- ဦးစီးဌာန -----

၃။ ဖုန်းနံပါတ် ----- ၀၉၇၅၀၇၄၀၇၇၀ -----

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

----- လျှင်လျှင် ခွဲခြားပတ်ဝန်းကျင်လျှင် လှူပေး လှူပေး ကျန်းမာရေး စကား
----- မှန်ကန်စေရန် အတွက် ဖုန်းများဖြင့် ချီးမြှင့် ပေးကြောင်း သတိပေး ပြောဆိုခြင်း
----- မှန်ကန်စေရန် အတွက် ဖုန်းများဖြင့် ချီးမြှင့် ပေးကြောင်း သတိပေး ပြောဆိုခြင်း
----- စားစား ဆေးဆိုင်ရာလမ်းညွှန်ချက်များ စားသုံးဆိုင်ရာ ဝါကျ ချွတ်ချက်
----- ကောက်ချက်ဆွဲပြီး ဝါကျစာကြည့် နားပါသည်။ -----

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / နေရာ ~~ကျေးရွာ~~ / ကျေးရွာ အုပ်စု / မြို့နယ် ~~ကျေးရွာ~~

နေ့စွဲ ။ ၆.၆.၂၀၂၃

စဉ်	အမည်/မှတ်ပုံတင်	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁						
၂	ဒေါ်သိန်းဖြူ ၇/လပတ (၉၆) ၀၇၃၆၈၆	မ	၄၂	ဒို့ဒို့	ကျေးရွာ	၀၇-၄၅၃၆၃၆၇၈
၃	ဒေါ်ဗျေးဗျေးစိန် ၆/ကသာ (၉၆) ၀၃၆၃၃၃ မ	မ	၃၆	ရွေးကောင်းလယ်	ကျေးရွာ	၀၇-၇၆၅၅၃၃၁၄၃
၄	ဒေါ်ဗျေးစိန် ၆/ကသာ (၉၆) ၀၁၈၇၃ မ	မ	၃၃	ကားရောင်း	"	၆၆၆၈၂၁၄၂၁
၅	ဒေါ်ခင်မာမာ ၆/ကသာ (၉၆) ၀၅၀၆၄၂ မ	မ	၃၇	ကောင်းလယ်	ကျေးရွာ	၀၇-၄၅၃၆၅၄၀၇
၆	ဒေါ်မိမိ ၆/ကသာ (၉၆) ၀၅၃၅၅၁ မ	မ	၂၈	ဒို့ဒို့	ကျေးရွာ	၀၇-၇၆၅၅၃၃၆၃၃၃
၇	ဒေါ်စုစုစိန် ၆/ကသာ (၉၆) ၀၅၃၅၅၁ မ	မ	၂၆	အလုပ်	ကျေးရွာ	၀၇-၇၆၅၅၃၃၃၄၄
၈	ဒေါ်မိမိ ၆/ကသာ (၉၆) ၀၅၃၅၅၁ မ	မ	၂၆	လက်သမား	ကျေးရွာ	၀၇-၇၆၅၅၃၃၆၀၅၅
၉	ဒေါ်မိမိ ၆/ကသာ (၉၆) ၀၄၀၆၄၂ မ	မ	၃၇	ဒို့ဒို့	ကျေးရွာ	၀၇-၇၆၅၅၃၃၅၅၃၄
၁၀	ဒေါ်မိမိ ၆/ကသာ (၉၆) ၀၅၃၅၅၁ မ	မ	၄၀	ကျေးရွာ	ကျေးရွာ	၀၇-၆၇၆၆၅၅၆၀
၁၁	ဒေါ်မိမိ ၆/ကသာ (၉၆) ၀၅၃၅၅၁ မ	မ	၂၇	ကွင်းကောင်း	ကျေးရွာ	၀၇-၇၆၅၅၃၃၇၀၀၅

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
 တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
 ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
 အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / ဇနရာ ပေါင်နီမြို့နယ် ကျေးရွာ အုပ်စု / မြို့နယ် တနင်္သာရီ

နေ့စွဲ ။ ဇ.၇.၂၀၂၃

စဉ်	အမည်	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁	ဦးစောင့်လွင် မြ/တသာ(ဒိုင်)၀၃၈၃၅၅	ကျား	42	ပျက်	ကျား:ပလပ်	 09-09426215566
၂	ဦးဂျီလွင် မြ/တသာ(ဒိုင်)၀၅၃၂၀၀	ကျား	31	ဆိုင်	ကျား:လမ	 09-662374037
၃	ဦးဂျော်စိုး မြ/တသာ(ဒိုင်)၀၅၆၁၃၁	ကျား	39	အိတ်ကပ်ပြင်	ကျား:လမ	 09-42038790
၄	ဦးစောဝင်း မြ/တသာ(ဒိုင်)၀၅၀၀၅၅	ကျား	၅၄	ပျော်ပျော်	ကျား:လမ	 09-263902830
၅	ဦးဝေယံထွန်း မြ/တသာ(ဒိုင်)၀၅၀၇၀၃	ကျား	၂၀	ကျေး	ကျား:ပလပ်	 09-650601225
၆	ဦးဌေးစော မြ/တသာ(ဒိုင်)၀၆၅၃၈၄	ကျား	35	ပျက်	ကျား:အင်းတော်	 09-650369053
၇	ဦးသန်းစိ မြ/တသာ(ဒိုင်)၀၆၃၀၀၄	ကျား	၆၇	ကျွမ်းကျင်	ကျား:ပလပ်	 09-421731686
၈	ဦးစောစိန် မြ/တသာ(ဒိုင်)၀၅၅၅၁၅	ကျား	18	ကျေး	ကျား:လမ	 09-67806038
၉	ဦးစောစော မြ/တသာ(ဒိုင်)၀၅၀၅၅၅	ကျား	25	ပျက်	ကျား:ပလပ်	 09-669396890 Aung
၁၀	ဦးအောင်စိန် မြ/တသာ(ဒိုင်)၀၅၃၂၀၀	ကျား	30	ကျေး	ကျား:ပလပ်	 09-453624089
၁၁	ဦးအောင်စိန် မြ/တသာ(ဒိုင်)၀၅၀၅၅၅	ကျား	၃၅	ကျေး	ကျား:ပလပ်	 09645080171

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် သီဟသူ.....

၂။ အလုပ်အကိုင် ကျေးရွာ..... (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ခရိုင်၊ လူရွာ..... နှင့်ကျေးရွာ အုပ်စု

၄။ ဖုန်းနံပါတ် ၀၉-၆၇၅၀၀၁၃၁..... (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးရွာအေးပေးခန်း ဖွင့်ပေးစေလိုပါသည်။

သီဟ

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်မယ်ဇွေ-----

၂။ အလုပ်အကိုင် ဒေါ်----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိစသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကျေးရွာ----- နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်-----

၄။ ဖုန်းနံပါတ် ၀၅-၄၀၄၈၆၃၆၅၅----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေါ်မယ်ဇွေ အလုပ်အကိုင်

(Handwritten signature)

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- ဒေါ်ရှေ့အေးအေး

၂။ အလုပ်အကိုင် ----- ရှေးရှေးစည် (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- ရွှေမင်းရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- ၀၉၂၆၅၂၃၁၅၇ ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေါ်အေးအေး

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် လှပင်းနိုင်

၂။ အလုပ်အကိုင် ကျေးလက် (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ ဝယ်ယူခြင်း)

၃. နေရပ် / ကျေးရွာ ကျေးရွာ နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်

၄။ ဖုန်းနံပါတ် ၀၉၆၀၂၁၄၂၁၇ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးရွာအုပ်စု၊ ကျေးရွာ၊ ကျေးရွာ၊ ကျေးရွာ၊ ကျေးရွာ

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်မာမာ.....

၂။ အလုပ်အကိုင် အေးအင်းဝယ်..... (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ အောင်လှရွာ..... နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်.....

၄။ ဖုန်းနံပါတ် ၀၉-၄၅-၃၆၂၄၀၈၉..... (ရှိပါက).....

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးဇူးတင်ပါသည်။ ဒေါ်ခင်မာမာ
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၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ဒြ်ဒြ်အေး-----

၂။ အလုပ်အကိုင် ဒီဇိုင်း----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ဂမ:ပလၤစွာ----- နှင့်ကျေးရွာ အုပ်စု အစားလှ-----

၄။ ဖုန်းနံပါတ် ၀၉-၂၅၉၃၃၆၃၂၂----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျွန်ုပ်တို့အား ဖော်ပြချက်များအား ရေးသားဖော်ပြပေးရန်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။


၁။ အမည် ဒေါ်စုစုစိန်ဝင်း

၂။ အလုပ်အကိုင် သမား (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ်/ ကျေးရွာ သိန်းခွင် နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်

၄။ ဖုန်းနံပါတ် ၀၉ ၇ ၉၄၆ ၃၁၃၁၇ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးဇူးပြု၍ ဖော်ပြပေးပါမည်


၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်စု

၂။ အလုပ်အကိုင် မိမိ (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ ဝယ်ယူခြင်း)

၃. နေရပ် / ကျေးရွာ ဆောင်လျာ နှင့်ကျေးရွာ အုပ်စု ဆောင်လျာ

၄။ ဖုန်းနံပါတ် ၀၉၇၆၉၂၅၄၅၂၄ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဖုန်းလိုင် မှား မကောင်းပါ။ စိုင်းဝန်း ဖြူပြင်ပေးစေလို့ပါ တယ်။

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်ကြူ

၂။ အလုပ်အကိုင် ကျား (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ ဝယ်ယူခြင်း)

၃. နေရပ်/ ကျေးရွာ ကျေးပယ် နှင့်ကျေးရွာ အုပ်စု အောင်လမူ

၄။ ဖုန်းနံပါတ် ၀၉-၆၂၂၁၁၅၂၀ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

အင်တာနက်များ: မ ကောင်း ပါ ဟ

၆၈

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ခေတ်သစ်

၂။ အလုပ်အကိုင် လွှဲပြောင်းရေး (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရောင်းလမ်း နှင့်ကျေးရွာ အုပ်စု ကျေးရွာ

၄။ ဖုန်းနံပါတ် ၀၉ ၇၉ ၂၆ ၂၀၀ ၉၂ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေသခံ များ ၏ အလုပ်ပေးစေချင်ပါသည်။ ~~ကျေးရွာ၏ စီမံကိန်းအတွက်~~

လွှဲ

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်လှစိန်-----

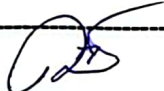
၂။ အလုပ်အကိုင် အများပြည်သူဝန်ထမ်း----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ ဝန်ထမ်း)

၃. နေရပ် / ကျေးရွာ ကျေးရွာအုပ်စု၊ သိန်းခွန်ကျေးရွာ----- နှင့်ကျေးရွာ အုပ်စု သိန်းခွန်ကျေးရွာ

၄။ ဖုန်းနံပါတ် ၀၉၄၂၆၂၁၅၅၆၆----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးရွာအုပ်စု ဝန်ထမ်း-----



၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအား ရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်လှိုင်ဦး-----

၂။ အလုပ်အကိုင် သူမည်မသိ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ စားပယ်၊ ခိုရွာ----- နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်ကျေးရွာ

၄။ ဖုန်းနံပါတ် ၀၉-၄၂၆၂၂၂၅၅၆၆----- (ရှိပါက)

အကြံပြုချက်များအား ရေးသားဖော်ပြပေးရန်

ရှာဖွေရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးကျော်စွာ

၂။ အလုပ်အကိုင် ခရစ်ယာန်ကျောင်းဆရာမ (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရွှေလင်းရွာ နှင့်ကျေးရွာ အုပ်စု ရွှေလင်းရွာ

၄။ ဖုန်းနံပါတ် ၀၉-၆၆၇၃၇၄၀၃၇ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျွန်ုပ်တို့တက်ရောက်ကြည့်ရှုစစ်ဆေးပေးမည်

Yes/No

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် မိုးမင်းစိန်

၂။ အလုပ်အကိုင် အိမ်ထောင်ရေးအဖွဲ့ (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ ဝန်ထမ်း)

၃. နေရပ် / ကျေးရွာ ဆောင်းလှ နှင့်ကျေးရွာ အုပ်စု ဆောင်းလှ

၄။ ဖုန်းနံပါတ် ၀၉၄၂၀၃၅၉၀ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

မိမိအနေဖြင့် မှတ်တမ်းတင်ပါသည်။ စာသင်ကျောင်း များ အစားဖြင့် ဖွင့်တင်စေချင်ပါသည်။
ကျေးရွာများကို စီမံကိန်းက အကျိုးပြုပါစေ။

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် - လှိုင်ဇွန်ဝင်း

၂။ အလုပ်အကိုင် - ကျောင်းလုပ် (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ - ကျေးရွာ နှင့်ကျေးရွာ အုပ်စု -

၄။ ဖုန်းနံပါတ် - ၀၉၂၆၇၉၀၂၀၀ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးရွာအုပ်စု၊ လှိုင်ဇွန်ဝင်း စီမံကိန်းအတွက် အကြံပြုချက်များ

၀၆

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ပေမံ တွင်

၂။ အလုပ်အကိုင် လုပ်ခွဲ (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကျေးရွာ နှင့်ကျေးရွာ အုပ်စု

၄။ ဖုန်းနံပါတ် ၀၉-၆၆၀-၆၀၂၇၄ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

မေးခွန်းများ ကျောင်းနေ့ခိုင်းစဉ်၊ မိဘများ အလုပ် လုပ်ပါသော်လည်း
မိမိတို့က စာမေးပေးပါ။

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
 တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
 ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
 ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
 စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ခင်အေး

၂။ အလုပ်အကိုင် အိမ်ထောင်ရေး (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကျေးရွာ နှင့်ကျေးရွာ အုပ်စု သိန်းခွန်

၄။ ဖုန်းနံပါတ် ၀၉-၄၂၇၇၁၆၅၆ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စီမံကိန်း: သိန်းခွန်၊ နယ်: တနင်္သာရီ၊ ရွာ: ကျေးရွာ၊ အား: အိမ်ထောင်ရေး၊ စေ့ငြိမ်းမှု

ဥပဒေ ၆၆၆၊ အား: သိန်းခွန်၊ စေ့ငြိမ်းမှု

အုပ်စု

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် မောင်စိုးသူခိုင်.....

၂။ အလုပ်အကိုင် အလုပ်လုပ်သူ..... (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရွာငါးပယ်..... နှင့်ကျေးရွာ အုပ်စု

၄။ ဖုန်းနံပါတ် ၀၉၆၇၀၄၀၃၇..... (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စီမံကိန်းကို ကြိုဆိုပါသည်။ ဥပမာအားဖြင့် ၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ရက်

အောင်မြင်စွာ ဆောင်ရွက်ပေးပါသည်။

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

- ၁။ အမည် ဒေါ်အိမ်မာအောင်.....
- ၂။ အလုပ်အကိုင် အထွေထွေ..... (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)
- ၃. နေရပ် / ကျေးရွာ မ.ရ.ပြ.လ..... နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်.....
- ၄။ ဖုန်းနံပါတ် ၀၉၅၅၅၉၅၅၅၅၅၅..... (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်
ဒေါ်အိမ်မာအောင် မှ ဖော်ပြချက်များ ဖော်ပြပါသည်။

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
 တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
 ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
 ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၆ ရက်)
 စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----
 သက်တမ်း -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စီမံကိန်းကြောင့် စွာများလျှော့ဖို့ဖြင့် စေ့ဆော်ပေးပါ။
 စွာတွင်လည်း များ ဖို့ကြောင့် စေ့ဆော်ပါ။

ထွက်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
 တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
 ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
 ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ (ရက်)
 အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / နေရာ ~~ချောင်းကန်ရွာ~~ ^{အိမ်ခြံမြေ} ကျေးရွာ အုပ်စု / မြို့နယ် ~~တနင်္သာရီ~~ ^{မြို့နယ်}

နေ့စွဲ ။ ~~၇.၉.၂၀၂၃~~

စဉ်	အမည်/မှတ်ပုံတင်	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁	ဦးဘင်းစိုး ၆/တောကုန်း(၆) ၁၅၇၄၂၈	ကျား	၄၇	ခွဲယာနှင့် ချောင်းလှ	ချောင်းလှ	 ၀၄၄၅၃၆၇၂၄၆၆
၂	ဒေါ်ခင်စု ၁၄/မအောင်(၆) ၀၉၂	မ	၄၅	ခွဲ	ချောင်းကန်	၅၆
၃	ဦးနုစု ၇/ကန်(၆) ၀၇၅၅၆၆	ကျား	၂၅	ခွဲယာ	ကျေးသာယာ	၀၆
၄	ဦးသန်းထွန်း ၆/တောကုန်း(၆) ၀၅၅၅၅၅	ကျား	၁၉	ကျေးစား	ကျေးသာယာ	ဦး ၀၄-၈၄၈၄၄၃၇၄၂
၅	ဦးကျော်စွာ ၆/တောကုန်း(၆) ၀၁၂၃၆၂	ကျား	၆၄	ခွဲယာနှင့်ချောင်း	ချောင်းကန်	စွာ ၀၄-၈၄၄၃၆၆၅၇၃
၆	ဦးကျော်စွာ ၆/တောကုန်း(၆) ၀၁၄၃၃၃	ကျား	၄၀	ကျေးစား	ချောင်းကန်	 ၀၄-၄၃၅၆၄၅၆၆
၇	ဦးစွာစု ၆/တောကုန်း(၆) ၀၅၅၅၅၅	ကျား	၂၀	ကျေးစား	ကျေးသာယာ	စွာ ၀၄-၈၈၅၅၅၃၅၅
၈	ဦးကျော်စွာ ၆/တောကုန်း(၆) ၀၅၅၅၅၅	ကျား	၃၅	ကျေးစား	ချောင်းကန်	 ၀၄-၈၈၅၅၅၃၅၅
၉	ဦးကျော်စွာ ၆/တောကုန်း(၆) ၀၅၅၅၅၅	မ	၃၂	ကျေးစား	ချောင်းကန်	
၁၀	ဦးစွာစု ၆/တောကုန်း(၆) ၀၅၅၅၅၅	ကျား	၃၅	ချောင်းကန်	ချောင်းကန်	စွာ ၀၄-၄၅၅၈၆၃၄၆၇
၁၁	ဦးကျော်စွာ ၆/တောကုန်း(၆) ၀၅၅၅၅၅	ကျား	၃၆	ခွဲယာ	ကျေးသာယာ	 ၀၄-၄၅၅၈၆၃၄၆၇

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၂၅ရက်)

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / နေရာ ~~ပေါင်နီကျောက်တောင်~~ / သိန်ခွန်းကျေးရွာ အုပ်စု / မြို့နယ် ~~တနင်္သာရီ~~ / နယ်

နေ့စွဲ ။ ၇.၉.၂၀၂၃

စဉ်	အမည်/ဖွဲ့စည်းပုံ	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁						
၂	ဦးဦးတက်ဖွား (ဒ/တဘူ(ဦး) ၂၄၀၈၀၅)	ကျား	၃၉	ယဉ်စောင်း	ဆောင်းဟောင်းမြ	၂၅ ၀၅၄၀၀၅၃၆၁၁၅
၃	ဦးစိုင်းကျော်သူ (ဒ/တဘူ(ဦး) ၀၉၉၀၀၅)	ကျား	၂၃	ရွက်ကုတ်	ဆောင်းဟောင်းမြ	၃၃ ၀၅.၄၅၃၇၀၄၂၄၇
၄	ဒေါ်တင်ချိုစော (ဒ/တဘူ(ဦး) ၁၀၁၀၀၅)	မ	၃၅	ရွေးရောင်း	စေးဘာယာ	၀၅
၅	ဦးစိုင်း (ဒ/တဘူ(ဦး) ၀၅၅၅၀၅)	မ	၃၀	ယဉ်လှပာ	ဆောင်းဟောင်းမြ	၀၅ ၀၅.၆၈၇၀၀၅၆၄၆
၆	ဦးပွင့်စွန်းစွန်း (ဒ/တဘူ(ဦး) ၁၀၀၀၀၅)	ကျား	၂၅	ယဉ်စောင်းသူ	စေးဘာယာ	၀၅
၇	ကျော်ကျော် (ဒ/တဘူ(ဦး) ၂၅၀၀၀၅)	ကျား	၄၇	ယဉ်စောင်း/ပင်	ဆောင်းဟောင်းမြ	၀၅၄၄၅၆၁၃၆၁၃ ၇၅
၈	ကျော်စိုးမျိုးစက် (ဒ/တဘူ(ဦး) ၁၀၀၀၀၅)	ကျား	၂၂	ရွေးရောင်း	ဆောင်းဟောင်းမြ	၀၅၆၇၇၇၆၆၅၇၇ ၀၅
၉						
၁၀	ဖောင်စိုင်းစိုင်း (ဒ/တဘူ(ဦး) ၁၀၀၀၀၅)	ကျား	၁၈	စုပယ်	စေးဘာယာ	၀၅
၁၁	ဦးစိုင်းကျော် (ဒ/တဘူ(ဦး) ၀၃၀၀၀၅)	ကျား	၃၀	ပင်စိုက်ရေး	ဆောင်းဟောင်းမြ	၀၅ ၀၅.၄၅၃၇၀၅၇၅၅

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးသန်းစိုး-----

၂။ အလုပ်အကိုင် ဥက္ကဋ္ဌ (ချောင်းလှေ)----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ချောင်းလှေ----- နှင့်ကျေးရွာ အုပ်စု -----ချောင်းလှေ-----

၄။ ဖုန်းနံပါတ် ၀၉၄၅၃၆၄၂၁၂၆----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ပိတ်ပင်ကျင့်ကြံသိမ်းဆည်းရေးအစီအစဉ်အရ အကျိုးအမြတ်အတွက် ဖော်ပြပါ
ခေတ္တဖြတ်ဖြိုးတိုးတက်စေရန်၊ လုပ်ငန်းဖြစ်စေရန်၊ အကျိုးအမြတ်အတွက် အများများ
ကျင့်ကြံခြင်း၊ ဤအစီအစဉ်အရ ဖြစ်ပေါ်လာမည့် အကျိုးအမြတ်အတွက် အကျိုး
ကျေးဇူးတင်ပါသည်။



၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- ဒေါ်ခင်ယုမာမာ -----

၂။ အလုပ်အကိုင် ----- မိမိ ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- ချောင်းနောက်ပြန် ----- နှင့်ကျေးရွာ အုပ်စု ----- ချောင်းလယ် -----

၄။ ဖုန်းနံပါတ် ----- ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဤအကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးသိန်းထွန်းဦး

၂။ အလုပ်အကိုင် ငွေစား (တောင်သူ/ ဝန်ထမ်း/ ကျောင်း/ မိမိတို့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ အေးသာယာ နှင့်ကျေးရွာ အုပ်စု ပေါင်လှ

၄။ ဖုန်းနံပါတ် ၀၉-၉၉၈၄၉၃၂၄၁ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စားဝတ်ဆောင်ရေး ဦးစီးဌာန၊ ပုသိမ်မြို့နယ်၊ ပုသိမ်မြို့နယ်၊ ပုသိမ်မြို့နယ် - မြို့နယ်အဖွဲ့

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးကျော်ဖြူ-----

၂။ အလုပ်အကိုင် အလုပ်မရှိ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရွှေဘိုမြို့နယ်၊ ရွှေဘိုမြို့နယ်၊ ရွှေဘိုမြို့နယ်----- နှင့်ကျေးရွာ အုပ်စု ရွှေဘိုမြို့နယ်-----

၄။ ဖုန်းနံပါတ် ၀၉ - ၉၅၅၂၆၆၅၅၂----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ရှောင် ဗျိုးစက်ရွာ၊ အထိ အကျိုးပေးရန် အား၊ အပွင့်များခံစား၊ ၎င်းစေရန်
ရေရှည်စီမံကိန်း၊ အကောင်အထည်ဖော်ဖွင့်ပါကြောင်း တင်ပြပါသည်။

ဖြူ

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ (၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးစိုးစင်အောင်

၂။ အလုပ်အကိုင် ကူးပေး (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကျောင်းကျောက်ပြန်ရွာ နှင့်ကျေးရွာ အုပ်စု ကျောင်းလမူ

၄။ ဖုန်းနံပါတ် ၀၉-၄၂၄၆၇၁၅၁၆ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဦးစိုးစင်အောင်

စ

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ထိုရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ချိုချိုစင်-----

၂။ အလုပ်အကိုင် စက်ချုပ်----- (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရွှေအင်းရွာ----- နှင့်ကျေးရွာ အုပ်စု ရွှေအင်းလယ်-----

၄။ ဖုန်းနံပါတ် ၀၉----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးဇူးတင်စွာဖြင့်

၂၅

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

- ၁။ အမည် ဝင်းခိုင်
- ၂။ အလုပ်အကိုင် ဆိုင်ကယ်ပြင် (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)
- ၃. နေရပ် / ကျေးရွာ ကျောင်းနောက်ပြန် နှင့်ကျေးရွာ အုပ်စု ကျောင်းမ
- ၄။ ဖုန်းနံပါတ် ၉၄-၄၅၁၈၆၃၉၆၂ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးဇူးပြုပေးရန် ယူဆပါသည်။
မရှိစေဘဲ အကောင်အထည်ဖော်ဆောင်ရွက်ပါသည်။

ခိုင်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၅ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ခင်စော

၂။ အလုပ်အကိုင် လယ်သမား (တောင်သူ/ ဝန်ထမ်း/ ကျောင်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကျေးလက်ရွာ နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်

၄။ ဖုန်းနံပါတ် ၀၄-၄၄၅၁၀၆၁၈၁ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကြီးစော

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ကိုရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးထွန်းတင်ထွန်း

၂။ အလုပ်အကိုင် ပာဠိဆောင် (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ဆောင်းနောက်ပြန် နှင့်ကျေးရွာ အုပ်စု ဆောင်းလမေ

၄။ ဖုန်းနံပါတ် ၀၉-၄၀၀၉၃၆၁၁၉ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေသခံများ၏ အင်အားစွမ်းရည်ကို ကျေးဇူးတင်အမှာအကူပြုပေးရန်
ပိုမိုဖြစ်ထွန်းစေရန်အတွက် လူမှုဝန်ထမ်းကော်မရှင်များ၏ အကူအညီအား
အကြံပြုပေးရန်
၂၀၂၃ ခုနှစ်

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်တင်ချိုအောင်.....

၂။ အလုပ်အကိုင် ရွေးချယ်ရေး..... (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ အေးသာယာ..... နှင့်ကျေးရွာ အုပ်စု အောင်သာ.....

၄။ ဖုန်းနံပါတ် (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျွန်ုပ်တို့အား ဤအကြံပြုချက်များအား ရေးသားဖော်ပြပေးရန်
အကြံပြုပေးရန် ဟု သတိပေး
အားဖြင့်
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၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးလွင်မင်းဦး.....

၂။ အလုပ်အကိုင် ဥယျာဉ်ထောက်သူ..... (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ရွာသစ်..... နှင့်ကျေးရွာ အုပ်စု ရွာသစ်.....

၄။ ဖုန်းနံပါတ် ၀၉၅..... (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ (၇ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ----- လွှဲသက် နိုင်

၂။ အလုပ်အကိုင် ----- ကျွန်ုပ်တို့၏ ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိတို့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- ရွှေဘိုမြို့နယ် ----- နှင့်ကျေးရွာ အုပ်စု ----- လှိုင်လှိုင် -----

၄။ ဖုန်းနံပါတ် ----- ၀၉-၄၄၅၆၇၃၃၃ ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

လွှဲသက် နိုင် နေရပ်အလုပ်အကိုင် အကျဉ်းချုပ် ဖော်ပြပါ အကျဉ်းချုပ် အကျဉ်းချုပ် အကျဉ်းချုပ်
ရေးသားဖော်ပြပါ အကျဉ်းချုပ် အကျဉ်းချုပ် အကျဉ်းချုပ် အကျဉ်းချုပ်
ရွှေဘိုမြို့နယ်
၇/၆

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ မှီရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည်

၂။ အလုပ်အကိုင် (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ နှင့်ကျေးရွာ အုပ်စု

၄။ ဖုန်းနံပါတ် (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

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၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၇ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် စံသာစန်းချစ်မောင်

၂။ အလုပ်အကိုင် ဝယ်ယူ (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ဒေါသယာ နှင့်ကျေးရွာ အုပ်စု ခေါင်းလမူ

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးရွာအုပ်စု ဦးစီးဌာနမှူးများအား ပူးတွဲပါရွာအုပ်စုနှင့် တွေ့ဆုံ
ဆွေးနွေးပူးပေါင်းဆောင်ရွက်ပါရန်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ခဲကျေး

ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / နေရာ ခဲကျေး၊ ပျဉ်းရိုး ကျေးရွာ အုပ်စု / မြို့နယ် တနင်္သာရီ

နေ့စွဲ ။ ၈.၉.၂၀၂၃

စဉ်	အမည်	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁	ဦးလွင်ငွေ ၆/ကျေးရွာ၊ ၆၆၅၆၉	ကျား	၄၇	အလုပ်	ခဲကျေး	 ၀၉-၆၇၂၂၂၅၄၄
၂	မာသန်းစိန် ၆/ကျေးရွာ(ခ) ၀၃၄၅၃၀	မ	၃၆	ကျေးရွာ	ခဲကျေး	စာရင်း ၀၉-၇၆၃၆၇၁၈၃၅
၃	ဒေါ်သန်းစိန် ၆/ကျေးရွာ(ခ) ၀၁၅၄၂၁	မ	၄၅	ကျေးရွာ	မာသန်းစိန်	စိန် ၀၉-၇၅၃၁၄၁၇၀
၄	မာသန်းစိန် ၆/ကျေးရွာ(ခ) ၀၁၁၄၂၃	မ	၅၂	ကျေးရွာ	ကျေးရွာ	စိန် ၀၉-၇၅၅၃၅၃၃၁
၅	မာသန်းစိန် ၆/ကျေးရွာ(ခ) ၀၀၇၆၅၈	မ	၃၉	ကျေးရွာ	ခဲကျေး	စိန် ၀၉-၆၇၀၄၄၅၅၀
၆	ဦးအောင်ကျော်စိန် ၆/ကျေးရွာ(ခ) ၀၁၃၂၀၁	ကျား	၅၆	အလုပ်	ခဲကျေး	Sein ၀၉-၇၇၈၅၄၈၁၀၅
၇	မောင်မျိုးစွယ် ၆/ကျေးရွာ(ခ) ၀၁၅၄၇၀	ကျား	၃၂	ကျေးရွာ	မာသန်းစိန်	မျိုးစွယ် ၀၉-
၈						
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၁၀						
၁၁						

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ခဲကျောင်း

ထုံးကျောက်သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ကျေးရွာ / နေရာ ခဲကျောင်း၊ မြင်းကုံး ကျေးရွာ အုပ်စု / မြို့နယ် တနင်္သာရီ

နေ့စွဲ ။ ၈.၉.၂၀၂၃

စဉ်	အမည်/မြတ်ဗွတ်	ကျား / မ	အသက်	အလုပ်အကိုင်	နေထိုင်သည့် ကျေးရွာအမည်	လက်မှတ်
၁	ဦးလှညွန့်အောင် ၁၀/ပမန(၃၆)၀၀၇၈၇၇	ကျား	၄၁	ဥယျာဉ်	ခဲကျောင်း	 ၀၉၇၅၇၅၇၆၄၁၀
၂	ဦးအောင်စော ၆/ကမန(၃၆)၀၅၇၆၇၇	ကျား	၄၀	လက်သမား	ရွာသာယာ	 ၀၉-၇၇၇၇၃၀၃၇၀
၃	ဦးလှမျိုးအောင် ၁၀/ပမန(၃၆)၀၄၁၈၅၈	ကျား	၅၆	ကျောင်းစာ	ခဲကျောင်း	 ၀၉-၄၅၃၄၇၈၆၇၃
၄	ဦးမောင်ကျွတ် ၆/ကမန(၃၆)	ကျား	၃၆	ပန်းချီလက်သမား	မင်းခဲ	 ၀၉-၆၇၃၃၅၄၄၃၄
၅	ဦးအောင်စော ၆/ပမန(၃၆)	ကျား	၃၆	လက်သမား	ခဲကျောင်း	 ၀၉-၄၆၇၅၀၄၅၇၃
၆	ဒေါ်ခင်မာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၃၄	စက်ရက်	မင်းခဲ	မင်း ၀၉-၄၆၆၇၅၆၅၃၃
၇	ဒေါ်ခင်မာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၂၈	မြေ	ခဲကျောင်းရွာ	မင်း ၀၉-
၈	ဒေါ်ခင်မာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၃၀	ကျေးလက်ပျော်	ခဲကျောင်း	မင်း ၀၄၄၆၃၀၄၈၅၃၃
၉	ဒေါ်ခင်မာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၅၆	မြေ	မင်းခဲ	မင်း
၁၀	မာမာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၃၃	ကျေးလက်	ခဲကျောင်း	မင်း
၁၁	ဒေါ်ခင်မာမာ ၆/ကမန(၃၆)၀၄၁၅၅	မ	၆၇	ကျေးလက်	မင်းခဲ	မင်း

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးလွင်ဌေး-----

၂။ အလုပ်အကိုင် အလုပ်မရှိ (အိမ်ထောင်ရေး)----- (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ကော့လယ်----- နှင့်ကျေးရွာ အုပ်စု ပန်းချိုကျေးရွာ-----

၄။ ဖုန်းနံပါတ် ၀၉-၆၉၂၂၂၂၅၉၉----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေသထက်ဝန်းကျင် သာ စဉ်းစား စက် ထိခိုက်မှု အနည်းဆုံးဖြင့် အလေး

အထူးအလေးထားပေးရန်။

ဒေသခံများအလုပ်အကိုင် အခွင့်အမ်း ပေးခြင်း၊ ပညာရေး၊ ကျန်းမာရေး

စောင့်ရှောက်မှုများ ပြုစုပေးခြင်း စွမ်းဆောင်ရည် တိုးတက်ရေးအား ဤသို့ထောက်ခံပါသည်။

(Handwritten signature)

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စာလင်ခံပါသည်။

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ရင်

Handwritten signature and address on lined paper. The signature is 'လှိုင်' and the address is 'လမ်းမကြီး ပေါက်ပင်ဘက်အိမ်၊ နယ်လမ်းမကြီး၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ တနင်္သာရီတိုင်းဒေသကြီး၊ တနင်္သာရီမြို့နယ်၊ ပေါင်နီကျောက်တောင်'.

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် မင်းအောင်-----

၂။ အလုပ်အကိုင် ခေ. ၂၂၃----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ခေ. ၂၂၃----- နှင့်ကျေးရွာ အုပ်စု မင်းရဲ-----

၄။ ဖုန်းနံပါတ် ၀၉ ၆၇၀ ၄၄၅၃၅၀----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

မင်းအောင်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးအောင်ကျော်စွာ

၂။ အလုပ်အကိုင် အလုပ်မရှိ (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ခဲခွေးရွာ နှင့်ကျေးရွာ အုပ်စု သိန်းခွင်

၄။ ဖုန်းနံပါတ် ၀၉၇၆၈၅၄၈၂၀၅ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စာရင်းသစ်သင်္ဘောလှေဗဟိုဌာန၊ ဒေသစွဲဖူးဦးစီးဌာန

ရွာစီမံခန့်ခွဲမှုဌာန၊ စတင်ဖွဲ့စည်းဌာန

Sein

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒေါ်ဦးအေးအောင်

၂။ အလုပ်အကိုင် ရောင်းချသူ (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ခဲခရိုင် နှင့်ကျေးရွာ အုပ်စု ပေါင်နီ

၄။ ဖုန်းနံပါတ် ၀၉-၉၅၅၇၅၇၇၄ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ခဲခရိုင်၊ ရွာစာပေကျောင်း၊ လှိုင်အောင်သာပရိဘောဂများ ထောက်ပံ့ပေးရန်

ရပ်ကွက်မှ ဖြိုခွဲထားသော အကြံပြုချက်များ ရေးသားနိုင်ပါသည်။

အပ်

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏ တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဒီ.စင်.လှိုင်-----

၂။ အလုပ်အကိုင် သိန်းခွင်လက်သား----- (တောင်သူ/ ဝန်ထမ်း/ ကျဘမ်း/ မှီခို စသဖြင့်)

၃. နေရပ် / ကျေးရွာ မင်းခူး----- နှင့်ကျေးရွာ အုပ်စု မင်းခူး-----

၄။ ဖုန်းနံပါတ် ၀၉၄၆၂၃၅၆၆၇၉----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဏား ဦးကျား ဖြတ်သန်းသွားသည့် လမ်းအား ပုခွံများထပ်ထူစေရန်
စီမံဆောင်ရွက်ပေးရောင်း အကြံပြုချက်များ
Y/relax

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိစား/ မိမိစား)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် : ၀၉၉ ၆၃၀ ၆၇၅၂ ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဒေသခံကျေးရွာအုပ်စုအဖွဲ့အစည်း နှင့် မြို့နယ်အဖွဲ့အစည်းတို့၏ ဝန်ခံချက်

၆၁

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----
စောအေးအေး

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)
ဒီဇို

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----
ရွာကြီး၊ ဝဲရွာ၊ နှင့်ကျေးရွာ အုပ်စု

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

စောအေးအေး

စော

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိစသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

၂၁ ဧကကျယ်ပါသည့် စွင်

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
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ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ဗိုလ်ဝင်းကျင် ထိခိုက်မှု နည်းစနစ်၊ နည်းလမ်း၊ ရွေး ဖြစ်

မိမိ၏ နှုတ်ချက် အကျဉ်းချုပ် အကြံပြုပါသည်

ထံ

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
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ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကမ္ဘာ့ ကံ အား ကြံ နှစ်ပါးတည်း၊ ပတ်ဝန်းကျင် စောင့်ရှောက်စေရန်
စောင့်ရှောက်ပေးပါ။

၄၃၂

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ခန့်အောင်မင်း

၂။ အလုပ်အကိုင် ရေမျှော်လုပ်ငန်း (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ မင်းခူး နှင့်ကျေးရွာ အုပ်စု မင်းခူး

၄။ ဖုန်းနံပါတ် ၀၉၅၉၈၄၇၅၁၆ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

ကျေးဇူးတင်စွာ ခြံ့ဆိုပါသည်။
MP

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး

တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်

ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍

ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)

စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် ဦးအောင်စွန်း.....

၂။ အလုပ်အကိုင် ပိုင်ဆိုင်..... (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိပိုင်ဆိုင်)

၃. နေရပ် / ကျေးရွာ သိန်းခွင်..... နှင့်ကျေးရွာ အုပ်စု ပေါင်နီ.....

၄။ ဖုန်းနံပါတ် ၀၉၅၂၅၂၂၀၇၇၇..... (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

အောင်စွန်း

အောင်စွန်း

၂၄နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

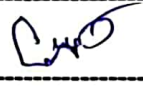
၁။ အမည် ကျိတ်လင်းတောင်

၂။ အလုပ်အကိုင် လက်သားစား (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိစားစားဖြင့်)

၃. နေရပ် / ကျေးရွာ ခင်အေး နှင့်ကျေးရွာ အုပ်စု မင်းလှ

၄။ ဖုန်းနံပါတ် ၀၉ ၉၈၂၄ ၆၄ ၅၅၅ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

.....
ကျောက်ခဲကြဲအိပါသည်။ 
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၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍ အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် မြင့်စွန်းမြင့်

၂။ အလုပ်အကိုင် မြို့ရွာရေးရာဝန်ထမ်း (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိတို့ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ စံရွာ နှင့်ကျေးရွာ အုပ်စု ပေါင်နီ

၄။ ဖုန်းနံပါတ် ၀၉၅၂၄၅၂၂၅၀ (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

အများပြည်သူအကြံပြုချက်များကို ရွေးချယ်ဖွဲ့စည်းပေးဆောင်ရာတွင် အကျိုးပေးချင်ပါသည်

စာ

၂၄ နာရီ သတ္တုတူးဖော်ရေးနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်၏တနင်္သာရီတိုင်းဒေသကြီး
တနင်္သာရီမြို့နယ်၊ သိန်းခွင်ကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်တွင်
ထုံးကျောက် သတ္တုတူးဖော်ထုတ်လုပ်မှု စီမံကိန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာ နှင့်စပ်လျဉ်း၍
ဒုတိယအကြိမ် အများပြည်သူနှင့် တွေ့ဆုံဆွေးနွေးခြင်း (၂၀၂၃ ခုနှစ် စက်တင်ဘာလ ၈ ရက်)
စီမံကိန်းနှင့်စပ်လျဉ်း၍အကြံပြုချက်များအားရေးသားဖော်ပြစေလိုပါသည်။

၁။ အမည် -----

၂။ အလုပ်အကိုင် ----- (တောင်သူ/ ဝန်ထမ်း/ ကျား/ မိမိ စသဖြင့်)

၃. နေရပ် / ကျေးရွာ ----- နှင့်ကျေးရွာ အုပ်စု -----

၄။ ဖုန်းနံပါတ် ----- (ရှိပါက)

အကြံပြုချက်များအားရေးသားဖော်ပြပေးရန်

Attachment 1.2

**Mining Enterprise
The grant 24-Hour**

ထုံးကျောက်လှုပ်ငန်း၏ ခွင့်ပြုမိန့်များ

နှင့်

ထုံးကျောက်လှုပ်ကွက်နေရာများ

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သတ္တုတွင်းဝန်ကြီးဌာန
သတ္တုတွင်းဦးစီးဌာန
နေပြည်တော်

ဖုန်း၊ ၀၆၇-၄၀၉၀၁၇၊ ၀၆၇-၄၀၉၀၁၈၊ ၀၆၇-၄၀၉၀၀၉

စာအမှတ်၊ ၉၆၄၂/ခဖရ/ခဖရ(၈)/၂၄ နာရီ/၂၀၁၃

ရက်စွဲ၊ ၂၀၁၃ ခုနှစ်၊အောက်တိုဘာလ ၂၁ ရက်

သို့

✓ ၂၄နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်
အမှတ်(၁၁)၊မဂ္ဂင်းလမ်း၊(၁၄)ရပ်ကွက်၊ကျောက်ကုန်း
ရန်ကင်းမြို့နယ်၊ရန်ကုန်တိုင်းဒေသကြီး

အကြောင်းအရာ။ ဓာတ်သတ္တုအကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုမိန့်ထုတ်ပေးခြင်း

၁။ ၂၄နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်မှ တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်းခွန်ကျေးရွာအုပ်စု၊ ပေါင်းနီကျောက်တောင်ဒေသရှိ စုစုပေါင်းမြေဧရိယာ(၂၈၈၀)ဧကတွင် အမှတ်(၃)သတ္တုတွင်း လုပ်ငန်းနှင့်ထုတ်လုပ်မှု အပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့် ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစား ထုတ်လုပ်ရန်ခွင့်ပြုမိန့်လျှောက်ထားမှုအား သတ္တုတွင်းဝန်ကြီးဌာန၊ စီမံခန့်ခွဲရေးကော်မတီ၏ ၃၂/၂၀၁၂ ကြိမ်မြောက် အစည်းအဝေးမှ သဘောတူခွင့်ပြုချက်အရ ၂၄နာရီသတ္တုတူးဖော်ရေး လုပ်ငန်းနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်သို့ ဓာတ်သတ္တုအကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုမိန့်အမှတ်(၀၀၀၈/၂၀၁၃)အား (၁၆.၉.၂၀၁၃မှ၅.၉.၂၀၂၃အထိ)(၁၀)နှစ်သက်တမ်းကို ထုတ်ပေးလိုက်သည်။

၂။ ခွင့်ပြုမိန့်ရရှိသူသည်-

- (က) လုပ်ငန်းများဆောင်ရွက်ရာတွင် မူလအဆိုပြုလွှာ၌ ဖော်ပြထားသည့် ထုတ်လုပ်မှုရည်မှန်းချက်များကို အနိမ့်ဆုံးရည်မှန်းချက်အဖြစ်ထားရှိ၍ အကောင်အထည်ဖော်ဆောင်ရွက်ရမည်။
- (ခ) လုပ်ငန်းများဆောင်ရွက်ရာတွင်သတ္တုတွင်းဝန်ကြီးဌာနမှထုတ်ပေးထားသောခွင့်ပြုမိန့်ပါ စည်းကမ်းများကို တိကျစွာလိုက်နာဆောင်ရွက်ရမည်။
- (ဂ) လုပ်ငန်းများဆောင်ရွက်ရာတွင် မြေအသုံးပြုမှုနှင့် စပ်လျဉ်း၍ နိုင်ငံတော်အစိုးရမှ မြေယာနှင့် ပတ်သက်သော သတ်မှတ်ပြဌာန်းထားသည့် စည်းကမ်း သတ်မှတ်ချက်များကို တိကျစွာ လိုက်နာဆောင်ရွက်ရမည်။

- (ဃ) ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း) အကြီးစား တူးဖော်ထုတ်လုပ်ရာတွင် ပတ်ဝန်းကျင် ညစ်ညမ်းမှုနှင့် ထိခိုက်မှုမရှိစေရန် စီမံဆောင်ရွက်ရမည့်အပြင်၊ လုပ်ကွက်အတွင်းဖြတ်သန်း စီးဆင်းသောချောင်းအတွင်း ဓာတ်သတ္တု ဟူးဖော်မှု မပြုရန်နှင့်စွန့်ပစ်မြေ(Tailing) နှင့် အနည်အနှစ် များ ချောင်းအတွင်းသို့ ကျရောက်မှု မရှိစေရန် စီမံဆောင်ရွက်ရမည်။
- (င) ခွင့်ပြုမိန့်ရ လုပ်ကွက်အတွက် လုပ်ငန်းဆောင်ရွက်မည့် အစီအစဉ် (Work Programme)နှင့် (Lay Out Plan)တို့ကို ခွင့်ပြုမိန့်ရရှိသည့် နေ့မှစ၍ (၃)လ အတွင်း တင်ပြရမည်။
- (စ) လုပ်ငန်း စတင်ဆောင်ရွက်ချိန်တွင် လုပ်ငန်းစတင်ကြောင်းကိုလည်းကောင်း၊ တူးဖော်မှု စတင်ချိန်တွင် တူးဖော်မှုစတင်ကြောင်းကိုလည်းကောင်း မပျက်မကွက် အစီရင်ခံ တင်ပြရမည်။
- (ဆ) ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစား လစဉ်ထုတ်လုပ်မှုနှင့် ရောင်းချမှု အစီရင်ခံစာကို ဤဦးစီးဌာနနှင့် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းသို့ တင်ပြပြီး သက်ဆိုင်ရာ မြို့နယ် စီမံကိန်းရေးဆွဲရေးဦးစီးဌာနသို့ မိတ္တူပေးပို့ ရမည်။
- (ဇ) အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄နာရီသတ္တုတူးဖော်ရေး လုပ်ငန်းနှင့်စက်မှု လုပ်ငန်း ကုမ္ပဏီလီမိတက်တို့ ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစား ထုတ်လုပ်ရန်အတွက် ထုတ်လုပ်မှု အပေါ် ခွဲဝေခံစားသည့်စနစ်ဖြင့် ချုပ်ဆိုထားသည့် စာချုပ်ပါစည်းကမ်းများကိုလည်း တိကျစွာ လိုက်နာရမည်။

၃။ ဤခွင့်ပြုမိန့်အား ထုတ်ပေးသည့် နေ့မှစ၍ (၆)လအတွင်း လုပ်ငန်းများ စတင်ဆောင်ရွက် ခြင်းမပြုပါက ဘဏ်အာမခံငွေအား နိုင်ငံတော်မှ သိမ်းယူမည်ဖြစ်သည့်အပြင် ဤခွင့်ပြုမိန့်သည် အလို အလျောက် ပျက်ပြယ်ပြီး ဖြစ်သည်ဟု မှတ်ယူရမည်။

၄။ ဤခွင့်ပြုမိန့်အား သတ်မှတ်စည်းကမ်းဘောင်အတွင်း မြေပိုင်ဆိုင်မှုနှင့် သက်ဆိုင်သော လုပ်ငန်း လုပ်ကိုင်ခွင့်နှင့် သက်ဆိုင်သော အငြင်းပွားမှုများ၊ စောဒကတက်မှုများ၊ သဘာဝပတ်ဝန်းကျင်ထိခိုက် ပျက်စီးမှုနှင့် ပတ်သက်သော တိုင်ကြားချက်များ၊ အငြင်းပွားမှုများ ဖြစ်ပွားပါက ကုမ္ပဏီမှသာ တာဝန်ယူ ဖြေရှင်းရန်၊ မဖြေရှင်းနိုင်ပါက လုပ်ကိုင်ခွင့် ရပ်ဆိုင်းခြင်း ပေးသွင်းထားသည့် အခွန်အခနှင့် အခြား ပေးသွင်းမှုများ သိမ်းယူခြင်း၊ လုပ်ကွက် ပြန်လည်သိမ်းယူခြင်းခံရမည်ကို သဘောတူဝန်ခံ ကတိပြုရမည်။

၅။ ဤခွင့်ပြုမိန့်အရခွင့်ပြုထားသော လုပ်ကွက်အတွင်းနိုင်ငံခြားသားများအား ခွင့်ပြုချက်မရှိဘဲ တရားမဝင် အသုံးပြုခြင်းမပြုရန်လိုက်နာရမည်။


ဝင်းထိန်
ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကို -

တနင်္သာရီတိုင်းဒေသကြီး၊ အစိုးရအဖွဲ့ရုံး၊ ထားဝယ်မြို့

တနင်္သာရီတိုင်းဒေသကြီး၊ သစ်တောနှင့်သတ္တုဝန်ကြီးဌာန၊ ထားဝယ်မြို့

ဦးဆောင်ညွှန်ကြားရေးမှူး၊

အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်း

ဤစာနှင့်ပူးတွဲပါရှိသည့် ၂၄နာရီ သတ္တုတူးဖော် ရေးနှင့်စက်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက်သို့ ခွင့်ပြုထားသောခွင့်ပြုမိန့်ပါ နေ့ရက်များ အတိုင်း အမှတ်(၃)သတ္တုတွင်း လုပ်ငန်းနှင့် ထုတ်လုပ်မှု အပေါ်ခွဲဝေ ခံစားသည့် စနစ်ဖြင့် သဘောတူ စာချုပ်ချုပ်ဆိုရေးကိုဆောင်ရွက်နိုင်ပါရန် စာချုပ် မိတ္တူတစ်စောင်ကို ဤဦးစီးဌာနသို့ ပေးပို့ရန် ညှိနှိုင်း အကြောင်းကြားပါသည်။

မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန၊ တနင်္သာရီမြို့

မြို့နယ်မြေစာရင်းဦးစီးဌာန၊ တနင်္သာရီမြို့

မြို့နယ်စီမံကိန်းရေးဆွဲရေးဦးစီးဌာန၊ တနင်္သာရီမြို့



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သတ္တုတွင်းဝန်ကြီးဌာန
ဝန်ကြီးရုံး
ဓာတ်သတ္တုအကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုမိန့်

ခွင့်ပြုမိန့်အမှတ်၊ ၀၀၀၈ / ၂၀၁၃ ရက်စွဲ၊ ၂၀၁၃ ခုနှစ်၊ အောက်တိုဘာလ ၁ ရက်။
အောက်ဖော်ပြပါ အဖွဲ့အစည်းအား မြန်မာ့သတ္တုတွင်းဥပဒေအရ အောက်ပါအချက်အလက်များနှင့်အညီ ဓာတ်သတ္တု
အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုလိုက်သည် -
၁။ ခွင့်ပြုမိန့်ရသူ၏

- (က) အမည်နှင့် နိုင်ငံသားစိစစ်ရေးကတ်ပြားအမှတ်-
- (ခ) အဖွဲ့အစည်းအမည်နှင့် - ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီ
အဖွဲ့အစည်းမှတ်ပုံတင်အမှတ် - လီမိတက် (၄၈၈/၂၀၀၇-၂၀၀၈)
- (ဂ) ဆက်သွယ်ရန်နေရပ်လိပ်စာ - အမှတ်(၁၁)၊ မဂ္ဂင်လမ်း၊ ၁၄ ရပ်ကွက်၊ ကျောက်ကုန်း၊
တယ်လီဖုန်းအမှတ်၊ ဖက်စ်(စ်) အမှတ် - ရန်ကင်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
ဖုန်း- ၀၉-၅၁၁၉၈၈၉၊ ဖက်စ် - ၀၁-၅၇၁၉၆၇

၂။ ခွင့်ပြုဧရိယာ၏

- (က) တည်နေရာ (ကျေးရွာ၊ မြို့နယ်၊ - ပေါင်နီကျောက်တောင်ဒေသ၊ သိန်းခွန်ကျေးရွာအုပ်စု၊
ခရိုင်၊ ပြည်နယ်/တိုင်းဒေသကြီး) - တနင်္သာရီမြို့နယ်၊ မြိတ်ခရိုင်၊ တနင်္သာရီတိုင်းဒေသကြီး
- (ခ) အကျယ်အဝန်း (စတုရန်းကီလိုမီတာ) - ၂၈၈၀ ဧက (၁၁.၆၅၅၂ စတုရန်းကီလိုမီတာ)
- (ဂ) နယ်နိမိတ်သတ်မှတ်ချက် - (၁) လုပ်ကွက်(၁) ၂၂၀၀ ဧက(၈.၉၀၃၂ စတုရန်းကီလိုမီတာ)
ခန့်မှန်းမြေပုံညွှန်း၊ ၉၆ အမ်/၂ + ၆ (၃၅၀၆၄၅၊ ၃၆၀၆၄၅၊
၃၆၀၆၀၀၊ ၃၅၀၆၀၀၊ ၃၅၀၅၄၅၊ ၃၄၀၅၄၅၊ ၃၄၀၆၁၅၊
၃၅၀၆၁၅) ပူးတွဲမြေပုံပါအကျယ်အဝန်းအတိုင်း
(၂) လုပ်ကွက်(၂) ၂၀၀၈၀ (၀.၈၀၉၄ စတုရန်းကီလိုမီတာ)
ခန့်မှန်းမြေပုံညွှန်း၊ ၉၆ အမ်/၂ (၃၂၂၆၅၂၊ ၃၂၇၆၅၂၊
၃၂၇၆၅၂၊ ၃၂၂၆၅၂) ပူးတွဲမြေပုံပါအကျယ်အဝန်းအတိုင်း
(၃) လုပ်ကွက်(၃) ၄၈၀.၀၀ ဧက (၁.၉၄၂၅ စတုရန်းကီလိုမီတာ)
ခန့်မှန်းမြေပုံညွှန်း၊ ၉၆ အမ်/၂ (၃၂၅၅၃၀၊ ၃၃၂၅၃၀၊
၃၃၂၅၀၄၊ ၃၂၅၅၀၄) ပူးတွဲမြေပုံပါအကျယ်အဝန်းအတိုင်း

- ၃။ ခွင့်ပြုဧရိယာ၏နယ်မြေ - တနင်္သာရီမြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
အုပ်ချုပ်မှုဆိုင်ရာအဖွဲ့အစည်း
- ၄။ တစ်ဆင့်သွားလာဝင်ထွက်ခွင့် - တနင်္သာရီမြို့နယ်
- ၅။ ခွင့်ပြုသည့်ဓာတ်သတ္တုအမျိုးအစား - ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)
- ၆။ ခွင့်ပြုသည့်ဓာတ်သတ္တုတူးဖော်မှုနှင့် - ဟင်းလင်းဖွင့်တူးဖော်ခြင်း၊ မြေအောက်တူးဖောက်ခြင်းအမှတ်(၃)
သတ္တုတွင်းလုပ်ငန်းမှ သဘောတူခွင့်ပြုသော နည်းစနစ်နှင့်
မြန်မာ့သတ္တုတွင်းဥပဒေပုဒ်မ ၂ (ည)ပါအတိုင်း

- ၇။ ခွင့်ပြုသက်တမ်းကာလ - (၁၀) နှစ်
- ၈။ စတင်လုပ်ကိုင်ခွင့်ပြုသည့်ရက်စွဲ - ၁၆ - ၉ - ၂၀၁၃
- ၉။ ခွင့်ပြုမိန့်ကုန်ဆုံးသည့်ရက်စွဲ - ၁၅ - ၉ - ၂၀၂၃
- ၁၀။ ပုံသေမြေငှားရမ်းခ (Dead Rent)
 - (က) ထူထောင်မှုကာလ - ပထမနှစ်တစ်စတုရန်းကီလိုမီတာအတွက်(၁၄၀၀၀၀၀)ကျပ်
 - (ခ) ထူထောင်မှုကာလ - ဒုတိယနှစ်တစ်စတုရန်းကီလိုမီတာအတွက်(၁၆၀၀၀၀၀)ကျပ်
 - (ဂ) ထုတ်လုပ်မှုကာလ - တစ်နှစ်လျှင်တစ်စတုရန်းကီလိုမီတာအတွက်(၂၀၀၀၀၀၀)ကျပ်
- ၁၁။ ဓာတ်သတ္တုခွန် - (၃%)
- ၁၂။ စည်းကမ်းချက်များ - တစ်ဖက်ပါစည်းကမ်းချက်များအတိုင်းတိကျစွာလိုက်နာရမည်။

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ပြည်ထောင်စုဝန်ကြီး
သတ္တုတွင်းဝန်ကြီးဌာန

စည်းကမ်းချက်များ

- ၁။ ဓာတ်သတ္တုထုတ်လုပ်ရန် ခွင့်ပြုမိန့်ရရှိသူသည်-
 - (က) ခွင့်ပြုဧရိယာသို့ဥပဒေနှင့်အညီ ဝင်ရောက်လုပ်ကိုင်ခွင့်ရှိသည်။
 - (ခ) ဓာတ်သတ္တုထုတ်လုပ်ခြင်းလုပ်ငန်းမစမီ နယ်မြေအုပ်ချုပ်ရေးဆိုင်ရာ အဖွဲ့အစည်းသို့ သတင်းပို့အစီရင်ခံရမည်။
 - (ဂ) မိမိအားတရားဝင်လုပ်ကိုင်ခွင့်ပြုထားသောဧရိယာအတွင်း(ခွင့်ပြုဧရိယာနယ်နိမိတ် အနားသတ်မျဉ်းမှ အောက်သို့ တည်မတ်စွာ ဆွဲသည့် ဒေါင်လိုက်မျဉ်းများအတွင်း) ဌာန တူးဖော်ထုတ်လုပ်ခြင်းလုပ်ငန်းကို လုပ်ကိုင်ရမည်။
 - (ဃ) မိမိအား တရားဝင်လုပ်ကိုင်ခွင့်ပြုထားသော လုပ်ကွက်ကိုအခြားမည်သူသို့မဆို ကိုယ်စားလှယ်အဖြစ်လုပ်ကိုင်စေခြင်းမှ အပ ဝန်ကြီးဌာန၏ ခွင့်ပြုချက်မရရှိဘဲ လွှဲပြောင်းပေးခြင်း၊ ပြန်လည်ရောင်းချခြင်းမပြုလုပ်ရ။
 - (င) တူးဖော်ထုတ်လုပ်ခွင့်ပြုထားသည့် နယ်မြေဒေသလုပ်ကွက်အတွင်းမှ ခွင့်ပြုထားသည့် ဓာတ်သတ္တုကိုသာ ခွင့်ပြုထားသည့် နည်းစနစ်အတိုင်း တူးဖော်ထုတ်လုပ်ရမည်။ အခြားမည်သည့် စီးပွားရေးလုပ်ငန်းကိုမျှ လုပ်ကိုင်ခွင့်မပြု။
 - (စ) လုပ်ကိုင်ခွင့်ပြုထားသည့် နယ်မြေဒေသရှိ လုပ်ကွက်အတွင်း တူးဖော်ခွင့်ပြုထားသည့် ဓာတ်သတ္တုအပ အခြားဓာတ်သတ္တုများနှင့် ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်ပစ္စည်းများ တွေ့ရှိပါက ဦးစီးဌာနသို့ မပျက်မကွက်ချက်ချင်းအကြောင်းကြားရမည်။
 - (ဆ) ခွင့်ပြုမိန့်ပါ ဓာတ်သတ္တုနှင့်စပ်လျဉ်း၍ တူးဖော်ရရှိမှု ၊ ရောင်းချမှုနှင့် လက်ကျန်ပမာဏတို့ကိုသတ္တုတွင်းဦးစီးဌာနသို့ သတ်မှတ် ပုံစံဖြင့် လစဉ်အစီရင်ခံစာ ပေးပို့ရမည်။
 - (ဇ) တူးဖော်ထုတ်လုပ်ရရှိသည့် ဓာတ်သတ္တုများအတွက် သတ်မှတ်စည်းကြပ်သည့် ဓာတ်သတ္တုခွန်ကို မြန်မာ့ကျပ်ငွေဖြင့် ရောင်းချ ပါက မြန်မာ့ငွေဖြင့်လည်းကောင်း ၊ နိုင်ငံခြားငွေဖြင့်ရောင်းချပါက နိုင်ငံခြား ငွေဖြင့်လည်းကောင်း ပေးဆောင်ရမည်။
 - (ဈ) တူးဖော်ထုတ်လုပ်မည့် လုပ်ကွက်တွင်လုပ်ငန်းလုပ်ကိုင်မည့် အလုပ်သမားစာရင်းကို အမည်၊ အသက်၊အမျိုးသားမှတ်ပုံတင်အမှတ်၊ နေရပ်လိပ်စာအပြည့်အစုံပြုစု၍ လုပ်ကွက်ရှိလုပ်ငန်းရုံးတွင်ထားရှိရမည်။ မိတ္တူတစ်စောင်ကို သတ္တုတွင်းဦးစီးဌာနသို့ပေးပို့ တင်ပြရမည်။
 - (ည) လုပ်ငန်းခွင်တွင် အပြင်းအထန်ထိခိုက်ဒဏ်ရာရရှိခြင်း၊ ထိခိုက်သေဆုံးခြင်းနှင့် ဥပဒေ၊ နည်းဥပဒေအရ သတင်းပို့ရမည့် မတော်တဆမှုများ ဖြစ်ပွားပါက သတ္တုတွင်းစစ်ဆေးရေးအရာရှိချုပ်ထံ ဥပဒေ၊နည်းဥပဒေတို့နှင့်အညီ အကြောင်းကြားရမည်။ အလုပ်သမားလျော်ကြေးဥပဒေနှင့် အကျုံးဝင်သည့် ထိခိုက်ဒဏ်ရာရရှိခြင်း၊သေဆုံးခြင်းဖြစ်ပေါ်ပါက ခွင့်ပြုမိန့်ရရှိသူမှ လျော်ကြေး ပေးရန်တာဝန်ယူရမည်။ ထို့ပြင်ခွင့်ပြုမိန့်ရရှိသူသည် အလုပ်သမားများနှင့်ပတ်သက်၍ ပြဌာန်းထားသည့် တည်ဆဲ ဥပဒေများ၊ နည်းဥပဒေများ ၊ အမိန့်နှင့်ညွှန်ကြားချက်များကို လိုက်နာဆောင်ရွက်ရမည်။
 - (ဋ) သစ်တောနယ်မြေ သို့မဟုတ် သစ်တောဖုံးလွှမ်းလျက်ရှိသော အစိုးရက စီမံခန့်ခွဲခွင့်ရှိသည့်မြေတွင် သစ်ပင်ခုတ်လှဲခြင်း၊ မြေကြီး တူးဆွခြင်းစသည့် တစ်စုံတစ်ရာ လုပ်ကိုင်လိုပါက သက်ဆိုင်ရာသစ်တောဦးစီးဌာန၏ ကြိုတင်ခွင့်ပြုချက်ကိုရယူရမည်။

- (၄) မိမိအားခွင့်ပြုထားသည့်ဧရိယာအား နယ်နိမိတ်တိုင်းတာသတ်မှတ်စိုက်ထူခြင်းကို မိမိကုန်ကျစရိတ်ဖြင့် ဆောင်ရွက်ထားရှိရမည်။
- (၅) ဓာတ်သတ္တုတူးဖော်ထုတ်လုပ်ရာတွင် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုနှင့် ထိခိုက်မှုမဖြစ်စေရန် စီမံဆောင်ရွက်ရမည်။
- (၆) သက်ဆိုင်ရာအခွင့်အာဏာရှိသူများမှ စိစစ်သည့်အခါ ပြသနိုင်ရန် ခွင့်ပြုမိန့်ဓာတ်ပုံမိတ္တူကို လုပ်ငန်းခွင်တွင်ချိတ်ဆွဲထားရှိပြီး မူရင်းကို လုံခြုံစွာ ထိန်းသိမ်းထားရှိရမည်။ဆက်လက်လုပ်ကိုင်လိုပါက သက်တမ်းမကုန်မီ (၃) လကြိုတင်လျှောက်ထားရမည်။
- (၇) ဥပဒေအရ ပေးဆောင်ရမည့် ပုံသေမြေငှားရမ်းခ (Dead Rent) ကို ပေးသွင်းရန် သတ်မှတ်သည့်နေ့မှတစ်လအတွင်း ဦးစီးဌာနသို့ ပေးသွင်း ရမည်။
- (၈) ဝန်ကြီးဌာန/ဦးစီးဌာနက အခါအားလျော်စွာ သတ်မှတ်သည့် စည်းကမ်းချက်များကို လိုက်နာရမည်။

၂။ ခွင့်ပြုမိန့်ရရှိသူသည် အထက်ပါစည်းကမ်းချက်များအပြင် ဥပဒေ၊ နည်းဥပဒေ၊ အမိန့်နှင့် ညွှန်ကြားချက်များကို လည်းလိုက်နာရမည်။ ထို့အပြင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ပေါင်နီကျောက်တောင်ဒေသတွင် ထုံးကျောက် (စက်မှုတွင်းထွက်ကုန်ကြမ်း) အကြီးစား ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့် ချုပ်ဆိုသည့် စာချုပ်ပါ စည်းကမ်းချက်များကိုလည်း လိုက်နာရမည်။

၃။ ဤခွင့်ပြုမိန့်အား သတ္တုတွင်းဝန်ကြီးဌာန၊ စီမံခန့်ခွဲရေးကော်မတီ၏ (၃၂/၂၀၁၂) ကြိမ်မြောက်အစည်းအဝေးတို့မှ သဘောတူခွင့်ပြုချက်အရ ထုတ်ပေးခြင်း ဖြစ်သည်။

၄။ ဤခွင့်ပြုမိန့်အား ထုတ်ပေးသည့်နေ့မှစ၍ (၆)လအတွင်း လုပ်ငန်းများစတင်ဆောင်ရွက်ခြင်းမပြုပါက လုံခြုံမှုအာမခံပေါ်ငွေအား နိုင်ငံတော်မှ သိမ်းယူမည်ဖြစ်သည့်အပြင် ဤခွင့်ပြုမိန့်သည် အလိုအလျောက် ပျက်ပြယ်ပြီးဖြစ်သည်ဟုမှတ်ယူရမည်။

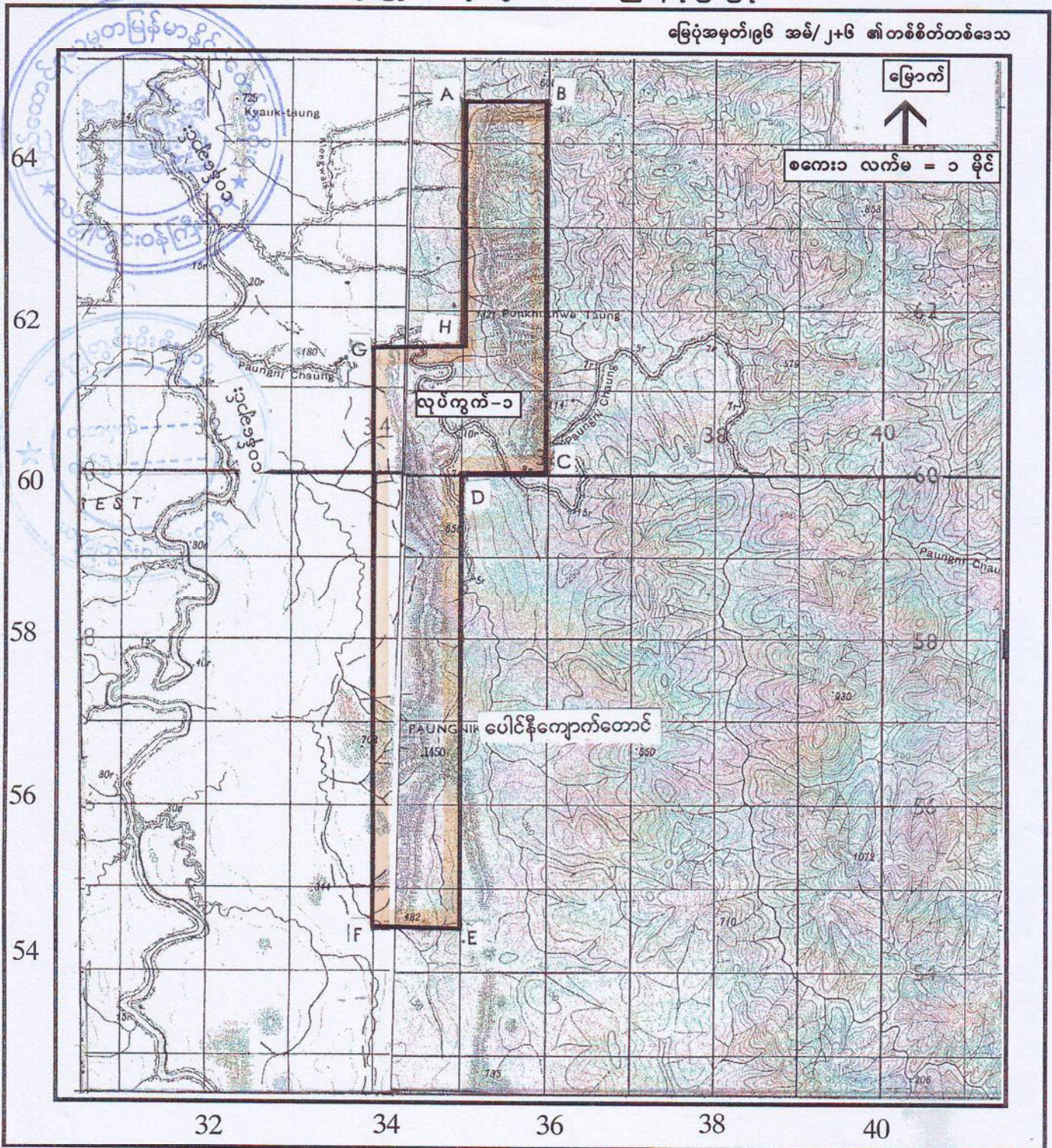
၅။ ဤခွင့်ပြုမိန့်အရ ခွင့်ပြုထားသောလုပ်ကွက်ဧရိယာအား နိုင်ငံတော်အတွက် လိုအပ်ပါက ခွင့်ပြုကာလအတွင်းပြန်လည်သိမ်းယူခွင့်ရှိရမည်။

၆။ ဤခွင့်ပြုမိန့်၌ သတ်မှတ်စည်းကမ်းဘောင်အတွင်း မြေပိုင်ဆိုင်မှုနှင့် သက်ဆိုင်သော လုပ်ငန်းလုပ်ကိုင်ခွင့်နှင့် သက်ဆိုင်သော အငြင်းပွားမှုများ၊ စောဒကတက်မှုများ၊ သဘာဝပတ်ဝန်းကျင် ထိခိုက်ပျက်စီးစေမှုနှင့် ပတ်သက်သော တိုင်ကြားချက်များ ၊ အငြင်းပွားမှုများ ဖြစ်ပွားပါက ကုမ္ပဏီမှသာ တာဝန်ယူ ဖြေရှင်းရန်၊ မဖြေရှင်းနိုင်ပါက လုပ်ကိုင်ခွင့် ရပ်ဆိုင်းခြင်း ပေးသွင်းထားသည့် အခွန်အခနှင့် အခြား ပေးသွင်းမှုများ သိမ်းယူခြင်း၊ လုပ်ကွက်ပြန်လည်သိမ်းယူခြင်း ခံရမည်ကို သဘောတူဝန်ခံကတိပြုရမည်။

၇။ ဤခွင့်ပြုမိန့်အရခွင့်ပြုထားသောလုပ်ကွက်အတွင်းနိုင်ငံခြားသားများအားခွင့်ပြုချက်မရှိဘဲတရားမဝင်အသုံးပြုခြင်းမပြုရန်လိုက်နာရမည်။

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၁)၏ တည်နေရာပြမြေပုံ

မြေပုံအမှတ်၊ ၉၆ အမ်/၂+၆ ၏တစ်စိတ်တစ်ဒေသ



အညွှန်း



ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၁)၏တည်နေရာ

အတည်ပြုသူ

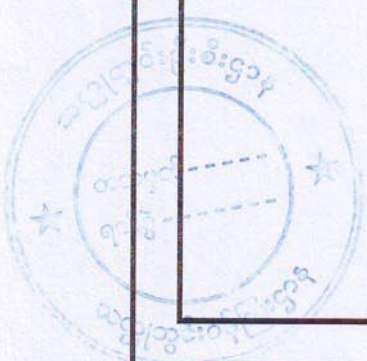
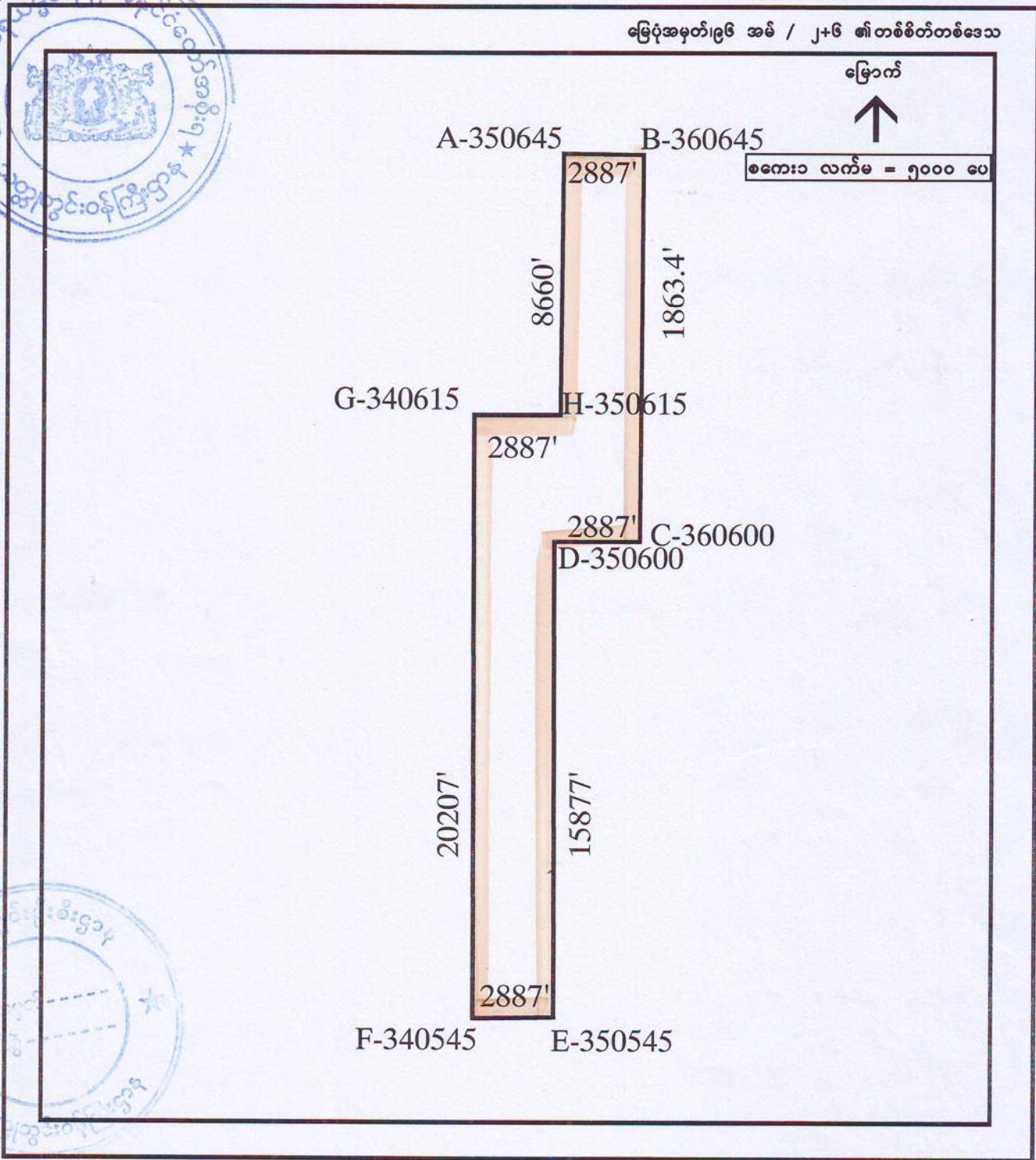
မြို့စု
တင်ထွန်းဝင်း
ဘူမိဗေဒအရာရှိ
သတ္တုတွင်းဦးစီးဌာန

(Signature)
ကိုကိုလွင်
ညွှန်ကြားရေးမှူး
သတ္တုတွင်းဦးစီးဌာန

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၁)၏ ဧရိယာအကျယ်အဝန်းနှင့်ပုံသဏ္ဍာန်ပြမြေပုံ



မြေပုံအမှတ်၊ ၉၆ အမ် / ၂+၆ ၏တစ်စိတ်တစ်ဒေသ



မြေပုံအမှတ် ၉၆ အမ် / ၂+၆ ၏တစ်စိတ်တစ်ဒေသ
 ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၁)၏ဧရိယာ(၂၂၀၀)ဧက

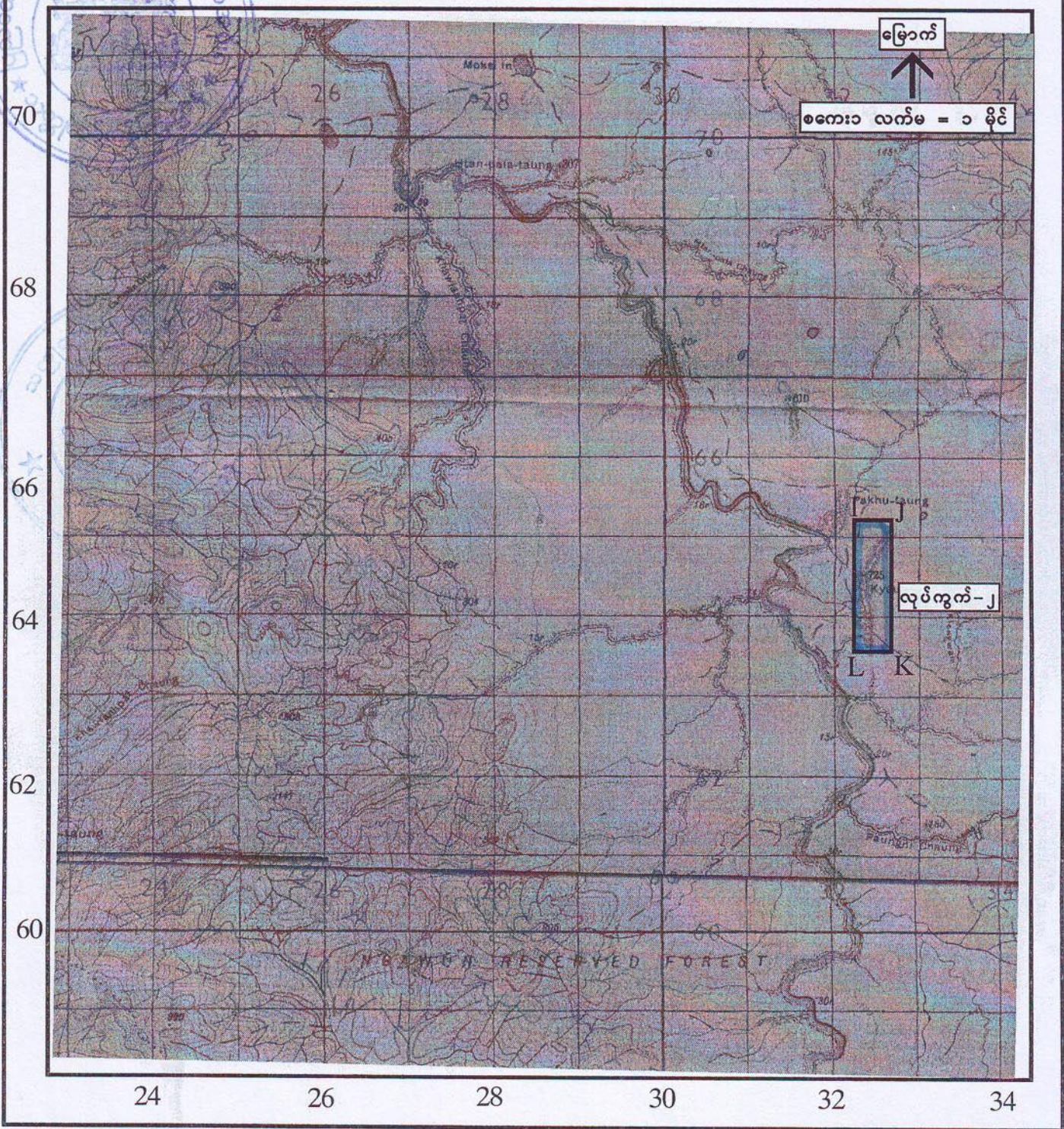
တင်ထွန်းဝင်း
 ဘူမိဗေဒအရာရှိ
 သတ္တုတွင်းဦးစီးဌာန

အတည်ပြုသူ

(Signature)
 ကိုကိုလွင်
 ညွှန်ကြားရေးမှူး
 သတ္တုတွင်းဦးစီးဌာန

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၂)၏ တည်နေရာပြမြေပုံ

မြေပုံအမှတ်၊ ၉၆ အမ်/၂၏ တစ်စိတ်တစ်ဒေသ

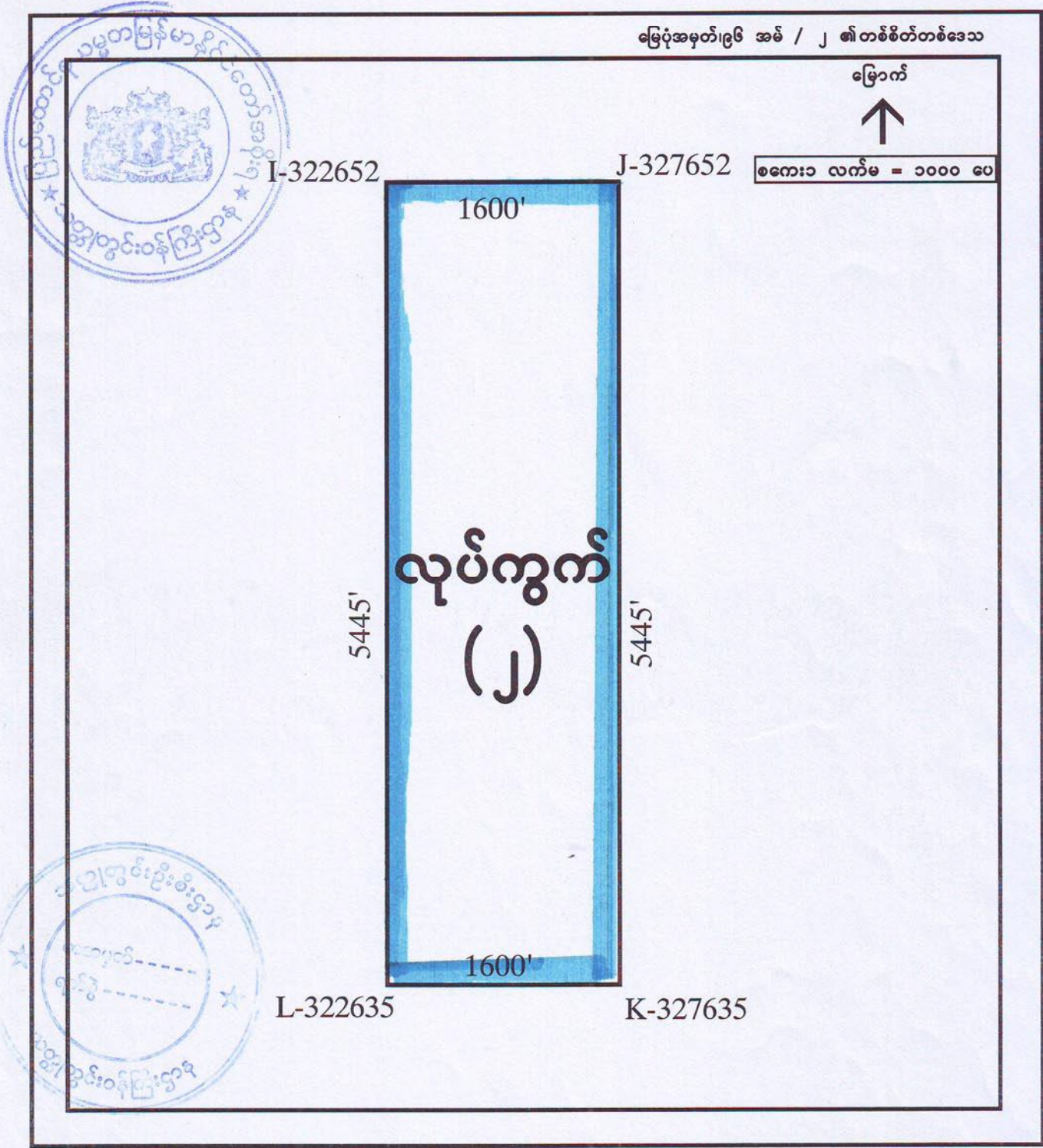


အညွှန်း: ပြုစုသူ အတည်ပြုသူ
 ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၂)၏ တည်နေရာ

တင်ထွန်းဝင်း
 ဘူမိဗေဒအရာရှိ
 သတ္တုတွင်းဦးစီးဌာန

ကိုကိုလွင်
 ညွှန်ကြားရေးမှူး
 သတ္တုတွင်းဦးစီးဌာန

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၂)၏ဧရိယာအကျယ်အဝန်းနှင့်ပုံသဏ္ဍာန်ပြမြေပုံ



အညွှန်း: ပြုစုသူ အတည်ပြုသူ

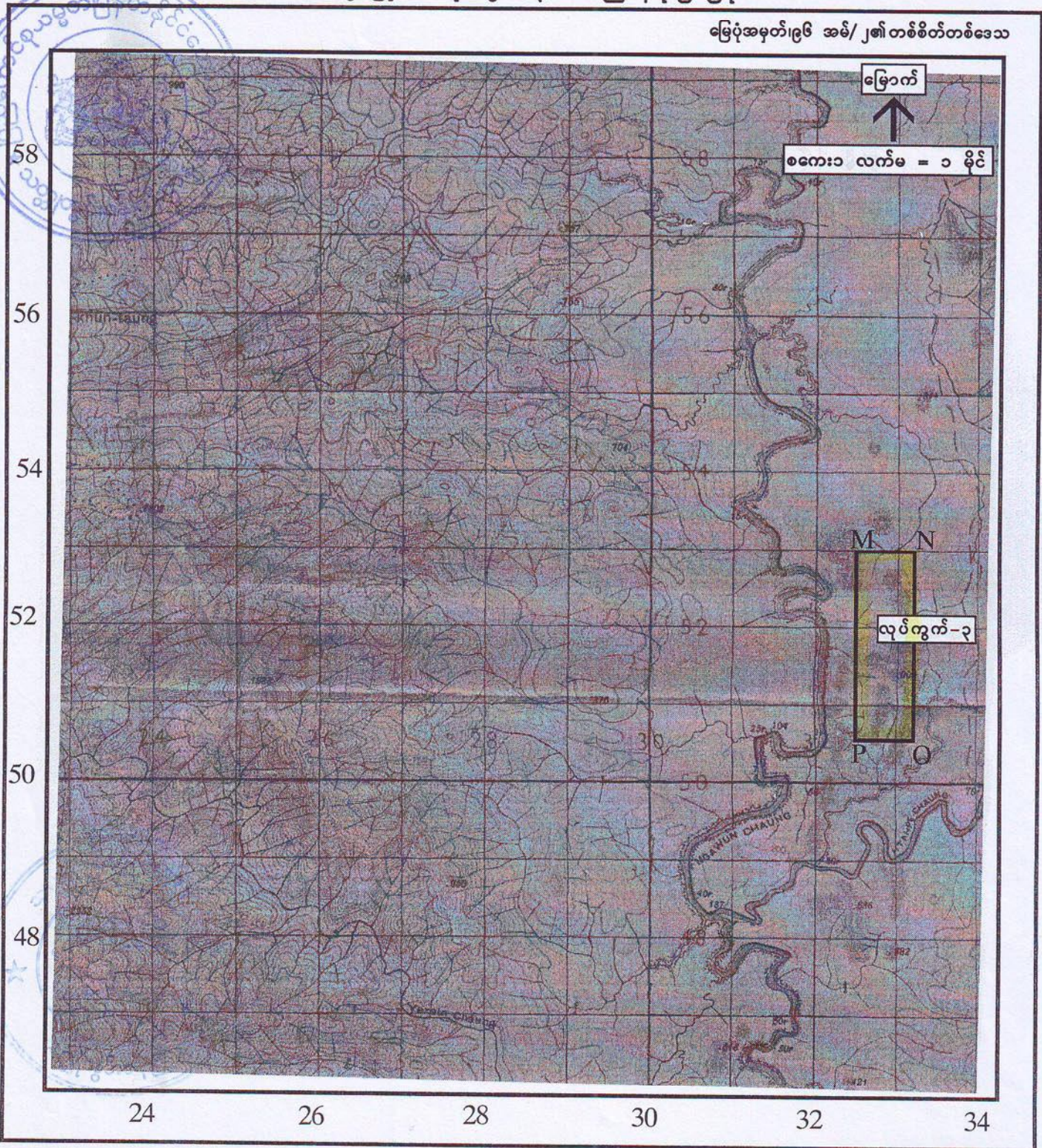
ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၂)၏ဧရိယာ(၂၀၀)ဧက

တင်ထွန်းဝင်း
ဘူမိဗေဒအရာရှိ
သတ္တုတွင်းဦးစီးဌာန

ကိုကိုလွင်
ညွှန်ကြားရေးမှူး
သတ္တုတွင်းဦးစီးဌာန

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၃)၏ တည်နေရာပြမြေပုံ

မြေပုံအမှတ် ၂၉၆ အမ်/၂၈၁ တစ်စိတ်တစ်ဒေသ



အညွှန်း



ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၃)၏ တည်နေရာ



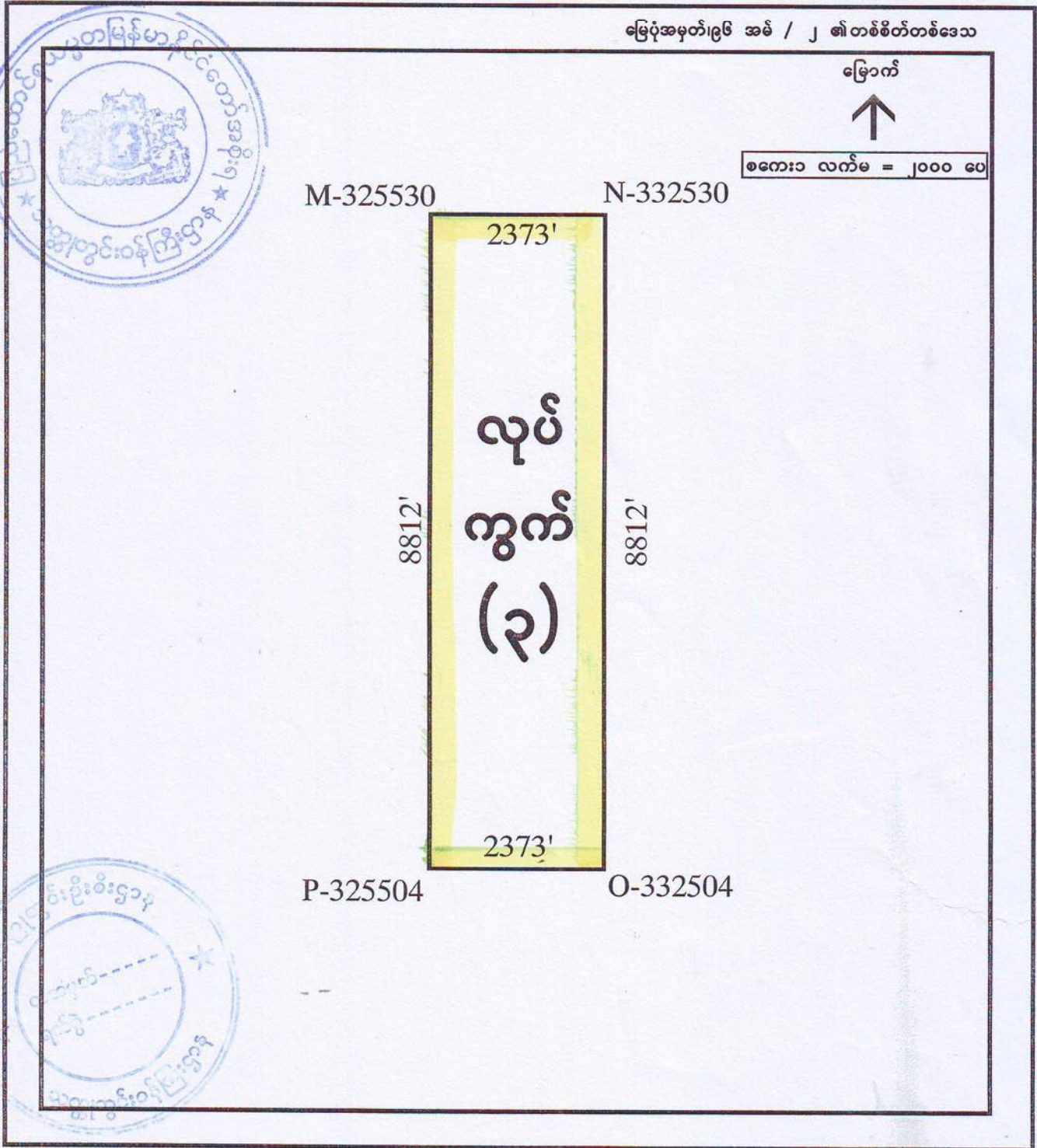
တင်ထွန်းဝင်း
ဘူမိဗေဒအရာရှိ
သတ္တုတွင်းဦးစီးဌာန

အတည်ပြုသူ

(Signature)
ကိုကိုလွင်

ညွှန်ကြားရေးမှူး
သတ္တုတွင်းဦးစီးဌာန

တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ သိန်ခွန်းကျေးရွာအုပ်စု၊ ပေါင်နီကျောက်တောင်ဒေသတွင် အမှတ်(၃)သတ္တုတွင်းလုပ်ငန်းနှင့် ၂၄ နာရီသတ္တုတူးဖော်ရေးလုပ်ငန်းနှင့်စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်တို့ ထုတ်လုပ်မှုအပေါ်ခွဲဝေခံစားသည့်စနစ်ဖြင့်ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန် ခွင့်ပြုသောလုပ်ကွက်(၃)၏ ဧရိယာအကျယ်အဝန်းနှင့်ပုံသဏ္ဍာန်ပြမြေပုံ



အညွှန်း

မြေပုံသူ

တင်ထွန်းဝင်း
ဘူမိဗေဒအရာရှိ
သတ္တုတွင်းဦးစီးဌာန

အတည်ပြုသူ

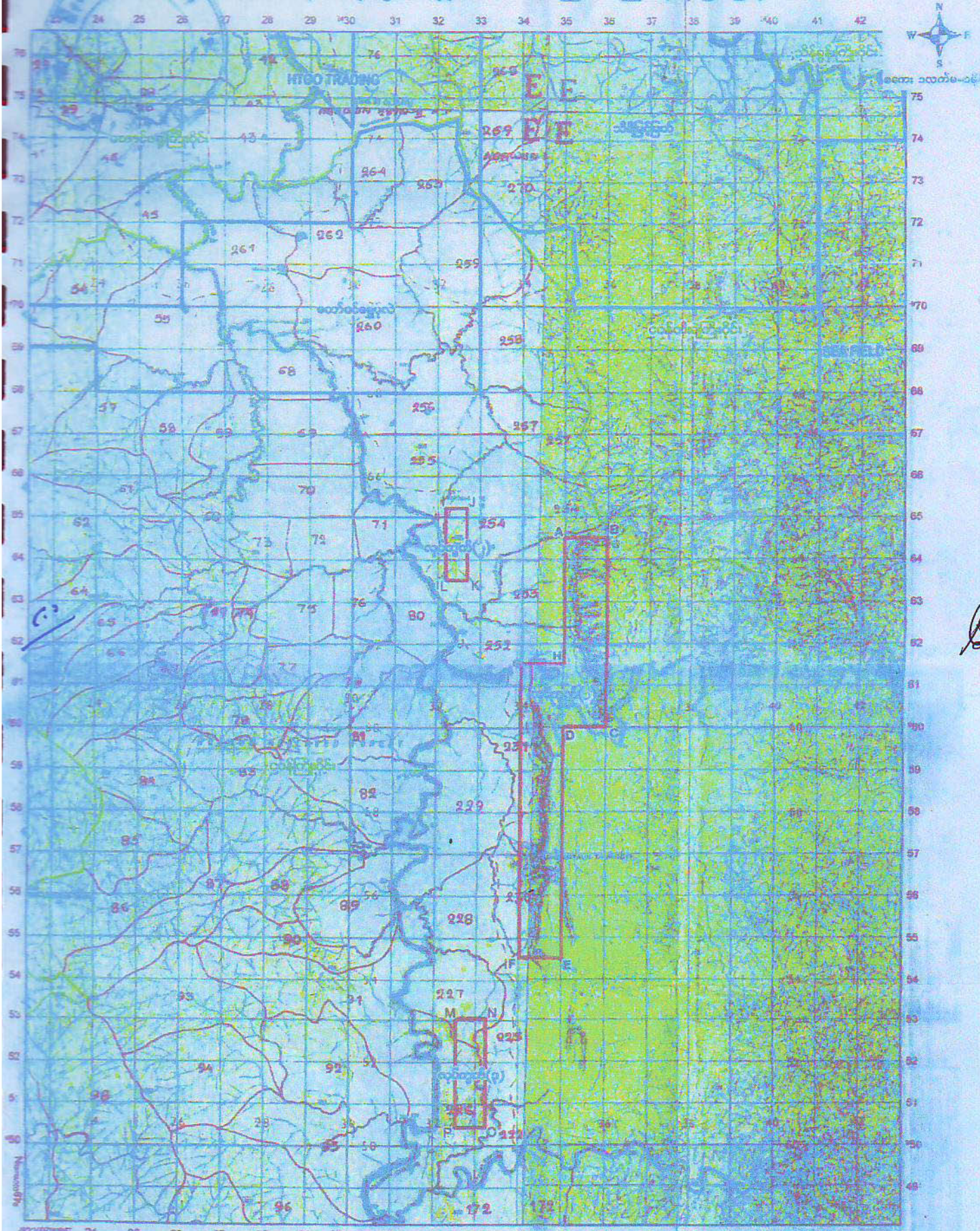
ကိုကိုလွင်
ညွှန်ကြားရေးမှူး
သတ္တုတွင်းဦးစီးဌာန

ထုံးကျောက်(စက်မှုတွင်းထွက်ကုန်ကြမ်း)အကြီးစားထုတ်လုပ်ရန်ခွင့်ပြုသောလုပ်ကွက်(၃)၏ဧရိယာ(၄၈၀)ဧက

Attachment 4.1

**Detailed map reference of each concession described in
the Mine Production Permit
(MONREC)**

ထွေးကျောက်ထုတ်လုပ်ခွင့်လျှောက်ထားသည့် ဓာတ်ခေရာပြမြေပုံ



ရည်ညွှန်းချက်

ကြီးပိုင်းအယ်နီမိတ်

လျှောက်ထားသည့်မြေပိုင်း

ကာလမ်း

မြစ်/ချောင်း

ဗဟို

မြေအရွယ်- 98 M/2, M/6

လုပ်ထွက်(ခ)	လုပ်ထွက်(၂)	လုပ်ထွက်(၃)
A - 350645	I - 322652	M - 325530
B - 360645	J - 327652	N - 332530
C - 360600	K - 327635	O - 332504
D - 350600	L - 322635	P - 325504
E - 350545		
F - 340545		
G - 340615		
H - 350615		

(Handwritten signature)

ကျေးဇူးတင်အားတင်



သစ်တောမြေအတွင်း ထုံးကျောက်အကြီးစားတူးဖော်ထုတ်လုပ်ခွင့်စာချုပ်

ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်အစိုးရ၊ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ သစ်တောဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်နှင့် ၂၄နာရီသတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက် မှ ဤစာချုပ်ကို ၂၀၂၃ ခုနှစ်၊ ဧပြီလ (၂၇)ရက်နေ့တွင် တနင်္သာရီမြို့နယ်ရှိ ငဝန်ကြီးပိုင်းအတွင်း ထုံးကျောက် အကြီးစားတူးဖော်ထုတ်လုပ်ခွင့်နှင့် စပ်လျဉ်း၍ ပူးတွဲပါ စည်းကမ်းချက်များအတိုင်း ဆောင်ရွက်ရန် အောက်ဖော်ပြပါ အသိသက်သေများ ရှေ့မှောက်တွင် နှစ်ဦးနှစ်ဖက် သဘောတူ လက်မှတ်ရေးထိုးကြပါသည်-

- (က) တိုင်းဒေသကြီး/ခရိုင် - တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်
- (ခ) သစ်တောမြေ - ငဝန်ကြီးပိုင်း၊ အကွက်အမှတ်(၂၂၅၂၅၆၊ ၂၂၅၂၅၇၊ ၂၂၅၂၅၈၊ ၂၂၅၂၅၉)
- (ဂ) ဧရိယာ(ဧက) - မြေဧရိယာ(၂၈၈၀)ဧက
- (ဃ) နယ်နိမိတ် - ခန့်မှန်းမြေပုံညွှန်း ၉၆-အမ်/၂၂၆
(၃၅၀၆၄၅, ၃၆၀၆၄၅, ၃၆၀၆၀၀, ၃၅၀၆၀၀, ၃၅၀၅၄၅, ၃၄၀၅၄၅, ၃၄၀၆၀၅, ၃၅၀၆၀၅)
(၃၂၅၆၅၂, ၃၂၇၆၅၂, ၃၂၇၆၃၅, ၃၂၅၆၃၅)
(၃၂၅၅၃၀, ၃၃၂၅၃၀, ၃၃၂၅၀၄, ၃၂၅၅၀၄)
- (င) စာချုပ်သက်တမ်း - (၁၆-၉-၂၀၂၂) မှ (၁၅-၉-၂၀၂၃)
(သက်တမ်းတိုး)

(သစ်တောဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်ရုံး၏ (၁၀-၁၁-၂၀၂၂) ရက်စွဲပါ စာအမှတ်၊ စီမံကိန်း/သတ္တု/(၁၉၅၄၃-၄၅/၂၀၂၂)အရ ဘဏ်ချလန်အမှတ်(၃၂)၊ နေ့စွဲ(၆-၁-၂၀၂၃)ဖြင့် မြေငှားခ (၈၆,၄၀၀,၀၀၀/-)(ကျပ် ရှစ်ရာ ခြောက်ဆယ့် လေးသိန်း တိတိ)၊ ဘဏ်ချလန်အမှတ်(၈၃)၊ နေ့စွဲ(၆-၁-၂၀၂၃)ဖြင့် ကုန်သွယ်ခွန် (၄,၃၂၀,၀၀၀/-) (ကျပ် လေးဆယ့် သုံးသိန်း နှစ်သောင်း တိတိ)နှင့် မြိတ်မြို့၊ မြန်မာ့စီးပွားရေးဘဏ်တွင် ပီဂျီအမှတ် (44/110)၊ နေ့စွဲ(၂၂-၁-၂၀၁၉)ဖြင့် လုပ်ငန်းဆောင်ရွက်မှုအာမခံငွေကို ပေးသွင်းပြီး။)

(ခွင့်ပြုသူ)

လက်မှတ် -

အမည် - (ဌေးအောင်)

ရာထူး - ညွှန်ကြားရေးမှူးချုပ်

ဌာန - သစ်တောဦးစီးဌာန

(လုပ်ကိုင်ခွင့်ရသူ)

လက်မှတ် -

အမည် - (အောင်အောင်ဇော်)

ရာထူး - မန်နေဂျင်းဒါရိုက်တာ

မှတ်ပုံတင်အမှတ် - ၁၂/မဂတ(နိုင်) ၀၃၅၅၃၀

နေရပ်လိပ်စာ - အမှတ်(၂၅/ဒီ/၆)၊ တက္ကသိုလ်ရိပ်သာ လမ်းသစ်လမ်းသွယ်၊ ဆရာစံရပ်ကွက်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။

(အသိသက်သေ)

လက်မှတ် -

အမည် - (မောင်မောင်ကျော်-၂)

ရာထူး - ညွှန်ကြားရေးမှူး

ဌာန - စီမံကိန်းနှင့်စာရင်းအင်းဌာန

သစ်တောဦးစီးဌာန

(အသိသက်သေ)

လက်မှတ် -

အမည် - (ရာဇာဖြိုးဝေထွန်း)

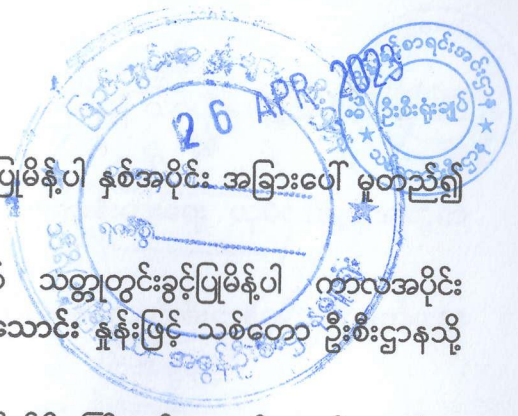
မှတ်ပုံတင်အမှတ် - ၁၂/ဥကမ(နိုင်) ၁၃၈၇၄၄

နေရပ်လိပ်စာ - အမှတ်(၁၀၉)၊ ဆရာတင်လမ်း၊ (၁၀)ရပ်ကွက်၊ ဒဂုံ(မြို့သစ်) အရှေ့ပိုင်း၊ ရန်ကုန်တိုင်းဒေသကြီး။

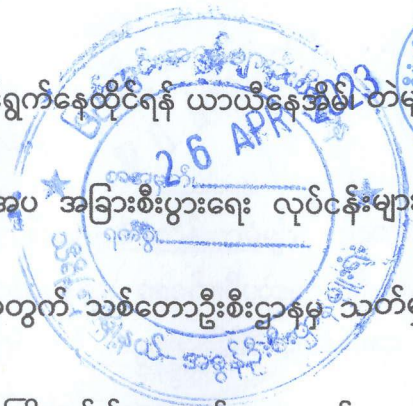




စည်းကမ်းချက်များ



- ၁။ သတ္တုတူးဖော်ထုတ်လုပ်ရန်အတွက် မြေငှားရမ်းခြင်းကို သတ္တုတွင်း ခွင့်ပြုမိန့်ပါ နှစ်အပိုင်း အခြားပေါ် မူတည်၍ သတ်မှတ်ခွင့်ပြုပါသည်။
- ၂။ သစ်တောမြေအတွင်း ထုံးကျောက်အကြီးစားတူးဖော်ထုတ်လုပ်ခွင့်အတွက် သတ္တုတွင်းခွင့်ပြုမိန့်ပါ ကာလအပိုင်း အခြားအလိုက် လုပ်ကွက်မြေ တစ်ဧကအတွက် တစ်နှစ်လျှင် ကျပ် သုံးသောင်း နှုန်းဖြင့် သစ်တော ဦးစီးဌာနသို့ နှစ်စဉ် မြေငှားခ ပေးဆောင်ရမည်။
- ၃။ ပထမနှစ်အတွက် သတ်မှတ်ထားသော အခွန်တော်ငွေကို စာချုပ်မချုပ်ဆိုမီ ကြိုတင်ပေးသွင်းရမည်။ ဒုတိယ နှစ်မှစ၍ ခွင့်ပြုချက်ရရှိပြီး တစ်လအတွင်းပေးသွင်းရမည်။
- ၄။ အခွန်တော်နှုန်းထားကို သစ်တောဦးစီးဌာနမှ အခါအားလျော်စွာ ပြင်ဆင်သတ်မှတ်နိုင်သည်။
- ၅။ ထုံးကျောက်အကြီးစား တူးဖော်ထုတ်လုပ်ခွင့်အတွက် အာမခံကြေးငွေကို (၁)ဧကလျှင် ကျပ် ငါးသောင်း နှုန်း ဖြင့် ခွင့်ပြုဧရိယာအတိုင်း မြန်မာ့စီးပွားရေးဘဏ်(သို့မဟုတ်) မြန်မာနိုင်ငံတော်ဗဟိုဘဏ်မှ အသိအမှတ်ပြုထားသော ပုဂ္ဂလိကဘဏ်တစ်ခုခုတွင် ပေးသွင်း၍ လုပ်ငန်းဆောင်ရွက်မှုအာမခံ Performance Guarantee ထားရှိ တင်ပြရမည်။
- ၆။ လုပ်ငန်းဆောင်ရွက်ပြီးစီး၍ သတ္တုတူးဖော်ထုတ်လုပ်ခွင့်ရရှိသူမှ လုပ်ကွက်ပြန်လည်အပ်နှံသည့် အချိန်တွင် စာချုပ်ပါ စည်းကမ်းချက်များနှင့်အညီ ဆောင်ရွက်ထားကြောင်း စိစစ်တွေ့ရှိရပါက အဆိုပါ အာမခံငွေကြေးကို ပြန်လည် ထုတ်ယူခွင့်ရရှိပြီး စာချုပ်ပါ စည်းမျဉ်းစည်းကမ်းများနှင့်အညီ လုပ်ကိုင်ဆောင်ရွက်ထားခြင်း မရှိ ကြောင်း စိစစ်တွေ့ရှိရပါက ပေးသွင်းထားသော လုပ်ငန်းဆောင်ရွက်မှုအာမခံငွေကို သိမ်းယူခြင်းခံရမည်။
- ၇။ ခွင့်ပြုချက်ရရှိပြီး သတ္တုတူးဖော်မည့်ဧရိယာကို ထင်ရှားသော နယ်နိမိတ်များ သတ်မှတ်ရမည်။ နယ်နိမိတ်များ သတ်မှတ်ခြင်းအတွက် ကုန်ကျစရိတ်ကို လုပ်ကိုင်ခွင့်ရရှိသူက ကျခံရမည်။
- ၈။ လုပ်ကိုင်ခွင့်ရရှိသည့် ဧရိယာကို လွှဲပြောင်းခြင်း၊ ပေါင်နှံခြင်း၊ ရောင်းချခြင်းမပြုရ။ ခွင့်ပြုချက်ရရှိသူမှ ကိုယ်တိုင် လုပ်ကိုင်လိုခြင်း/ ကိုယ်တိုင်လုပ်ကိုင်နိုင်ခြင်း မရှိလျှင် သစ်တောဦးစီးဌာနသို့ ပြန်လည်အပ်နှံရမည်။
- ၉။ သတ္တုတူးဖော်ထုတ်လုပ်မှုကြောင့် ကျင်း၊ ချိုင့်များဖြစ်ပေါ်လာပါက ၎င်းနေရာတွင် ပြန်လည်၍ မြေဖို့ပေးရမည်။
- ၁၀။ သတ္တုတူးဖော်ထုတ်လုပ်သည့် ဧရိယာတွင်ဖြစ်စေ၊ ဧရိယာပြင်ပတွင်ဖြစ်စေ သစ်ပင်ခုတ်လှဲခြင်း မပြုရ။ မလွှဲ မရှောင်သာ၍ ခုတ်လှဲရန်လိုအပ်ပါက သစ်တောဦးစီးဌာန၏ ကြိုတင်ခွင့်ပြုချက်ကိုရယူရမည်။ ခုတ်လှဲပြီးသည့်နေရာ တွင် သစ်တောစိုက်ခင်းများ တည်ထောင်ပေးရမည်။ (သို့မဟုတ်) စိုက်ခင်းတည်ထောင်စရိတ် ကျခံပေးလျော် ရမည်။
- ၁၁။ သစ်တောဦးစီးဌာန၏ ခွင့်ပြုချက်ဖြင့် ခုတ်လှဲပြီးသောသစ်ပင်များကို သတ္တုတူးဖော်သော လုပ်ငန်းရှင်မှ အသုံးပြု လိုပါက သစ်တောဦးစီးဌာန၏ ခွင့်ပြုချက်ကို တောင်းခံပြီး သစ်တောဦးစီးဌာနမှ သတ်မှတ်ထားသော ဈေးနှုန်း ဖြင့် ဝယ်ယူသုံးစွဲရမည်။
- ၁၂။ သတ္တုတွင်းခွင့်ပြုမိန့်ကာလ (၅)နှစ်အထက် ရရှိသည့် လုပ်ကွက်များအား စိုက်ပျိုးရမည့် ဂေဟစနစ်ဖြည့်တင်းရေး စိုက်ခင်းကို ဌာနမှ သတ်မှတ်ပေးသည့် ကာလအတွင်း အပြီးစိုက်ပျိုးစေပြီး သစ်တောဦးစီးဌာနသို့ ပြန်လည် အပ်နှံချိန်တွင် ရှင်သန်အောင်မြင်မှု ၇၀% ရရှိအောင် ဆောင်ရွက်ပြီးမှသာ ဌာနသို့အပ်နှံရမည်။
- ၁၃။ ဂေဟစနစ်ဖြည့်တင်းရေးစိုက်ခင်းကို သစ်တောဦးစီးဌာနမှ ရွေးချယ်သတ်မှတ်ပေးပြီး ဦးစီးရုံးချုပ်မှ အတည်ပြု သည့် မြေနေရာတွင် စိုက်ပျိုးရမည်။
- ၁၄။ ဂေဟစနစ်ဖြည့်တင်းရေးစိုက်ခင်း စိုက်ပျိုးရာတွင် စိုက်ခင်းသက်တမ်း (၅)နှစ်အထိ ဆောင်ရွက်မည့် စိုက်ပျိုးပြုစု ထိန်းသိမ်းခြင်း လုပ်ငန်းများအတွက် ကုန်ကျစရိတ်များကို ကုမ္ပဏီ/လုပ်ငန်းရှင်များမှ ကျခံရမည်။
- ၁၅။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအတွက် လေထု၊ ရေထု၊ မြေထု ညစ်ညမ်းမှုမဖြစ်စေရန် လိုအပ်သည်များကို လုပ်ကိုင်ခွင့် ရသူက ဆောင်ရွက်ပေးရမည်။



- ၉၆။ သတ္တုတူးဖော်ထုတ်လုပ်ခွင့်ရရှိသော ဧရိယာအတွင်း လုပ်ငန်းဆောင်ရွက်နေထိုင်ရန် ယာယီနေအိမ်၊ တံများမှအပ အခြား အဆောက်အဦးများ အခိုင်အမာဆောက်လုပ်ခြင်း မပြုရ။
- ၉၇။ လုပ်ကိုင်ခွင့်ရရှိသောမြေကို ခွင့်ပြုချက်ရရှိသည့် သတ္တုတူးဖော်မှုမှအပ အခြားစီးပွားရေး လုပ်ငန်းများအတွက် ဆောင်ရွက်ခြင်းမပြုရ။
- ၉၈။ သတ္တုတူးဖော်ထုတ်လုပ်မှုကြောင့် ထိခိုက်ပျက်စီးသည့် အပင်များအတွက် သစ်တောဦးစီးဌာနမှ သတ်မှတ်ထားသည့် လျော်ကြေးငွေကို ပေးချေရမည်။
- ၉၉။ သက်တမ်းတိုးလျှောက်ထားရာတွင်လည်း သက်တမ်းမကုန်မီ (၃)လ ကြိုတင်၍ လျှောက်ထားရမည်။
- ၂၀။ သက်တမ်းတိုး လျှောက်ထားရာတွင် သက်တမ်းကုန်ဆုံးပြီးနောက်မှ လျှောက်ထားလာပါက သက်တမ်းတိုး နောက်ကျ လျှောက်ထားသည့် လအလိုက် (၁)လလျှင် ဒဏ်ကြေးငွေ (၁၀၀,၀၀၀/-)နှုန်း ပေးသွင်းစေရမည်။
- ၂၁။ သက်တမ်းတိုးခွင့်ပြုကြောင်း အကြောင်းကြားသည့်နေ့မှစ၍ (၁)လအတွင်း မြေငှားခ ပေးသွင်းစေရန်နှင့် (၁)လကျော်ပါက ဒဏ်ကြေးငွေ (၁၀၀,၀၀၀/-)ကျပ်၊ (၁)လမှ (၃)လအထိ ကျော်လွန်ပါက (၃၀၀,၀၀၀/-)ကျပ်၊ (၃)လမှ (၆)လအထိ ကျော်လွန်ပါက (၆၀၀,၀၀၀/-)ကျပ်၊ (၆)လမှ (၉)လအထိ ကျော်လွန်ပါက (၉၀၀,၀၀၀/-)ကျပ်၊ (၉)လမှ (၁)နှစ် ကျော်လွန်ပါက (၁,၂၀၀,၀၀၀/-)ကျပ် ပေးသွင်းရမည်။
- ၂၂။ သက်တမ်းတိုးခွင့်ပြုကြောင်း အကြောင်းကြားသည့်နေ့မှစ၍ (၁)နှစ်ကျော်အထိ မြေငှားခများ ပေးသွင်းခြင်း မရှိသည့် လုပ်ကွက်များအား ခွင့်ပြုမိန့်ထုတ်ပေးခဲ့သည့် သက်ဆိုင်ရာဌာနသို့ လုပ်ကွက်ပယ်ဖျက်ရန် အကြောင်းကြားမည်ဖြစ်ကြောင်းနှင့် (၁)နှစ်ကျော်အထိ မြေငှားခများ ပေးသွင်းလာခြင်းမရှိသည့် လုပ်ကွက်များအား လုပ်ကွက်ပယ်ဖျက်မည်။
- ၂၃။ ချုပ်ဆိုခဲ့သော ဤစာချုပ်သည် သစ်တောဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်နှင့် လုပ်ကိုင်ခွင့်ရရှိသည့် ၂၄နာရီသတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက် နှင့်သာ သက်ဆိုင်စေရမည်။
- ၂၄။ ဖော်ပြပါ စည်းကမ်းချက်တစ်စုံတစ်ရာကို ချိုးဖောက်ပါက လုပ်ကိုင်ခွင့် ရုပ်သိမ်းခြင်းခံရမည့်အပြင် တည်ဆဲဥပဒေများအရ အရေးယူခြင်းခံရမည်။



(Handwritten signature)

(အောင်အောင်ဇော်)
မန်နေဂျင်းဒါရိုက်တာ
၁၂/မဂတ(နိုင်) ၀၃၅၅၃၀

၂၄နာရီသတ္တုတူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်
အမှတ်(၂၅/ဒီ/၆)၊ တက္ကသိုလ်ရိပ်သလမ်းသစ်လမ်းသွယ်၊
ဆရာစံရပ်ကွက်၊ ဗဟန်းမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး။

စည်းကမ်းချက်များအပေါ်
ဝန်ခံကတိလက်မှတ်ရေးထိုးခြင်း



၁။ သတ္တုတူးဖော်ရာတွင် လက်ရှိဆောင်ရွက်လျက်ရှိသော ရေအားလျှပ်စစ် စီမံကိန်းတမ်းများ သက်တမ်းပြည့် တည်မြဲ နေစေရေးအတွက် သတ္တုတူးဖော်သည့် နေရာများသည် တစ်တည်နေရာ၊ ရေဝပ်ဧရိယာများနှင့် လွတ်ကင်း သော်လည်း တွက်ချက်တိုင်းတာ၍ မရနိုင်သော ရေဆင်းဧရိယာများအတွင်းတွင် ကျရောက်နိုင်သည်ဖြစ်ရာ အောက် ဖော်ပြပါ စည်းကမ်းသတ်မှတ်ချက်များအတိုင်း ကုမ္ပဏီမှ လိုက်နာဆောင်ရွက်ရမည်-

- (၁) လုပ်ငန်းဆောင်ရွက်ရာတွင် (၄)ပေကျင်းလုံးစနစ်ဖြင့် ထွက်ရှိလာမည့် မြေစာ၊ ကျောက်စာများကို သဘာဝ ပတ်ဝန်းကျင် ပျက်စီးမှုမရှိစေရန် ချောင်း၊ မြောင်း၊ လျှိုများအတွင်း မစွန့်ပစ်ဘဲ စွန့်ပစ်ကန် တူး၍ လည်းကောင်း၊ ကျင်းဟောင်းများတွင် မြေပြန်ဖို့ခြင်းဖြင့်လည်းကောင်း ဆောင်ရွက် ရန်၊
- (၂) သတ္တုတူးဖော်ထုတ်လုပ်ရာတွင် ဆိုင်ရာနိုက်ကဲ့သို့သော ဓါတုဓါတ်ဆေးများကို အသုံးမပြုဘဲ သမားရိုး ကျနည်းများကိုသာ အသုံးပြုရန်၊
- (၃) ထွက်ရှိလာမည့် မြေစာနည်းပါးစေရန်အတွက် ဟင်းလင်းပွင့်တူးဖော်နည်းစနစ် (Open Pit)အစား မြေအောက်တူးဖော်နည်းစနစ် (Underground Mining Method)ကိုသာအသုံးပြုရန်၊
- (၄) သတ္တုတူးဖော်ထုတ်လုပ်ခြင်းအတွက် လုပ်ကိုင်ခွင့်ကာလအား တိကျစွာသတ်မှတ်ခြင်းနှင့် လုပ်ငန်း ရပ်ဆိုင်းရန် အကြောင်းတစ်စုံတစ်ရာ ပေါ်ပေါက်လာပါက (၁)လအတွင်း လုပ်ငန်းရပ်သိမ်းရန်၊
- (၅) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအတွက် ရေထု၊ မြေထု၊ လေထု ညစ်ညမ်းမှုမဖြစ်စေရန် လိုအပ်သည်များကို သက်ဆိုင်ရာ ကုမ္ပဏီမှ တာဝန်ယူဆောင်ရွက်ရန်၊
- (၆) သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာနက ထုတ်ပြန်ထားသော စည်းကမ်း သတ်မှတ်ချက်များအတိုင်း တိကျစွာ လိုက်နာဆောင်ရွက်ရန်။

၂။ အထက်ဖော်ပြပါ စည်းကမ်းသတ်မှတ်ချက်များနှင့် စာချုပ်စည်းကမ်းချက်များကို တိကျစွာ လိုက်နာဆောင်ရွက် မည်ဖြစ်ကြောင်းနှင့် လိုက်နာရန် ပျက်ကွက်ပါက ပေးသွင်းထားသည့် လုပ်ငန်းဆောင်ရွက်မှုအာခံငွေ သိမ်းဆည်းခြင်း ကို သဘောတူလက်ခံပါကြောင်း ဝန်ခံကတိပြု လက်မှတ်ရေးထိုးပါသည်။



(အောင်အောင်ဇော်)
မန်နေဂျင်းဒါရိုက်တာ
၁၂/မဂတ(နိုင်) ၀၃၅၅၃၀

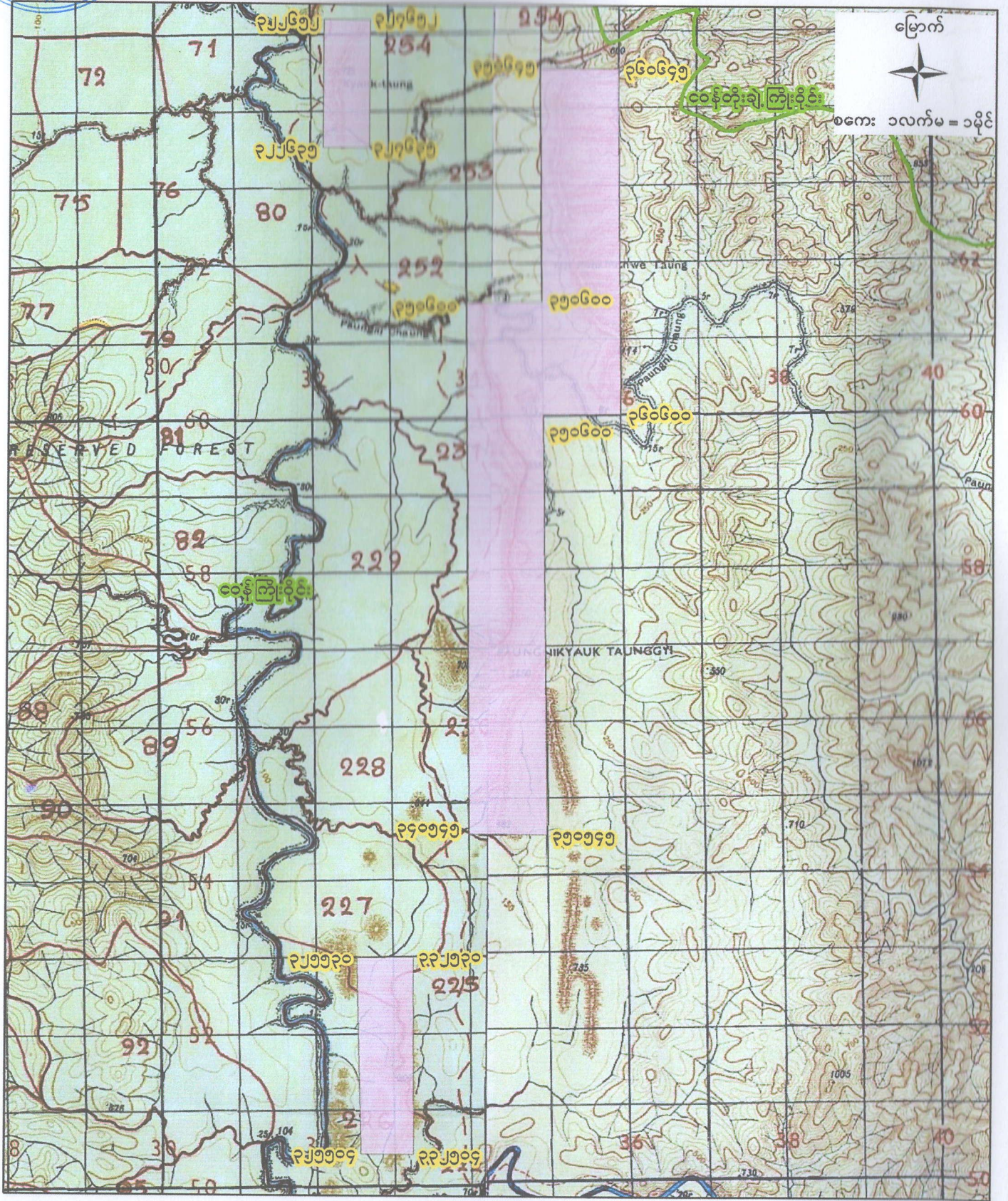
၂၄နာရီသတ္တု တူးဖော်ရေးနှင့် စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက်
အမှတ်(၂၅/ဒီ/၆)၊ တက္ကသိုလ်ရိပ်သလမ်းသစ်လမ်းသွယ်၊
ဆရာစံရပ်ကွက်၊ ဗဟန်းမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး။



တနင်္သာရီတိုင်းဒေသကြီး၊ မြိတ်ခရိုင်၊ တနင်္သာရီမြို့နယ်၊ ဝေန်ကြိုးတိုင်း အတွင်း ဌ

24 Hours Mining & Industry Co., Ltd အား ထုံးကျောက်အကြီးစားတူးဖော်

ထုတ်လုပ်ရန် ခွင့်ပြုထားသည့် မြေဧရိယာ (၂၈၈၀) ဧက၏ လုပ်ကွက်တည်နေရာပြမြေပုံ



မြောက်
စကေး: ၁လက်မ = ၁မိုင်

ရည်ညွှန်းချက်

- ကြိုးတိုင်းနယ်နိမိတ်
- လုပ်ကွက်တည်နေရာ
- အကွက်နယ်နိမိတ်

မြေပုံအမှတ် - 96_M_2,6

et



သစ်တောမြို့နယ်၊ တံငါကျွန်း၊ ဦးကျော်စွာ၊ ဦးကျော်စွာ၊ ဦးကျော်စွာ၊ ဦးကျော်စွာ၊ ဦးကျော်စွာ

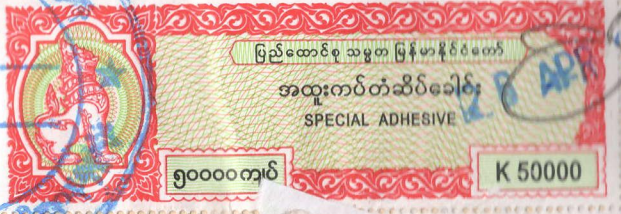
26 APR



26 APR



26 APR



26 APR



26 APR



26 APR



26 APR



Attachment 6.1.

Monthly rainy days in Tanintharyi Township

Attachment 2: Meteorology data

A: Monthly rainy days in Tanintharyi Township during ten years (2010 – 2019)

Sr.	Month/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
1	January	4	0	6	2	0	1	2	6	1	2	1.9
2	February	2	1	3	3	0	0	1	1	4	2	2.3
3	March	2	12	4	3	2	6	4	1	6	3	5.4
4	April	9	9	6	9	9	3	2	9	9	9	7.9
5	May	10	16	21	18	17	19	16	16	11	20	17.8
6	June	21	21	19	24	27	17	24	18	27	25	22.4
7	July	26	27	26	28	27	21	19	27	29	22	25.6
8	August	26	24	25	23	19	19	26	19	30	30	23.4
9	September	18	28	23	20	19	20	11	22	24	23	21.0
10	October	18	13	11	14	11	15	22	17	17	7	14.7
11	November	1	2	7	8	8	5	6	6	8	3	4.7
12	December	5	1	0	0	3	1	2	2	2	0	1.4
	Total	142	154	151	154	142	127	135	144	168	146	148.6

B: Monthly rainfall (mm) in Tanintharyi Township during ten years (2010 – 2019)

Mon ths	Year										Avg.
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Jan.	26.9	-	238.8	43.9	-	2.0	14.0	146.1	2.0	8.4	37.1
Feb.	75.2	5.1	43.7	33.8	-	-	21.6	1.0	48.0	13.0	30.6
Mar.	21.3	107.4	232.4	19.8	57.4	304.5	33.0	16.0	80.0	31.5	95.4
Apr.	201.4	191.5	713.7	250.7	259.3	82.0	39.1	108.0	132.3	150.6	189. 6
May	175.3	338.1	1,453. 6	879.9	114.8	495.0	309.4	332.0	115.6	140.5	441. 0
Jun.	293.1	968.2	1,242. 6	1,593. 3	1,206. 5	965.5	429.8	334.5	587.2	524.0	704. 8
Jul.	339.3	1,610.9	1,220. 5	575.3	664.0	772.9	426.7	725.4	1,351.3	450.1	768. 0
Aug.	420.4	684.3	1,300. 2	1,880. 6	459.2	641.1	612.4	394.0	1,085.3	1,268.2	799. 3

Months	Year										Avg.
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Sept.	416.1	650.2	809.0	687.3	563.4	596.4	192.8	364.5	432.1	541.3	535.8
Oct.	311.7	249.4	230.1	519.9	360.2	250.7	437.6	148.1	302.0	60.2	280.1
Nov.	2.5	32.5	110.5	273.1	137.7	26.7	60.7	61.2	81.0	10.7	64.3
Dec.	74.2	48.0	-	-	84.8	26.9	10.2	4.1	23.6	-	24.9
Total	2,357.4	4,890.3	7,595.1	6,757.7	3,907.3	4,163.8	2,587.2	2,634.7	4,240.5	3,198.4	3,973.7

Attachment 6.2

Water sample results from ISOTECH laboratories

Laboratory Technical Consultant: U Saw Christopher Maung
 B.Sc Engg: (Civil), Dip S.E(Delft) Lecturer of YIT (Retd). Consultant (Y.C.D.C), LWSE 001.
 Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
 Issue Date - 01-12-2021
 Effective Date - 01-12-2021
 Issue No - 1.0/Page 2 of 2

W1221 612

WATER QUALITY TEST RESULTS FORM

Client	U Kyaw Thet Naing (GGG)
Nature of Water	SW - 1
Location	ဘန်းဦးရွာ
Date and Time of collection	25.12.2021
Date and Time of arrival at Laboratory	27.12.2021
Date and Time of commencing examination	28.12.2021
Date and Time of completing	30.12.2021

Results of Water Analysis

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

Parameter	Result	Unit	Guideline
Temperature (°C)		°C	
Fluoride (F)		mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate (N.NO ₃)		mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia Nitrogen (NH ₃)		mg/l	
Ammonium Nitrogen (NH ₄)		mg/l	
Dissolved Oxygen (DO)	7.0	mg/l	
Chemical Oxygen Demand (COD)	64	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	
Cyanide (CN)	Nil	mg/l	0.07 mg/l
Zinc (Zn)	Nil	mg/l	3 mg/l
Copper (Cu)	Nil	mg/l	2 mg/l
Silica (SiO ₂)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature:

Name:

Heiny
Zaw Hein Oo
 B.Sc (Chemistry)
 Sr.Chemist
 ISO Tech Laboratory

Approved by

Signature:

Name:

Thinzar Thinzar Thinzar
Thinzar Thinzar Thinzar
 B.E (Civil)
 Assistant Technical Officer
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WTL-RE-001

Issue Date - 01-12-2021
 Effective Date - 01-12-2021
 Issue No - 1.0/Page 1 of 2

W1221 612

WATER QUALITY TEST RESULTS FORM

Client U Kyaw Thet Naing (GGG)
 Nature of Water SW - 1
 Location ဘန်းဂွမ်းရွာ
 Date and Time of collection 25.12.2021
 Date and Time of arrival at Laboratory 27.12.2021
 Date and Time of commencing examination 28.12.2021
 Date and Time of completing 30.12.2021

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	6.8		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	3	NTU	5 NTU
Conductivity	42	micro S/cm	
Total Hardness	14	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness		mg/l as CaCO ₃	
Magnesium Hardness		mg/l as CaCO ₃	
Total Alkalinity		mg/l as CaCO ₃	
Phenolphthalein Alkalinity		mg/l as CaCO ₃	
Carbonate (CaCO ₃)		mg/l as CaCO ₃	
Bicarbonate (HCO ₃)		mg/l as CaCO ₃	
Iron	0.42	mg/l	0.3 mg/l
Chloride (as CL)		mg/l	250 mg/l
Sodium Chloride (as NaCL)		mg/l	
Sulphate (as SO ₄)		mg/l	500 mg/l
Total Solids		mg/l	1500 mg/l
Total Suspended Solids	10	mg/l	
Total Dissolved Solids		mg/l	1000 mg/l
Manganese		mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Zaw Hein Oo

Name: B.Sc (Chemistry)
Sr.Chemist

Approved by

Signature: Thinzar Theint Theint

Name: B.E (Civil)
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WTL-RE-001
 Issue Date - 01-12-2021
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 Issue No - 1.0/Page 2 of 2

W1221 614

WATER QUALITY TEST RESULTS FORM

Client U Kyaw Thet Naing (GGG)
 Nature of Water GW - 2
 Location ခဲချောင်းရွာ
 Date and Time of collection 25.12.2021
 Date and Time of arrival at Laboratory 27.12.2021
 Date and Time of commencing examination 28.12.2021
 Date and Time of completing 30.12.2021

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Parameter	Result	Unit	Guideline
Temperature (°C)		°C	
Fluoride (F)		mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate (N.NO ₃)		mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia Nitrogen (NH ₃)		mg/l	
Ammonium Nitrogen (NH ₄)		mg/l	
Dissolved Oxygen (DO)	6.8	mg/l	
Chemical Oxygen Demand (COD)	32	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	
Cyanide (CN)	Nil	mg/l	0.07 mg/l
Zinc (Zn)	Nil	mg/l	3 mg/l
Copper (Cu)	Nil	mg/l	2 mg/l
Silica (SiO ₂)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: _____

Name: _____

Hein
Zaw Hein Oo
 B.Sc (Chemistry)
 Sr.Chemist
 ISO Tech Laboratory

Approved by

Signature: _____

Name: _____

Thinzar Thint Thint
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 Assistant Technical Officer
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Laboratory Technical Consultant: U Saw Christopher Maung
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WTL-RE-001
 Issue Date - 01-12-2021
 Effective Date - 01-12-2021
 Issue No - 1.0/Page 1 of 2

W1221 614

WATER QUALITY TEST RESULTS FORM

Client U Kyaw Thet Naing (GGG)
 Nature of Water GW - 2
 Location ခဲခေ့ခဲရွာ
 Date and Time of collection 25.12.2021
 Date and Time of arrival at Laboratory 27.12.2021
 Date and Time of commencing examination 28.12.2021
 Date and Time of completing 30.12.2021

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	6.9		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	5	NTU	5 NTU
Conductivity	70	micro S/cm	
Total Hardness	6	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness		mg/l as CaCO ₃	
Magnesium Hardness		mg/l as CaCO ₃	
Total Alkalinity		mg/l as CaCO ₃	
Phenolphthalein Alkalinity		mg/l as CaCO ₃	
Carbonate (CaCO ₃)		mg/l as CaCO ₃	
Bicarbonate (HCO ₃)		mg/l as CaCO ₃	
Iron	0.37	mg/l	0.3 mg/l
Chloride (as CL)		mg/l	250 mg/l
Sodium Chloride (as NaCL)		mg/l	
Sulphate (as SO ₄)		mg/l	500 mg/l
Total Solids		mg/l	1500 mg/l
Total Suspended Solids	13	mg/l	
Total Dissolved Solids		mg/l	1000 mg/l
Manganese		mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: _____

Name: _____

Hein Oo
Zaw Hein Oo
 B.Sc (Chemistry)
 Sr.Chemist

Approved by

Signature: _____

Name: _____

Thinzar Theint Theint
Thinzar Theint Theint
 B.E (Civil)
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WTL-RE-001
 Issue Date - 01-12-2021
 Effective Date - 01-12-2021
 Issue No - 1.0/Page 2 of 2

W1221 613

WATER QUALITY TEST RESULTS FORM

Client U Kyaw Thet Naing (GGG)
 Nature of Water SW - 3
 Location ၀၀၆၆၆
 Date and Time of collection 25.12.2021
 Date and Time of arrival at Laboratory 27.12.2021
 Date and Time of commencing examination 28.12.2021
 Date and Time of completing 30.12.2021

Results of Water Analysis

WHO Drinking Water Guideline
(Geneva - 1993)

Parameter	Result	Unit	Guideline
Temperature (°C)		°C	
Fluoride (F)		mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate (N.NO ₃)		mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia Nitrogen (NH ₃)		mg/l	
Ammonium Nitrogen (NH ₄)		mg/l	
Dissolved Oxygen (DO)	6.6	mg/l	
Chemical Oxygen Demand (COD)	64	mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	
Cyanide (CN)	Nil	mg/l	0.07 mg/l
Zinc (Zn)	Nil	mg/l	3 mg/l
Copper (Cu)	Nil	mg/l	2 mg/l
Silica (SiO ₂)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Heiny

Name: Zaw Hein Oo

B.Sc (Chemistry)
Sr.Chemist
ISO Tech Laboratory

Approved by

Signature: Imzaz Phinza Phinza

Name: B.E (Civil)

Assistant Technical Officer
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WTL-RE-001

Issue Date - 01-12-2021

Effective Date - 01-12-2021

Issue No - 1.0/Page 1 of 2

W1221 613

WATER QUALITY TEST RESULTS FORM

Client U Kyaw Thet Naing (GGG)
 Nature of Water SW - 3
 Location ကိုနီမြို့
 Date and Time of collection 25.12.2021
 Date and Time of arrival at Laboratory 27.12.2021
 Date and Time of commencing examination 28.12.2021
 Date and Time of completing 30.12.2021

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	7.1		6.5 - 8.5
Colour (True)	20	TCU	15 TCU
Turbidity	39	NTU	5 NTU
Conductivity	44	micro S/cm	
Total Hardness	14	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness		mg/l as CaCO ₃	
Magnesium Hardness		mg/l as CaCO ₃	
Total Alkalinity		mg/l as CaCO ₃	
Phenolphthalein Alkalinity		mg/l as CaCO ₃	
Carbonate (CaCO ₃)		mg/l as CaCO ₃	
Bicarbonate (HCO ₃)		mg/l as CaCO ₃	
Iron	0.65	mg/l	0.3 mg/l
Chloride (as CL)		mg/l	250 mg/l
Sodium Chloride (as NaCL)		mg/l	
Sulphate (as SO ₄)		mg/l	500 mg/l
Total Solids		mg/l	1500 mg/l
Total Suspended Solids	42	mg/l	
Total Dissolved Solids		mg/l	1000 mg/l
Manganese		mg/l	0.05 mg/l
Phosphate		mg/l	
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Zaw Hein Oo
 Name: B.Sc (Chemistry)
 Sr.Chemist

Approved by

Signature: Thinzar Theint Theint
 Name: B.E (Civil)
 Assistant Technical Officer
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Attachment 6.3.

Air quality sampling methodology (by the EQM)

Background Ambient Air Level Report

On

The proposed 24hr Mining & Industry Company Limited

TABLE OF CONTENTS**CHAPTER-1: Executive Summary 1**

1	Introduction	2
2	Objective	2
3	Ambient air monitoring locations	2
	3.1 Point (1) Near Project Site	3
	3.2 Point (2) Khae Chaung Office	6
	3.3 Point (3) Near Nga Wun River	9

Table

3.1	Air sampling locations for baseline survey, December, 2021	2
3.2	Ambient air monitoring at point (1), Near Project Site	5
3.3	Ambient air monitoring at point (2), Khae Chaung Office	8
3.4	Ambient air monitoring at point (3), Near Nga Wun River	11

FIGURES:

3.1:	Map of ambient air monitoring near the project site	3
3.2:	Ambient air monitoring at point (1), Near Project Site (Day time)	4
3.3:	Ambient air monitoring at point (1), Near Project Site (Night time)	4
3.4:	Map of ambient air monitoring at Khae Chaung Office	6
3.5:	Ambient air monitoring at point (2), Khae Chaung Office (Day time)	7
3.6:	Ambient air monitoring at point (2), Khae Chaung Office (Night time)	7
3.7:	Map of ambient air monitoring near Nga Wun River	9
3.8:	Ambient air monitoring at point (3), Near Nga Wun River (Day time)	10
3.9:	Ambient air monitoring at point (3), Near Nga Wun River (Night)time	10

Executive Summary

In order to determine the existing baseline air quality status at and around the proposed 24hr Mining and Industry Company Limited, Tanintharyi Region, Myanmar, the levels of ambient air parameters monitored throughout the survey period were compared with Myanmar National Environmental Quality (Emission) Guidelines stated by Environmental Conservation Department (ECD).

Regarding the findings of average ambient air concentrations monitored all of the points, the existing baseline particulates level (PM10 and PM2.5) were met the guidelines.

In terms of gases level, all gases levels (one hour average level of CO and NO₂ and 8 hr average of CO and O₃ and 24 hr average level of SO₂) were met the guidelines.

Thus, it can be assumed as the good air quality for these particulates and gases. The potential sources mainly come from *mobile emission* and *human activities*.

1. Introduction

The ambient air monitoring had been conducted in the vicinity within the AOI of the proposed Project area of 24hr Mining and Industry Company Limited, Tanintharyi Region, Myanmar.

2. Objective

It was aimed to reveal the existing baseline ambient air quality at and around the project site.

3. Ambient air monitoring locations

Locations of air sampling stations are listed in **Table 3.1**. The air quality sampling methodology used for this project is described in the annex.

Point 1 – Near Project Site

Point 2 – Khae Chaung Office

Point 3 – Near Nga Wun River

Table 3.1 Air sampling locations for baseline survey, December, 2021

Points	Locations	Coordinates		Start Date	End Date
		N	E		
1	Near Project Site	11.577501°	99.237902°	21.12.2021	22.12.2021
2	Khae Chaung Office	11.62085°	99.06375°	22.12.2021	23.12.2021
3	Near Nga Wun River	11.637143°	99.224149°	23.12.2021	24.12.2021

3.1 Point (1): Near Project Site

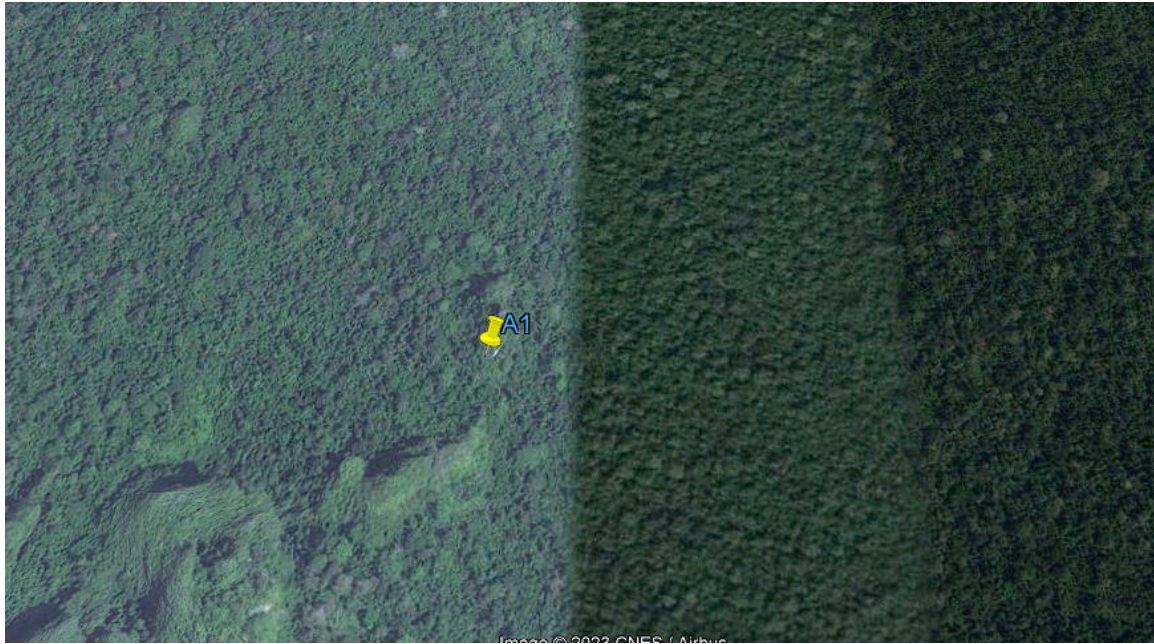


Figure 3.1: Map of ambient air monitoring near the project site



Figure 3.2: Ambient air monitoring at point (1), Near Project Site (Day time)



Figure 3.3: Ambient air monitoring at point (1), Near Project Site (Night time)

The point 1 is located near the project site. Regarding particulates, Table 3.2 presents both the levels of PM10 (21 $\mu\text{g}/\text{m}^3$) and PM 2.5 (11 $\mu\text{g}/\text{m}^3$) were met the National Environmental Air Quality Guideline (ECD) adopted from WHO Guideline. In terms of gases level, one-hour average level of NO₂ (30 $\mu\text{g}/\text{m}^3$), one hour average level of CO (920 $\mu\text{g}/\text{m}^3$), eight hours average level of CO (390 $\mu\text{g}/\text{m}^3$), eight hours average level of O₃ (33 $\mu\text{g}/\text{m}^3$) and 24hr average level of SO₂ (6 $\mu\text{g}/\text{m}^3$) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were presented below. (Table 3.2)

Table 3.2: Ambient air monitoring at point (1), Near Project Site

Parameters	Concentration (24hr average) except some Gases (NO ₂ , CO and O ₃)*	National Environmental Air Quality Guideline (ECD)/WHO Guideline (24hr average)
PM10	21 ^a (0 ^b -30 ^c) $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
PM 2.5($\mu\text{g}/\text{m}^3$)	11 ^a (0 ^b -15 ^c) $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
NO ₂ *	16 ^a (2 ^b -33 ^c) $\mu\text{g}/\text{m}^3$ (24 hr) 30 $\mu\text{g}/\text{m}^3$ (one hr)	40 $\mu\text{g}/\text{m}^3$ (annual) /200 $\mu\text{g}/\text{m}^3$ (one hour)
SO ₂	6 ^a (0 ^b -12 ^c) $\mu\text{g}/\text{m}^3$	20 $\mu\text{g}/\text{m}^3$
CO *	0.37 ^a (0 ^b -1.5 ^c) mg/m ³ / 370 ^a (0 ^b -1500 ^c) $\mu\text{g}/\text{m}^3$ (24hr) 0.92 mg/m ³ (one hr)/920 $\mu\text{g}/\text{m}^3$ 0.39 mg/m ³ (8 hr) /390 $\mu\text{g}/\text{m}^3$	30,000 $\mu\text{g}/\text{m}^3$ (one hr) 10,000 $\mu\text{g}/\text{m}^3$ (8 hr)
O ₃ *	32 ^a (30 ^b -37 ^c) $\mu\text{g}/\text{m}^3$ (24hr) 33 $\mu\text{g}/\text{m}^3$ (8 hr)	100 $\mu\text{g}/\text{m}^3$ (8hr)
H ₂ S	15 ^a (5 ^b -30 ^c) ppb	NA
CO ₂	325 ^a (251 ^b -442 ^c) ppm	NA
VOC	42 ^a (0 ^b -89 ^c) ppb	NA
NH ₃	4 ^a (1 ^b -7 ^c)ppm	NA
CH ₄	41 ^a (12 ^b -89 ^c)ppm	NA
Meteorology		
T (Degree C)		27 ^a (26 ^b -29 ^c)
RH		89 ^a (71 ^b -100 ^c)
Wind Speed (kph)		1 ^a (0 ^b -6.2 ^c)
Wind Direction (Degree from North)		287 (WNW)
Remark:		
There were people and motor cycles activities. The generator ran at night from 6:00 pm to 9:00 pm.		

^a Average ^b Min ^cMax

Referring to National Environmental Air Quality Guideline (ECD), the color codes are categorized in order to reveal the general air quality status around the of the project area.

Green – meets the standards

Yellow (slightly over and less than double)

Orange (exceeding if more than double)

3.2 Point (2): Khae Chaung Office



Figure 3.4: Map of ambient air monitoring at Khae Chaung Office



Figure 3.5: Ambient air monitoring at point (2), Khae Chaung Office (Day time)



Figure 3.6. Ambient air monitoring at point (2), Khae Chaung Office (Night time)

The point 2 is located at the Khae Chaung Office. Regarding particulates, Table 3.3 presents both the levels of PM10 (24 $\mu\text{g}/\text{m}^3$) and PM2.5 (12 $\mu\text{g}/\text{m}^3$) were met the National Environmental Air Quality Guideline (ECD) adopted from WHO Guideline. In terms of gases level, one-hour average level of NO₂ (34 $\mu\text{g}/\text{m}^3$), one hour average level of CO (1400 $\mu\text{g}/\text{m}^3$), eight hours average level of CO (1050 $\mu\text{g}/\text{m}^3$), eight hours average level of O₃ (21 $\mu\text{g}/\text{m}^3$) and 24hr average level of SO₂ (8 $\mu\text{g}/\text{m}^3$) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were presented below. (Table 3.3)

Table 3.3: Ambient air monitoring at point (2), Khae Chaung Office

Parameters	Concentration (24hr average) except some Gases (NO ₂ , CO and O ₃)*	National Environmental Air Quality Guideline (ECD)/WHO Guideline (24hr average)
PM10	24 ^a (11 ^b -37 ^c) $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
PM 2.5($\mu\text{g}/\text{m}^3$)	12 ^a (5 ^b -23 ^c) $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
NO ₂ *	24 ^a (10 ^b -39 ^c) $\mu\text{g}/\text{m}^3$ (24 hr) 34 $\mu\text{g}/\text{m}^3$ (one hr)	40 $\mu\text{g}/\text{m}^3$ (annual) /200 $\mu\text{g}/\text{m}^3$ (one hour)
SO ₂	8 ^a (0 ^b -14 ^c) $\mu\text{g}/\text{m}^3$	20 $\mu\text{g}/\text{m}^3$
CO *	0.90 ^a (0 ^b -1.7 ^c) mg/m ³ / 900 ^a (0 ^b -1700 ^c) $\mu\text{g}/\text{m}^3$ (24hr) 1.4 mg/m ³ (one hr) / 1400 $\mu\text{g}/\text{m}^3$ 1.05 mg/m ³ (8 hr) / 1050 $\mu\text{g}/\text{m}^3$	30,000 $\mu\text{g}/\text{m}^3$ (one hr) 10,000 $\mu\text{g}/\text{m}^3$ (8 hr)
O ₃ *	19 ^a (14 ^b -40 ^c) $\mu\text{g}/\text{m}^3$ (24hr) 21 $\mu\text{g}/\text{m}^3$ (8 hr)	100 $\mu\text{g}/\text{m}^3$ (8hr)
H ₂ S	27 ^a (10 ^b -44 ^c) ppb	NA
CO ₂	379 ^a (301 ^b -467 ^c) ppm	NA
VOC	53 ^a (0 ^b -90 ^c) ppb	NA
NH ₃	4 ^a (1 ^b -8 ^c)ppm	NA
CH ₄	44 ^a (20 ^b -98 ^c)ppm	NA
Meteorology		
T (Degree C)		27 ^a (26 ^b -29 ^c)
RH		82 ^a (70 ^b -100 ^c)
Wind Speed (kph)		2 ^a (0 ^b -6.2 ^c)
Wind Direction (Degree from North)		260 (W)
Remark:		
The monitoring station is near the Myeik-Kaw Thaug main road. There were vehicles (cars and trucks) and motor cycles activities.		

^a Average ^b Min ^cMax

Referring to National Environmental Air Quality Guideline (ECD), the color codes are categorized in order to reveal the general air quality status around the of the project area.

Green – meets the standards

Yellow (slightly over and less than double)

Orange (exceeding if more than double)

3.3 Point (3): Near Nga Wun River

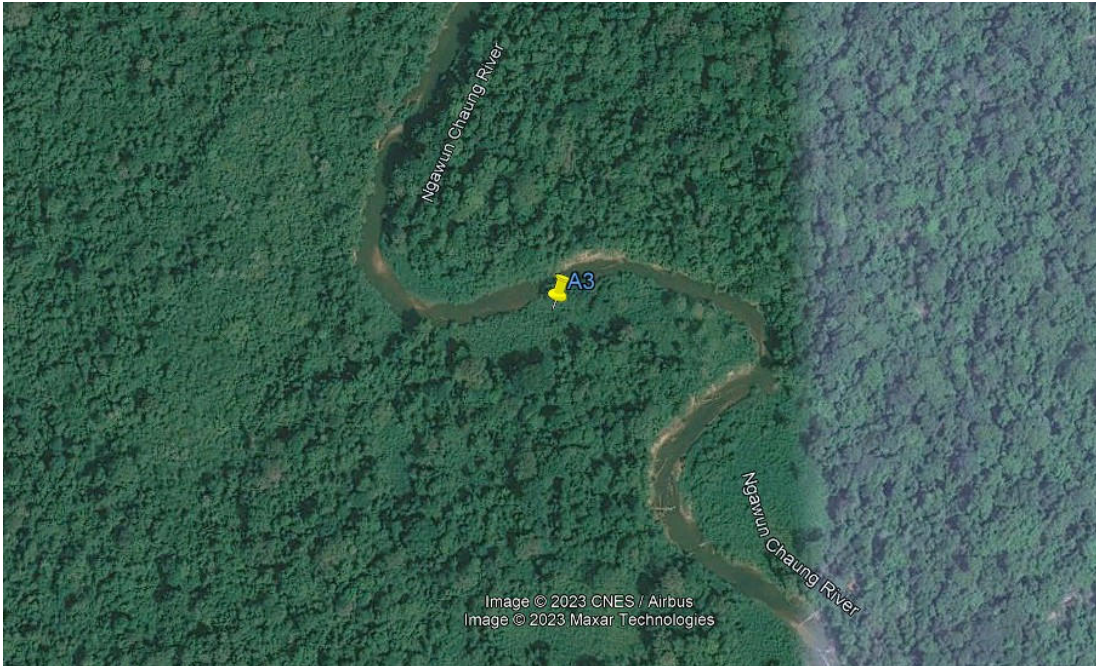


Figure 3.7: Ambient air monitoring Near Nga Wun River



Figure 3.8: Ambient air monitoring at point (3), Near Nga Wun River (Day time)



Figure 3.9. Ambient air monitoring at point (3), Near Nga Wun River (Night time)

The point 3 is located near the Nga Wun river. Regarding particulates, Table 3.4 presents both the levels of PM10 (18 µg/m³) and PM 2.5 (6 µg/m³) were met the National Environmental Air Quality Guideline (ECD) adopted from WHO Guideline. In terms of gases level, one-hour average level of NO₂ (44 µg/m³), one hour average level of CO (875µg/m³), eight hours average level of CO (469 µg/m³), eight hours average level of O₃ (25 µg/m³) and 24hr average level of SO₂ (5 µg/m³) met the guidelines.

The meteorology findings (Temperature, Relative Humidity, Wind Speed, Wind Direction) during the monitoring were presented below. (Table 3.4)

Table 3.4: Ambient air monitoring at point (3), Near Nga Wun River

Parameters	Concentration (24hr average) except some Gases (NO ₂ , CO and O ₃)*	National Environmental Air Quality Guideline (ECD)/WHO Guideline (24hr average)
PM10	18 ^a (2 ^b -24 ^c) µg/m ³	50 µg/m ³
PM 2.5(µg/m ³)	6 ^a (1 ^b -11 ^c) µg/m ³	25 µg/m ³
NO ₂ *	28 ^a (12 ^b -45 ^c) µg/m ³ (24 hr) 44µg/m ³ (one hr)	40 µg/m ³ (annual) /200 µg/m ³ (one hour)
SO ₂	5 ^a (0 ^b -11 ^c) µg/m ³	20 µg/m ³
CO *	0.44 ^a (0 ^b -1.2 ^c) mg/m ³ (24hr) / 440 ^a (0 ^b -1200 ^c) µg/m ³ 0.875 mg/m ³ / 875 µg/m ³ (one hr) 0.469 mg/m ³ / 469 µg/m ³ (8 hr)	30,000 µg/m ³ (one hr) 10,000 µg/m ³ (8 hr)
O ₃ *	24 ^a (15 ^b -29 ^c) µg/m ³ (24hr) 25 µg/m ³ (8 hr)	100 µg/m ³ (8hr)
H ₂ S	8 ^a (1 ^b -16 ^c) ppb	NA
CO ₂	296 ^a (222 ^b -350 ^c) ppm	NA
VOC	34 ^a (0 ^b -68 ^c) ppb	NA
NH ₃	4 ^a (3 ^b -5 ^c)ppm	NA
CH ₄	39 ^a (8 ^b -79 ^c)ppm	NA
Meteorology		
T (Degree C)		27 ^a (26 ^b -29 ^c)
RH		91 ^a (72 ^b -100 ^c)
Wind Speed (kph)		3 ^a (0 ^b -6.2 ^c)
Wind Direction (Degree from North)		271 (W)
Remark:		

^a Average ^b Min ^cMax

Referring to National Environmental Air Quality Guideline (ECD), the color codes are categorized in order to reveal the general air quality status around the of the project area.

Green – meets the standards

Yellow (slightly over and less than double)

Orange (exceeding if more than double)

Annex (I)

1. Ambient air monitoring instrument

The air monitoring survey will use the HAZ-SCANNER EPAS Wireless Environmental Perimeter Air Monitoring Station. (EPAS).

(i) Principles

The EPAS, manufactured by EDC/SKC (USA), is a light scattering photometer equipped with a filter sampling system. This dual capability allows for simultaneous real-time and filter measurement. Single-jet impactors are used for particulate size selection and the TSPM, PM10 and PM2.5 impactors would be used for air quality survey.

The highly sensitive EPAS provides real-time determinations and data recordings of airborne particle concentration in $\mu\text{g}/\text{m}^3$. It provides the minimum, maximum and time-weighted average (TWA) monitoring of gases as well.

This instrument is factory calibrated with the appropriate USEPA certified target gas and correlated with USEPA methods. (Ref: Code of Federal Regulation 40CFR part 53). The EPAS is annually calibrated and does not require laboratory analysis to determine concentrations. It operates maximum automation of data collection, uses the optional data logger including Dust Comm Pro Software for PC that provides statistical analysis, graphs, and detailed reports that can be printed for record keeping.

(ii) System check

Prior to the survey, calibration span and system checks (system flow rate, sensor baseline levels for all parameters, etc.) will be performed on the EPAS to ensure it is operational and ready for monitoring.

The air monitoring instrument will be operated in accordance with the manufacture's guidelines.

2 Ambient air monitoring

(i) The sensor intakes

The survey would deploy the sensor intakes based on the sitting criteria as specified. The survey will comply with the following guidelines as follows;

- Particulates and gas sensor intakes will be located between 2-3 meters above the ground level
- Keep unrestricted airflow located away from obstacles so that the distance from the sensor intake is at least twice the height that the obstacle protrudes above the probe
- Keep unrestricted airflow in an arc of at least 270 degrees around the inlet probe, or 180 degrees if the probe is on the side of a building
- Would be clear of optical obstructions, including potential obstructions that may move due to wind, human activity, growth of vegetation, etc.
 - Spacing from trees (10-20 m)
 - Spacing from roadways (10-250 m) depending on the traffic
- Observe temporary optical obstructions, such as rain, particles, fog, or snow

(ii) Location of the monitoring sites

The monitoring sites were selected based on their being broadly distributed within the project area and in proximity to the most sensitive receptors i.e. communities. Operating activities of the project would impact local air quality. Air pollution both on site and in the surrounding locality may result from release of dust and gases to the atmosphere from handling or processing of its by-products.

(iii) Sampling time and frequency of measurements

The survey will monitor 24hr continuously.

(iv) Ambient air parameters to be measured

- 1) Particulates: PM10, PM2.5} USEPA Criteria air pollutants
- 2) Gases: NO2, SO2, CO, VOC, NH3, CH4, O3, CO2, H2S
- 3) Atomic Radiation
- 4) Meteorology: Temperature, Relative Humidity, Wind Speed, Wind Direction which can have the influence on both local and regional air quality

(I) Particulates

Sr	Parameters	Sensors	Detection limit
1	TSPM, PM10, PM2.5	90 degree Infra Red Light Scattering	0 to 5000 µg/m3

Calibration: Gravimetric reference NIST Traceable - SAE fine dust- ISO12103-1 Accuracy (± 10% to filter gravimetric SAE fine test dust which falls under the ACGIH/ISO/CEN criteria.

(II) Gases

Calibration: ppm equivalent change/year in lab air (24month warranted)

Sr	Parameters	Sensors	Detection limit
1	NO2	Electrochemical	(0-5000) ppb
2	SO2	Electrochemical	(0-5000) ppb
3	CO	Electrochemical	(0 -10,000) ppb
4	NH3	Electrochemical	(0 -100) ppm
5	H2S	Electrochemical	(0 -25) ppm
6	VOC	Photoionization	0 to 50,000 ppb
7	CO2	NDIR	0 to 5000 ppm
8	Methane	NDIR	0 to 1% Vol,0 to 10,000 ppm,0 to 20% LEL
9	O3	Metal oxide semiconductor (MOS),	(0 -150) ppb

(III) Meteorology (EPAS Meters)

Sr	Parameters	Sensors	Detection limit
1	Temperature, Detection limit -)/ (-20°C - 60°C)	NTC	(-20 to 60 C)/ (-4° to 140°F
2	Relative Humidity	CAP	(0-100)%
3	Wind Speed (sensor:), Detection limit -	3-cup anemometer a	(0 – 125 mph)
4	Wind Direction	Continuous rotation potentiometric wind direction vane	(5 – 355)degrees

References:

ENVIRONMENTAL PROTECTION AGENCY (US EPA), 40 CFR Appendix E to Part 58,
Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring
<https://www3.epa.gov/ttnamti1/files/ambient/longpath/fropenph.pdf>

Noel De Nervers, (2000), Air Pollution Control Engineering, 2nd edition, McGraw-Hill
International Editions, Civil Engineering Series

Environmental Report

Start: 12/21/2021 9:15 AM End: 12/22/2021 9:15 AM

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Logger ID **912005**

Record Count **97**



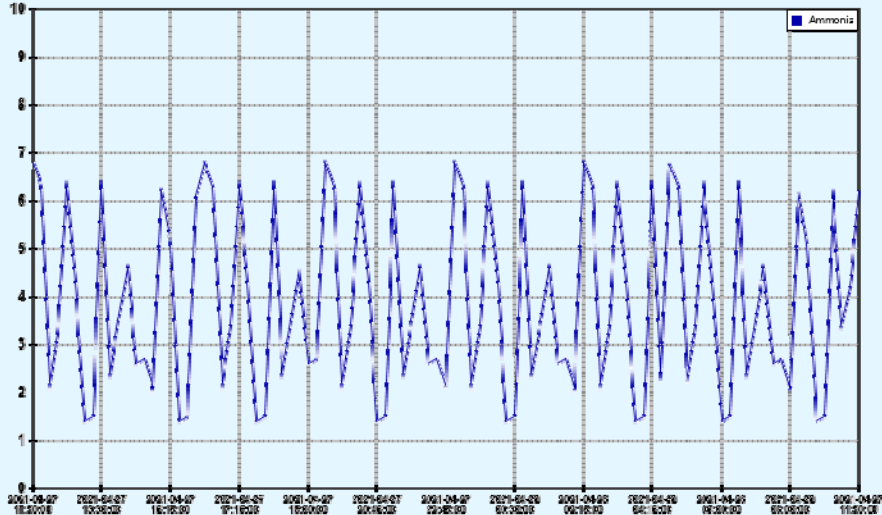
Ammonia



Sensor ID

Range: 0 to 100 ppm

Min	Ave	Max	Hi Limit % Above Hi	Lo Limit % Below Lo
1.4	3.86804	6.8		



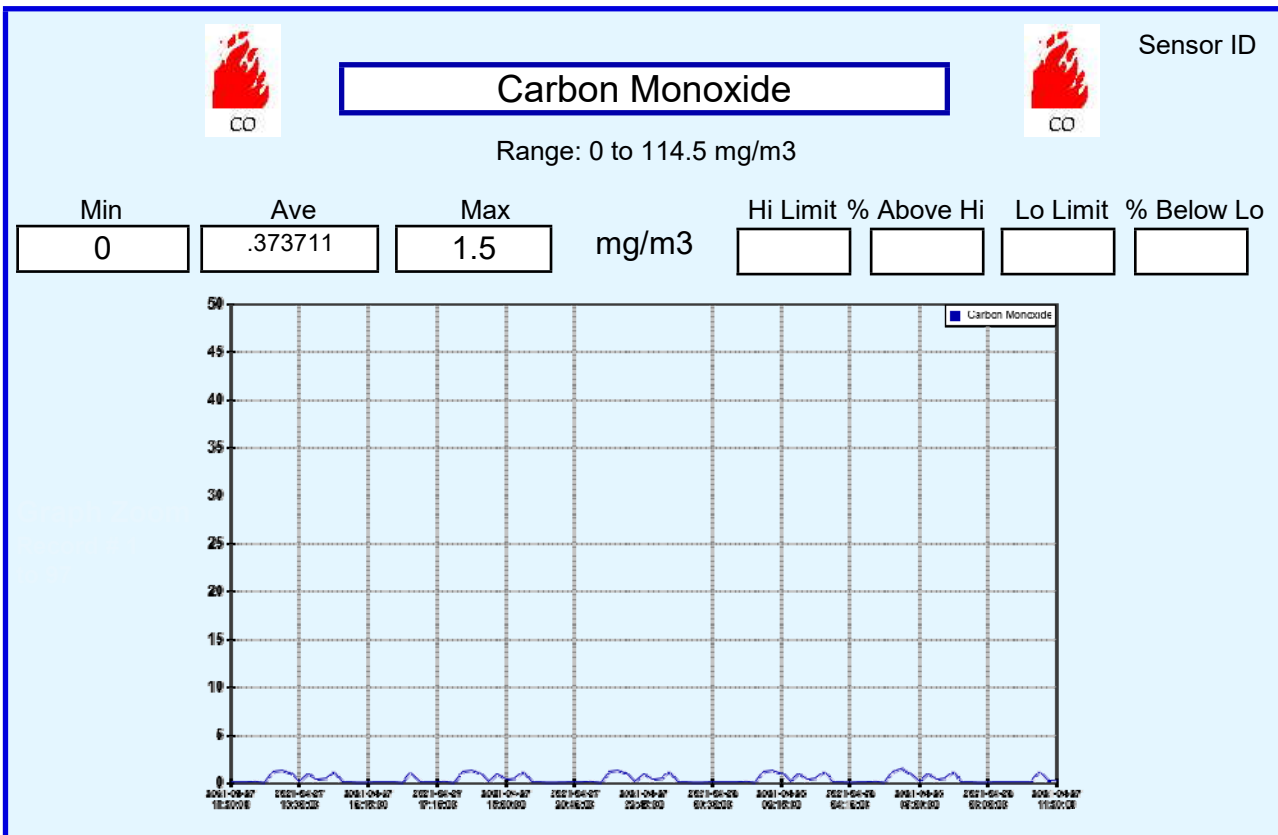
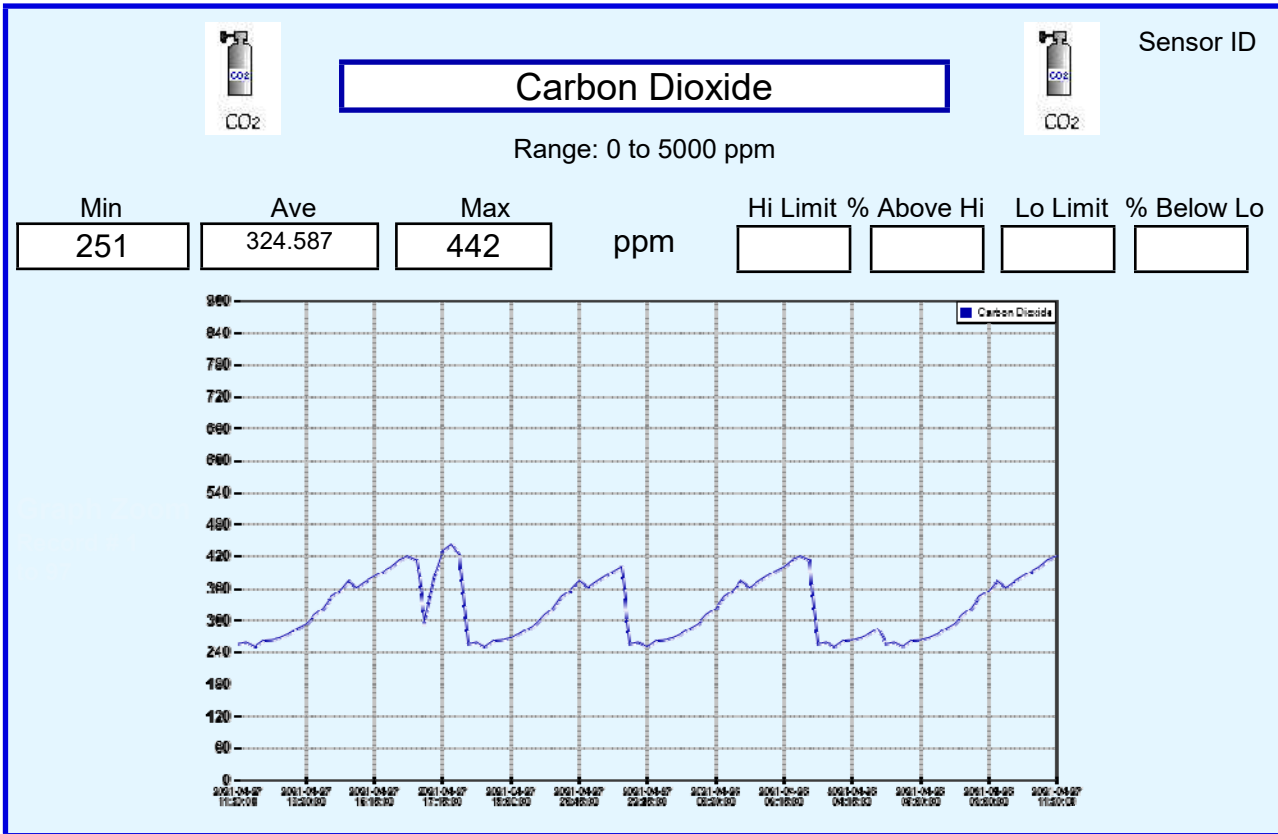
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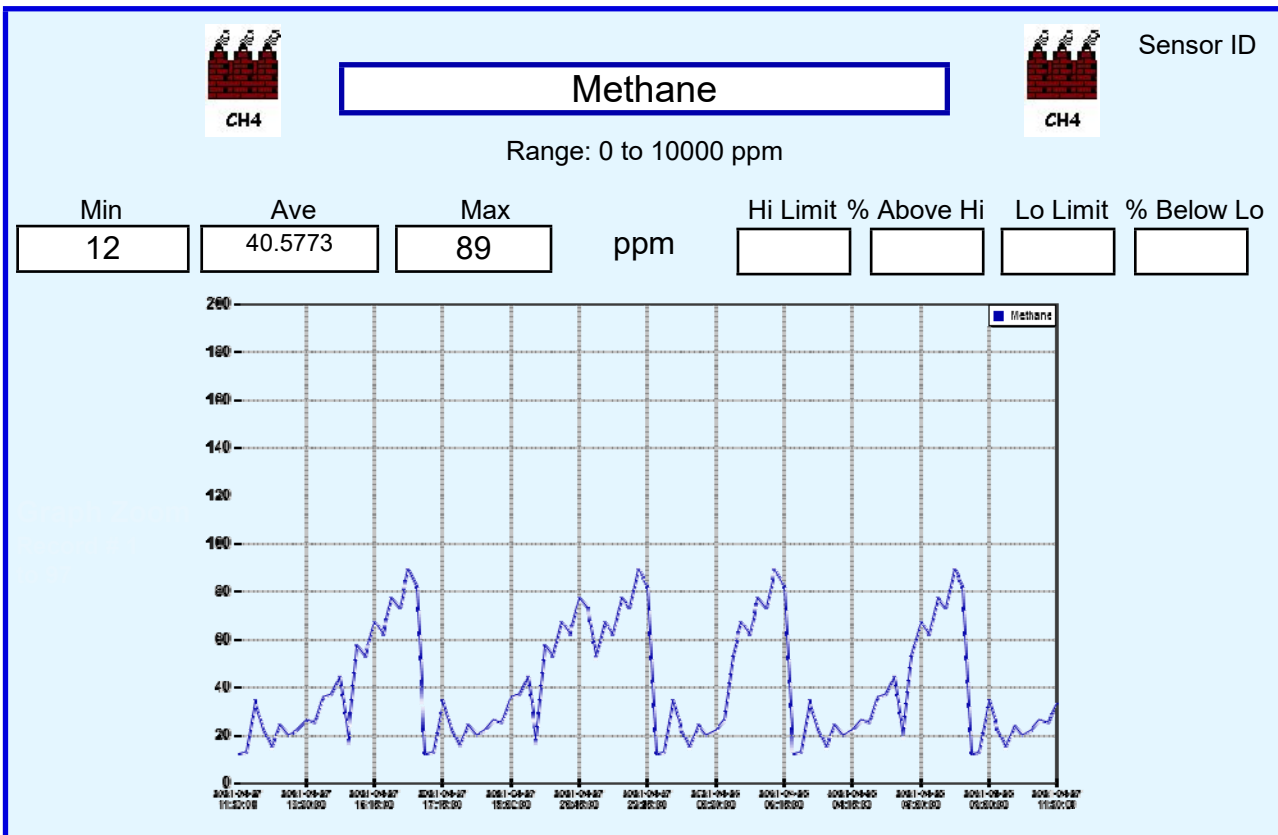
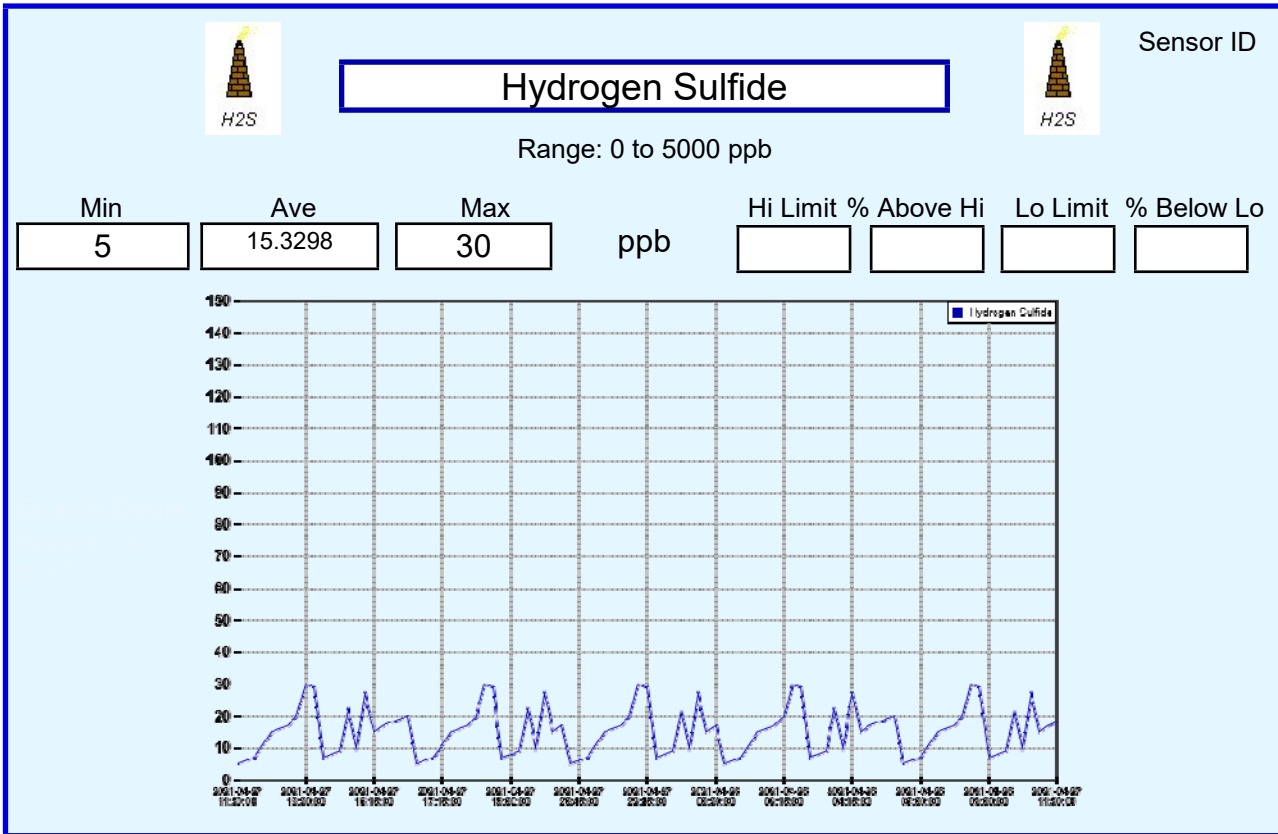
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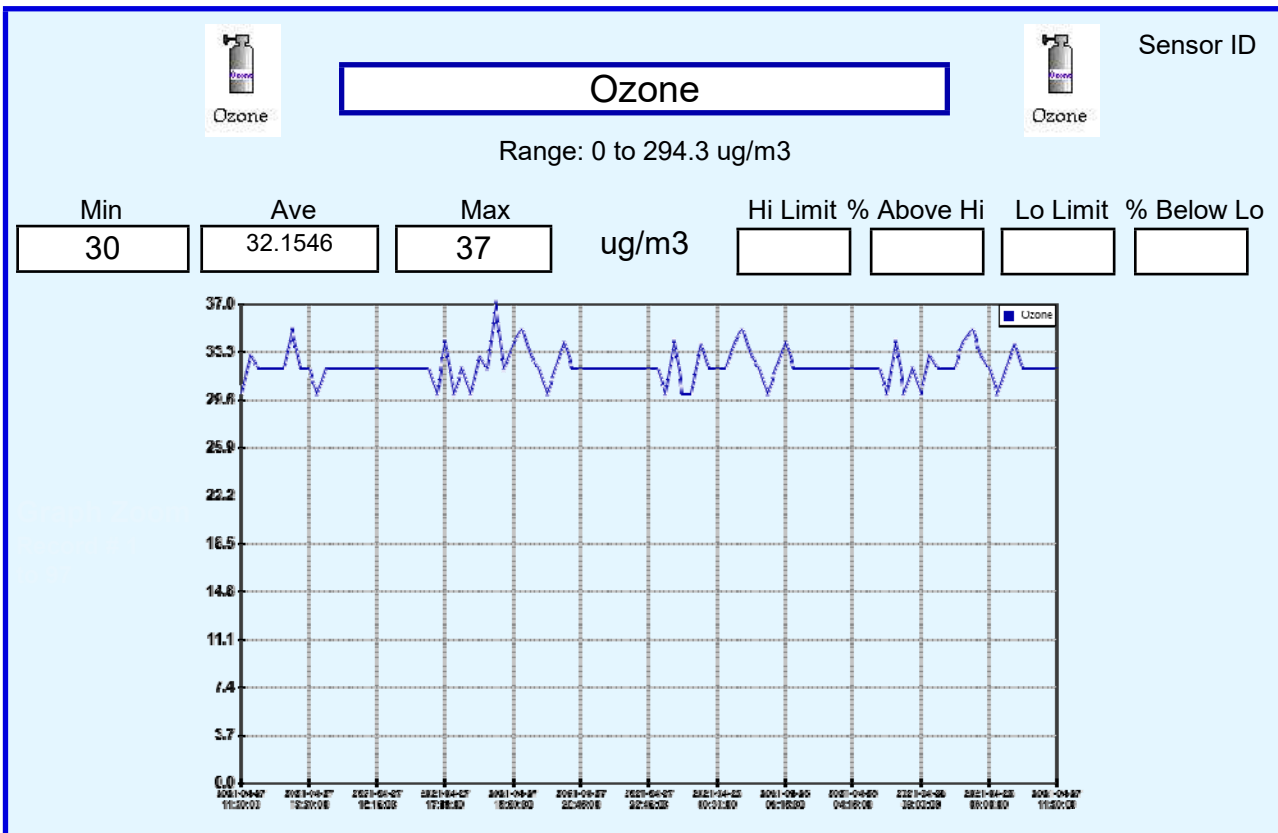
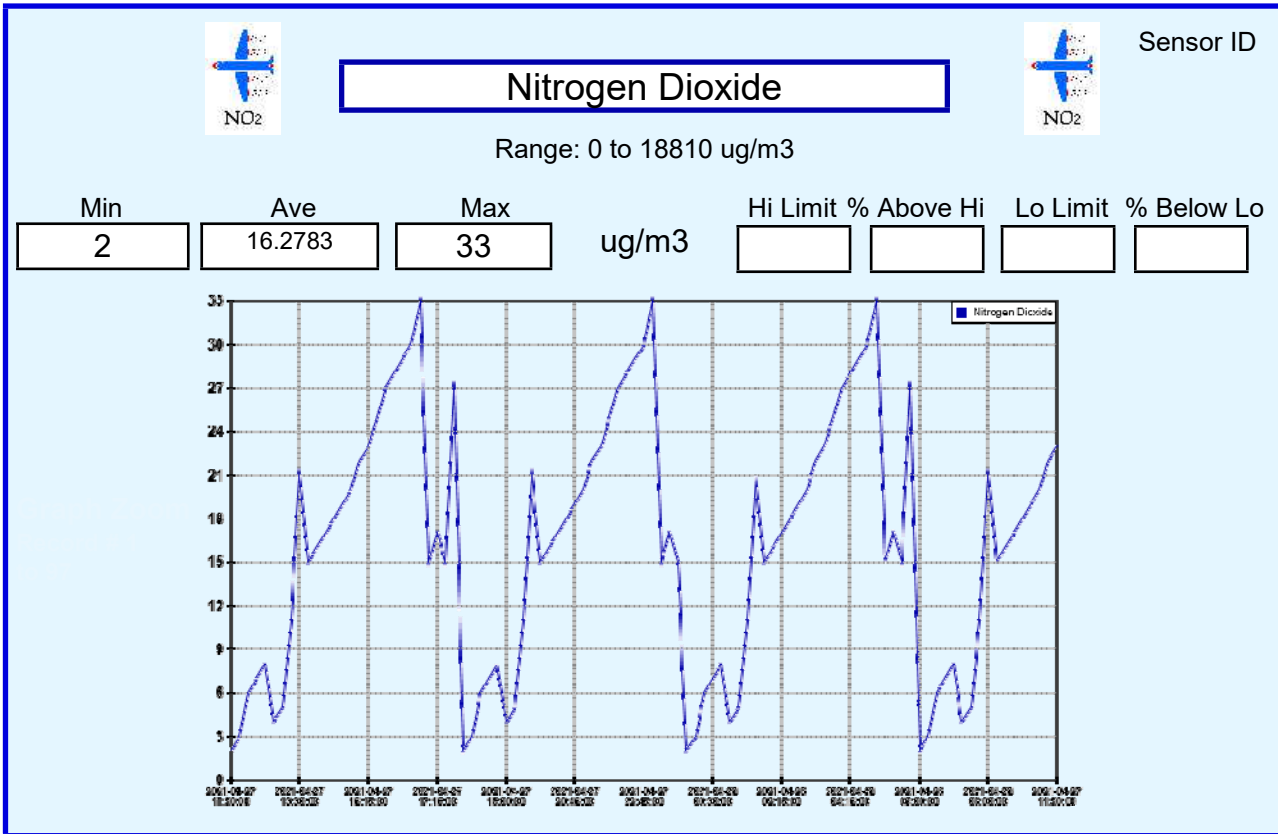
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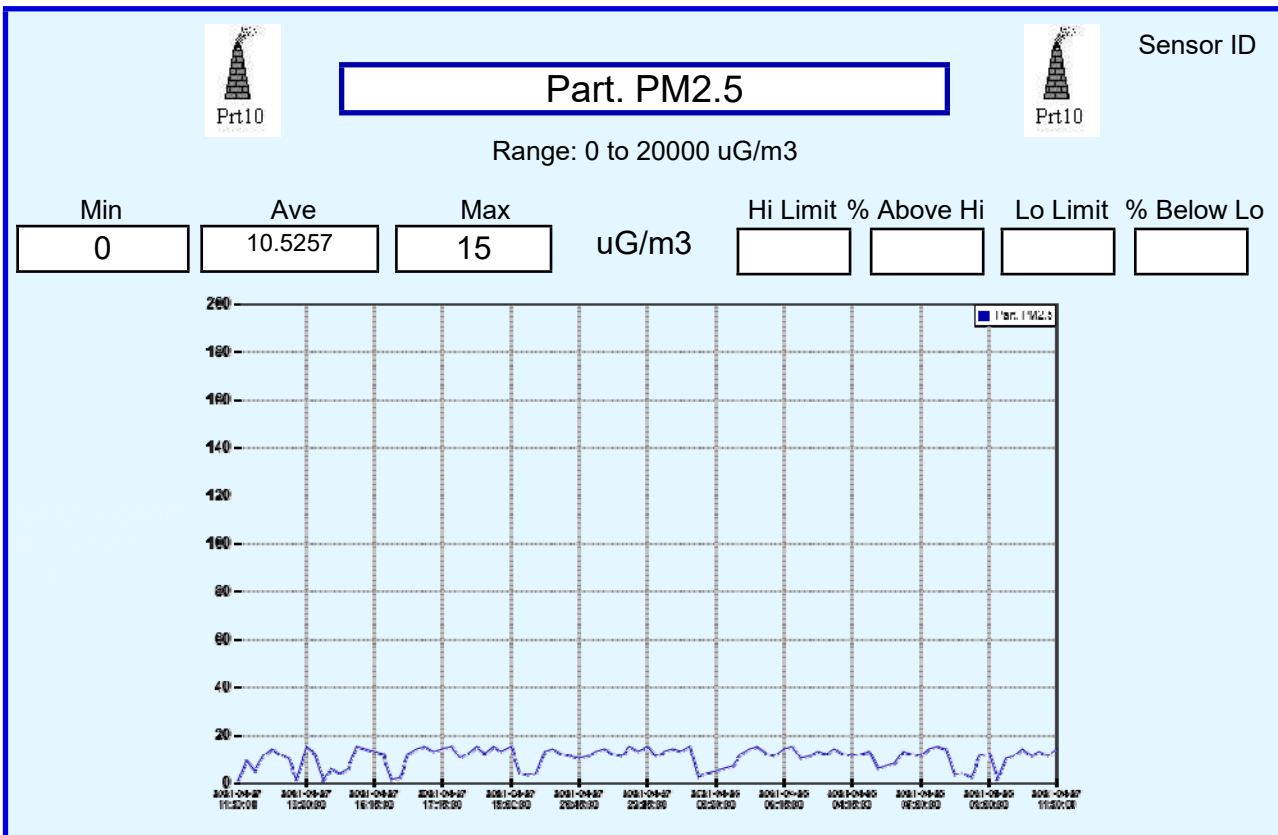
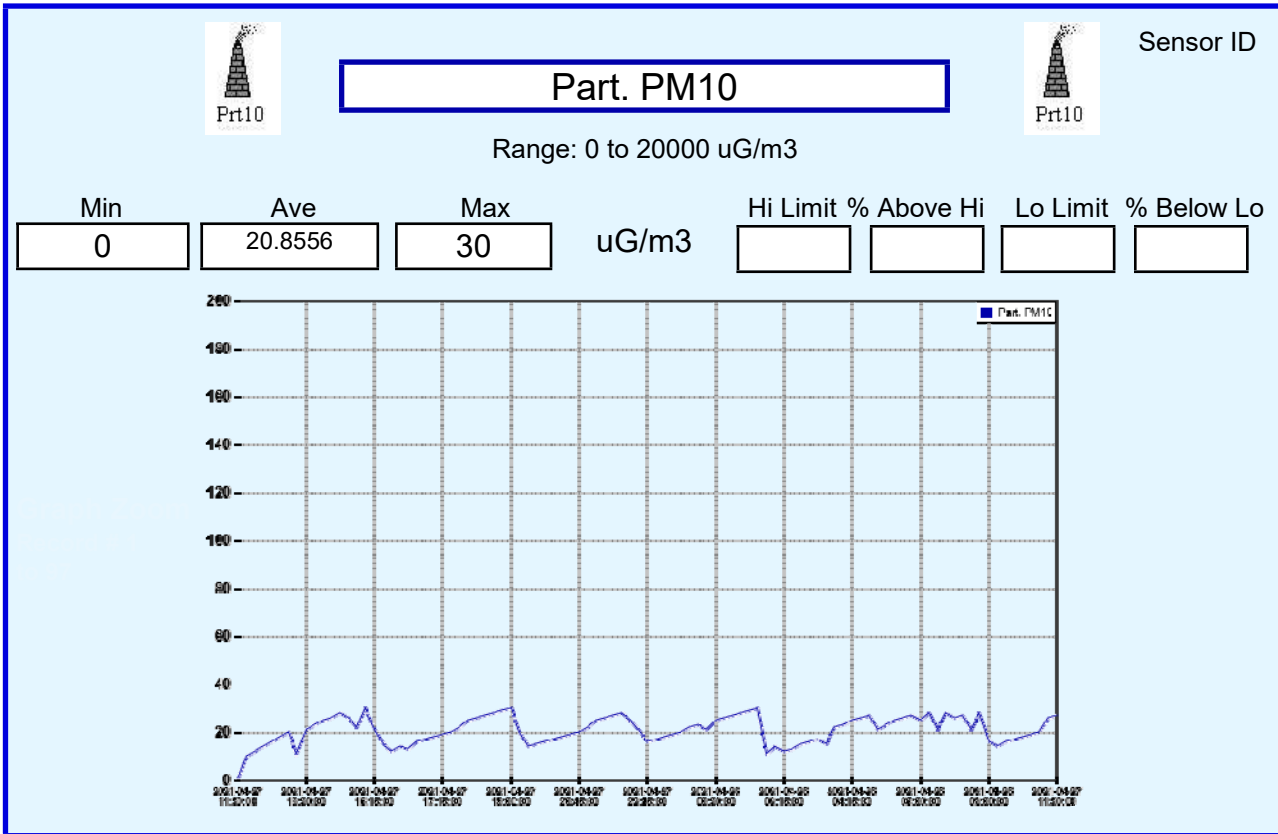
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Record Count **97**



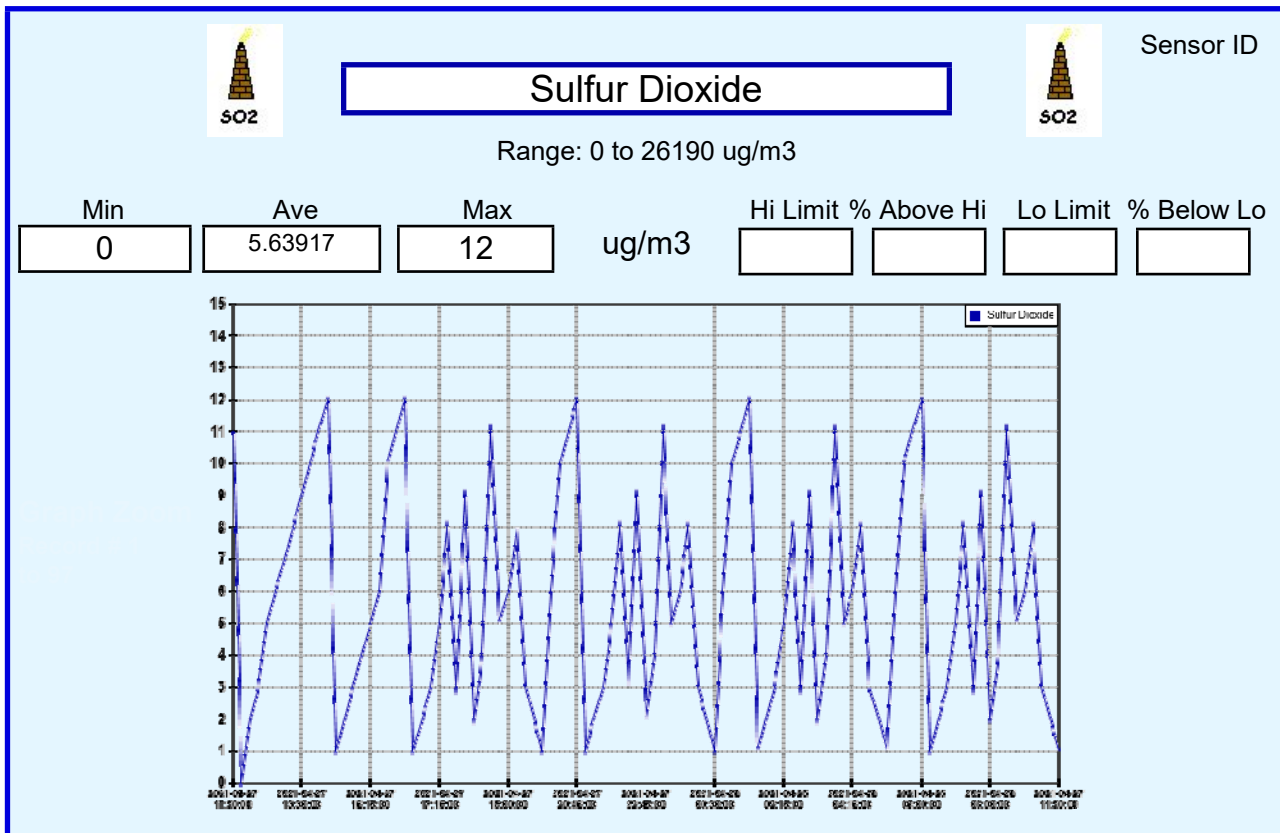
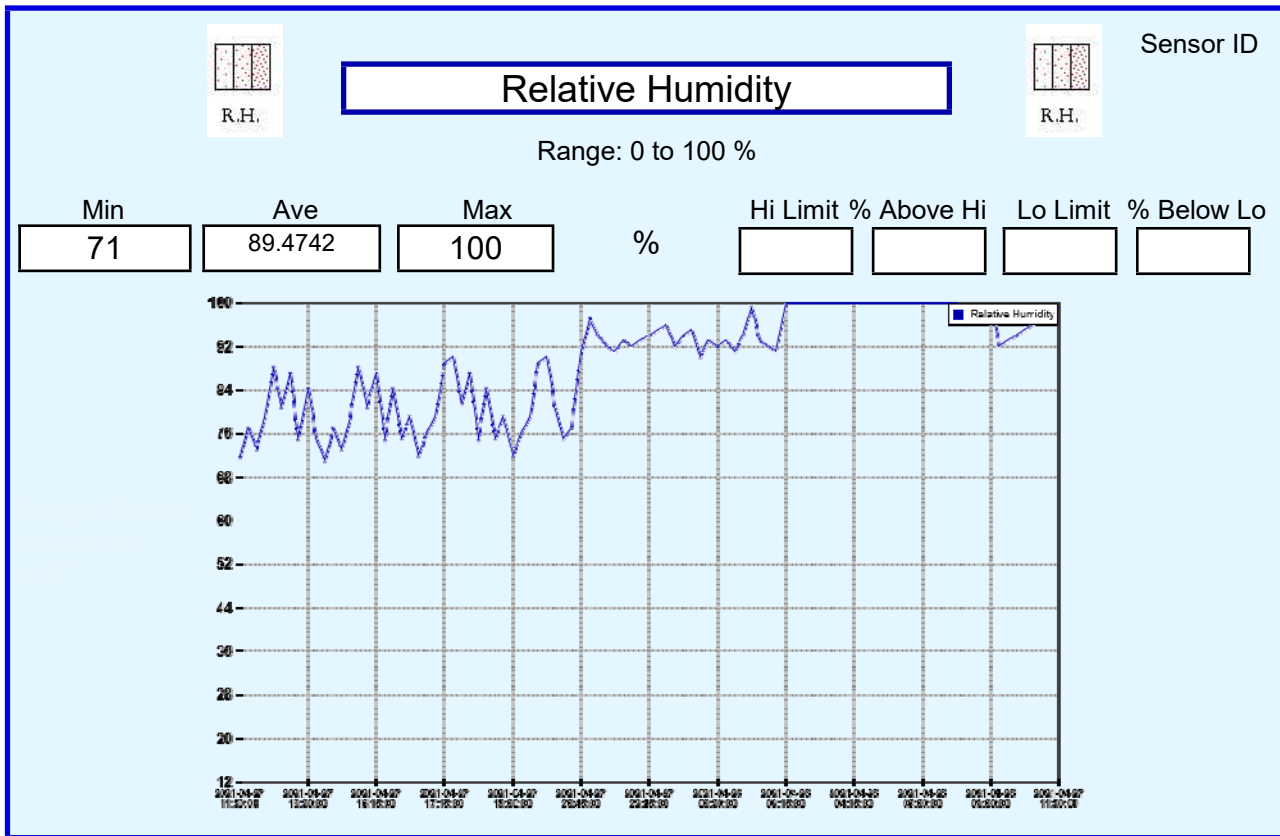
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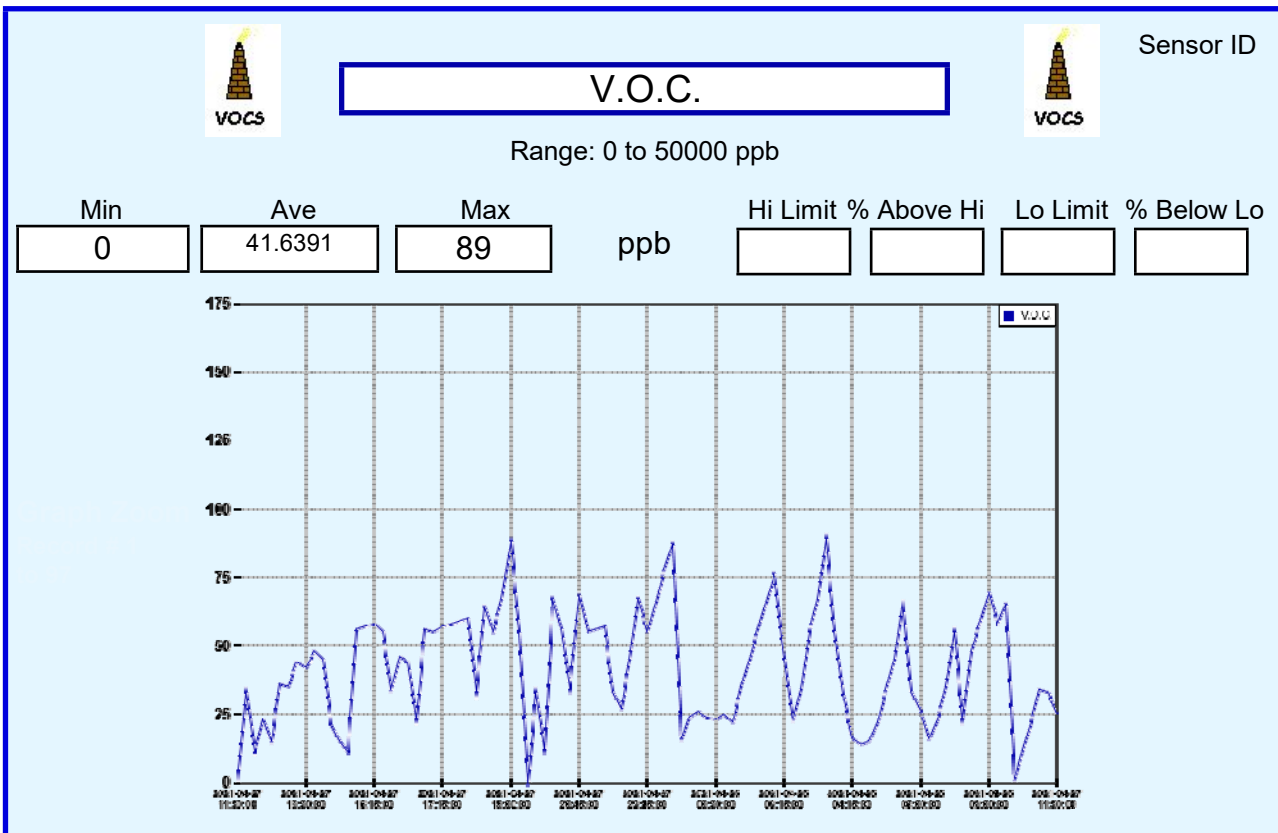
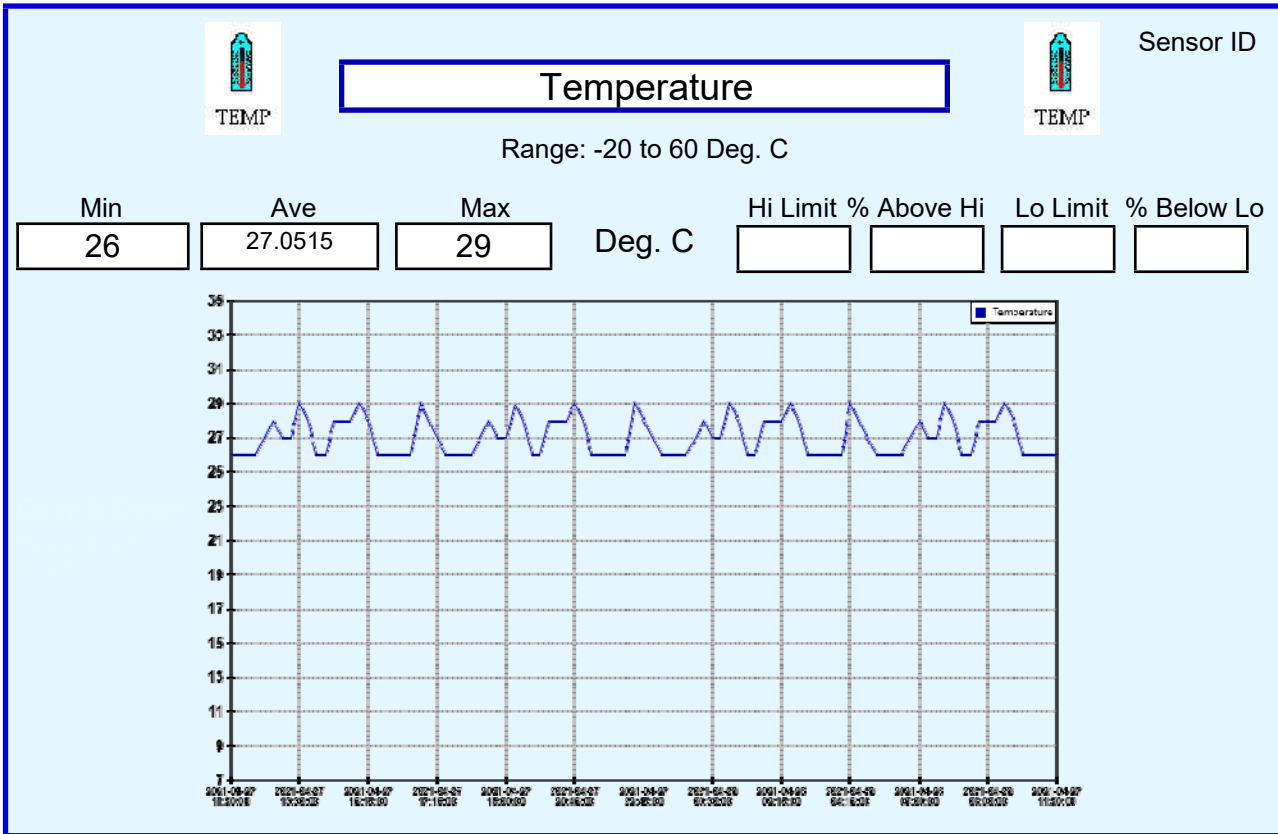
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Logger ID **912005**

Record Count **97**



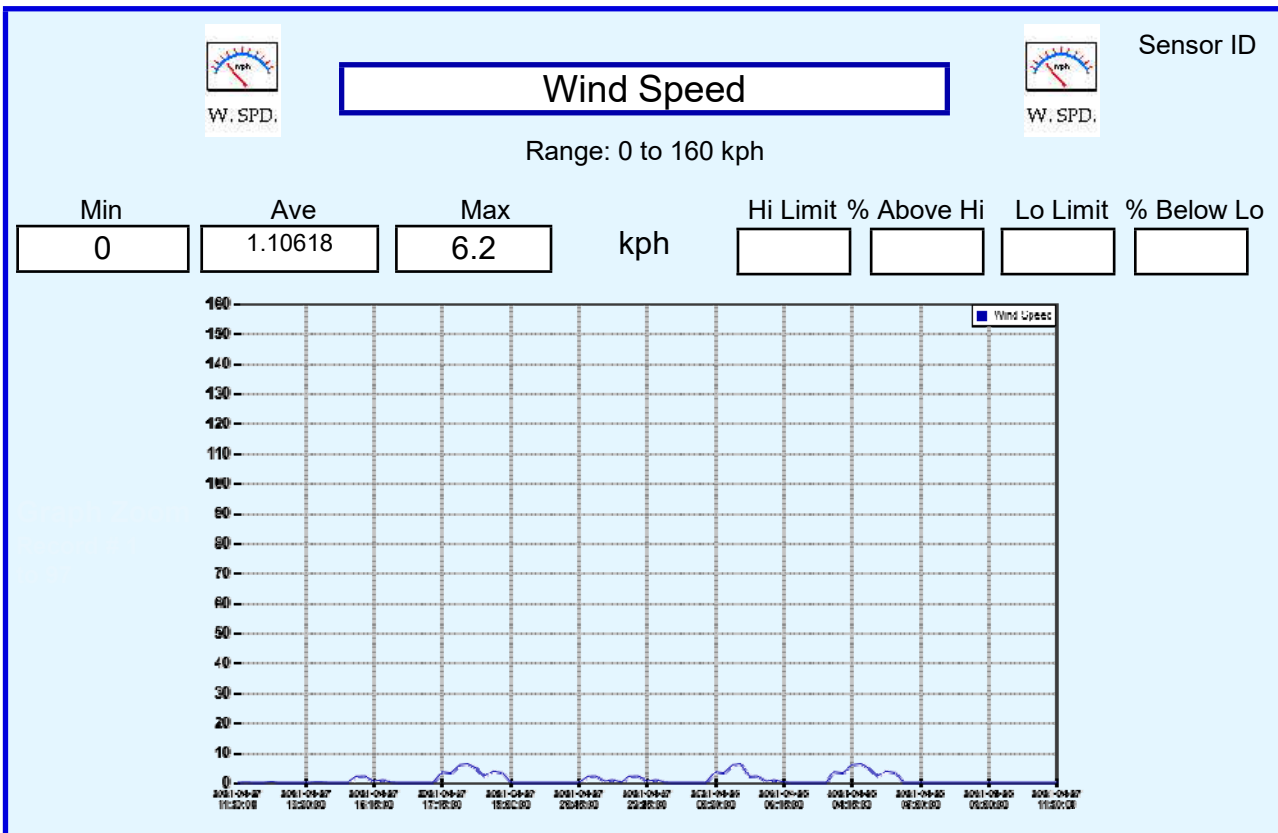
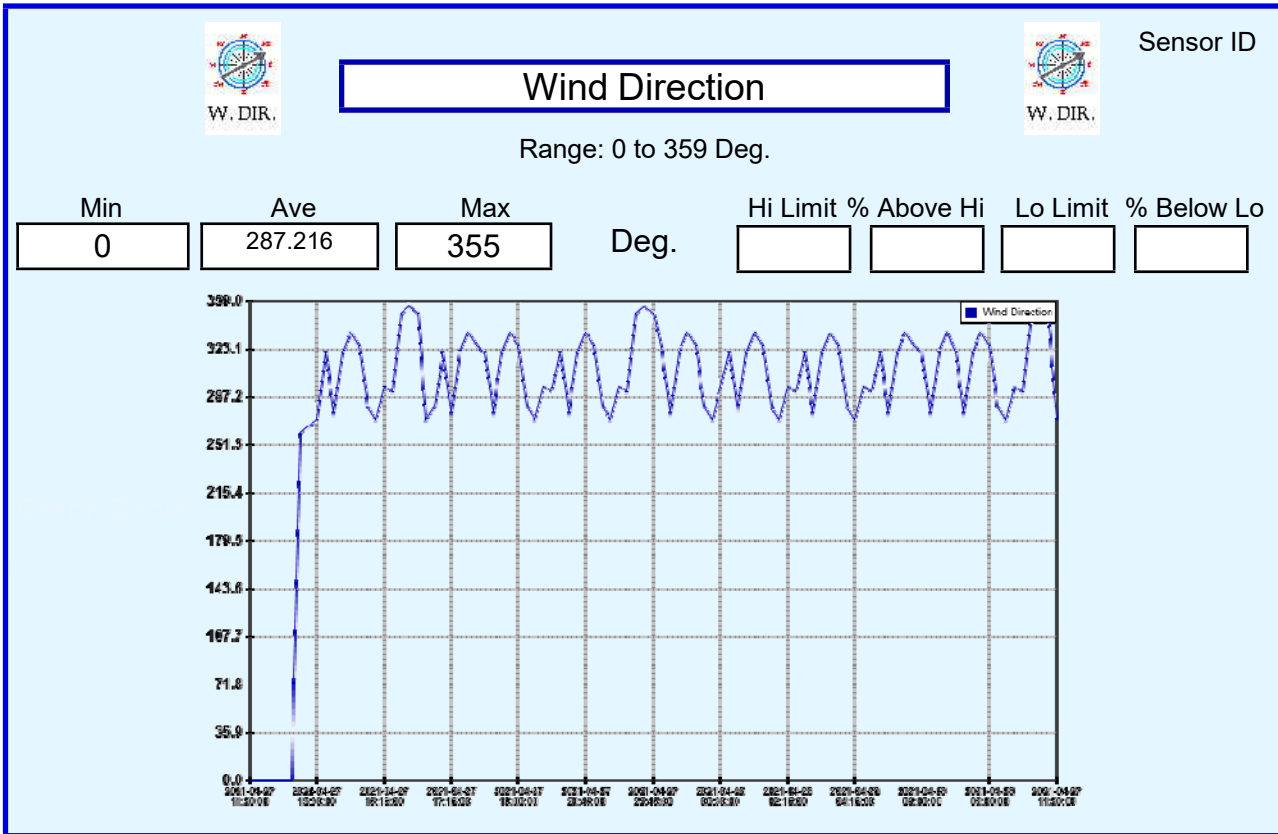
Environmental Report

Start: 12/21/2021 9:15 AM End: 12/22/2021 9:15 AM

Collected by:

Logger ID **912005**

Record Count **97**



Environmental Report

Start: 12/21/2021 9:15 AM End: 12/22/2021 9:15 AM

Collected by:

Logger ID **912005**

Record Count **97**



Batt.

Supply Voltage

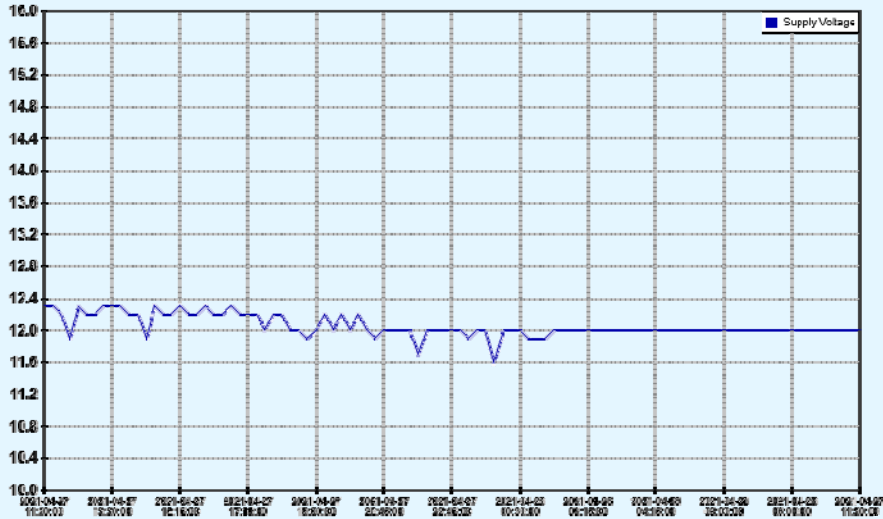


Batt.

Sensor ID

Range: 10 to 16 V

Min	Ave	Max	V	Hi Limit % Above Hi	Lo Limit % Below Lo
11.6	12.0546	12.3			





Environmental Report

Record Cnt 97

12/21/2021

Start Date

9:15:00 AM

End Date

12/22/2021

9:15:00 AM

	NH3 ppm	CO2 ppm	CO mg/m3	H2S ppb	CH4 ppm	NO2 ug/m3	O3 ug/m3	PM10 uG/m3	PM25 uG/m3	RH %	SO2 ug/m3	TmpC Deg. C	VOCS ppb	WDir Deg.	WSpM kph	Pwr V
Ave	3.86804	324.587	.373711	15.3298	40.5773	16.2783	32.1546	20.8556	10.5257	89.4742	5.63917	27.0515	41.6391	287.216	1.10618	12.0546
Max	6.8	442	1.5	30	89	33	37	30	15	100	12	29	89	355	6.2	12.3
Min	1.4	251	0	5	12	2	30	0	0	71	0	26	0	0	0	11.6

Comments

Environmental Report

Start: 12/22/2021 10:30 AM End: 12/23/2021 10:30 AM

Collected by:

Logger ID

Record Count



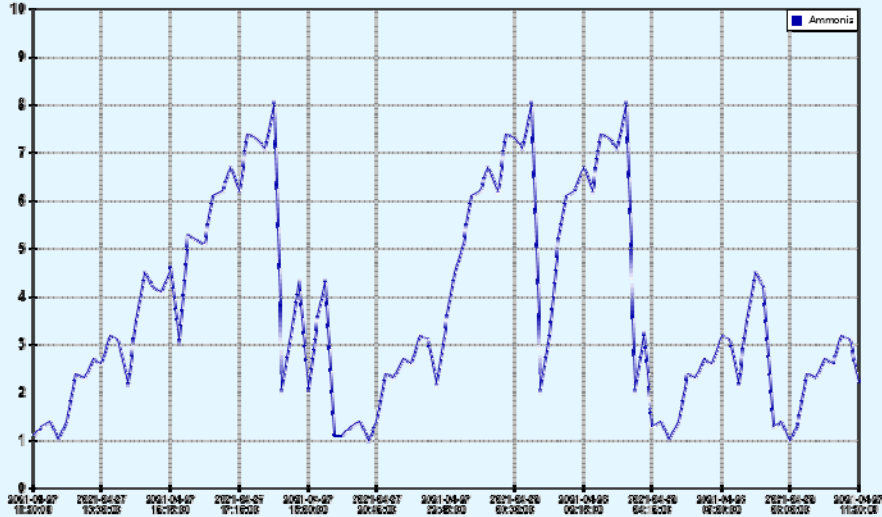
Ammonia



Sensor ID

Range: 0 to 100 ppm

Min	Ave	Max	Hi Limit	% Above Hi	Lo Limit	% Below Lo
1	3.74123	8				



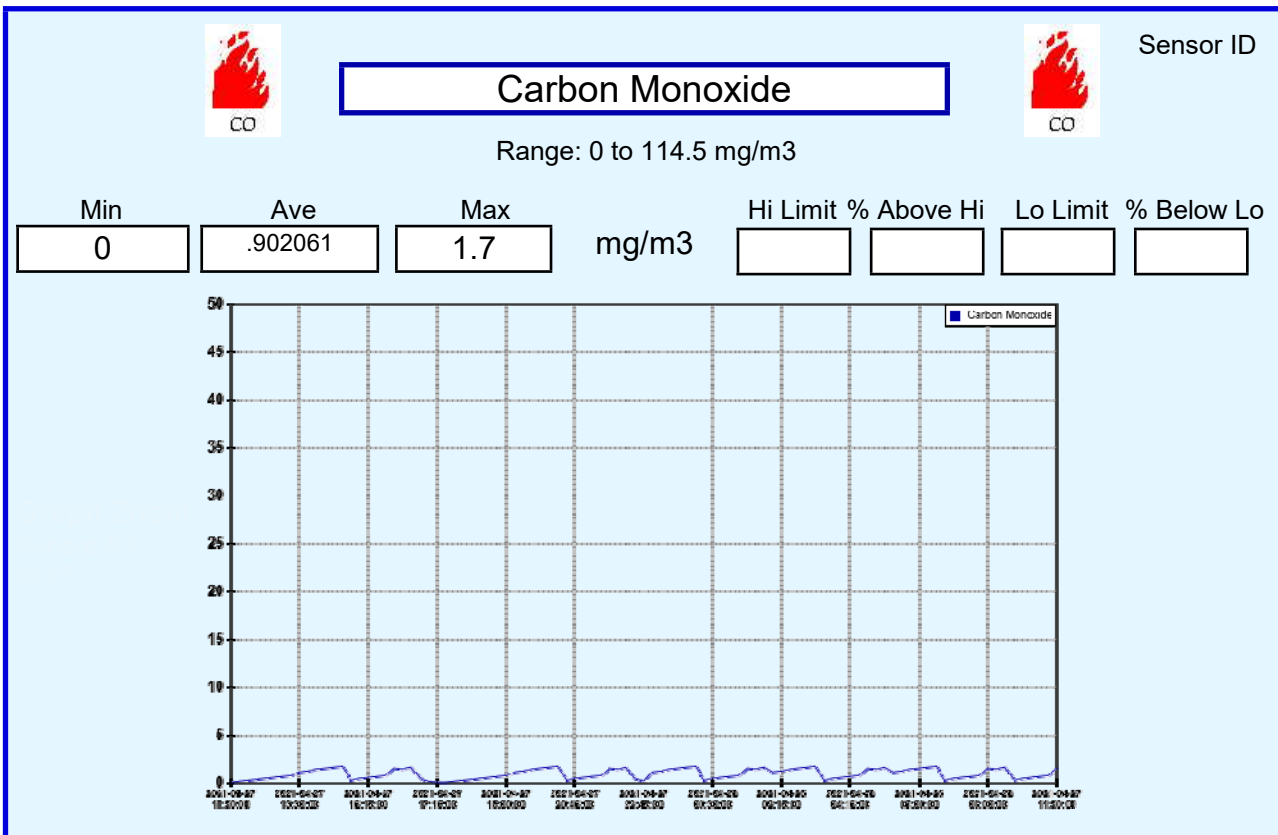
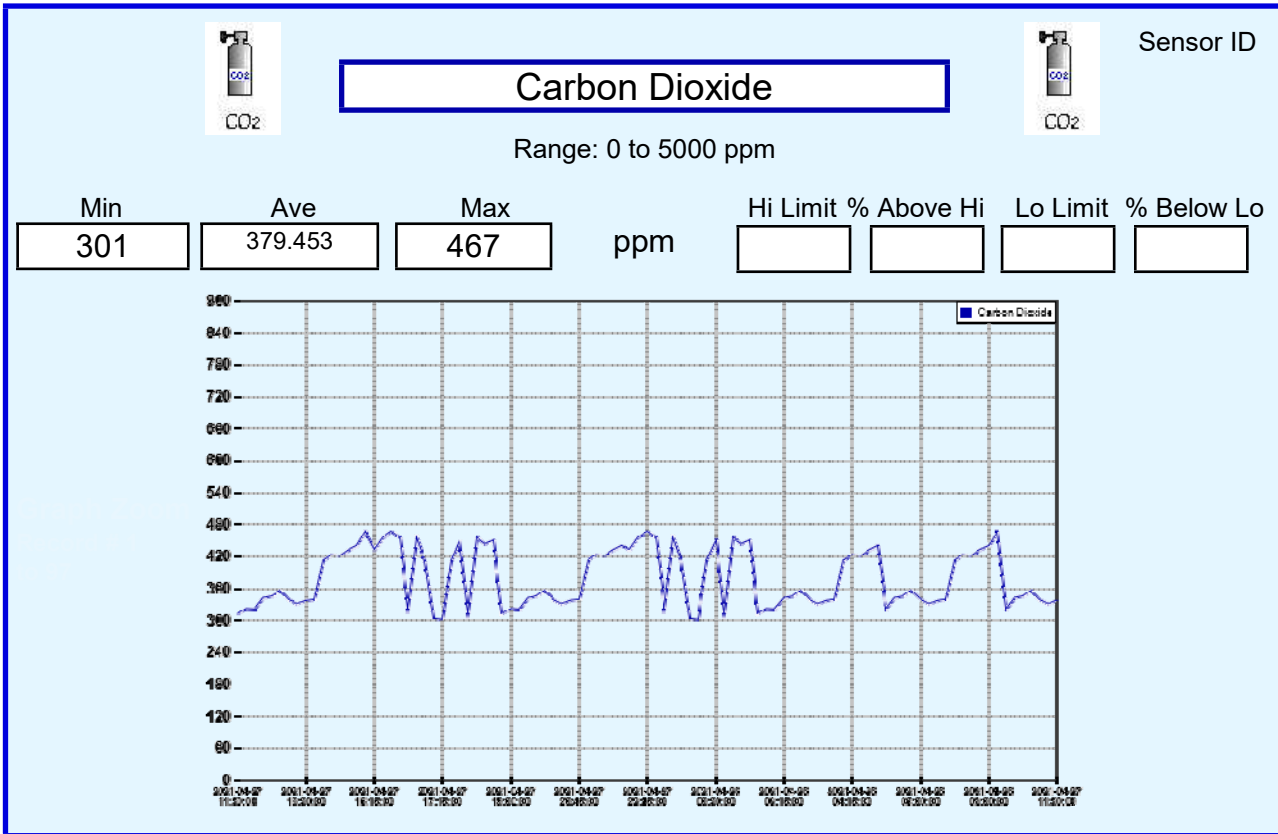
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Start: 12/22/2021 10:30 AM End: 12/23/2021 10:30 AM

Collected by:

Logger ID **912005**

Record Count **97**



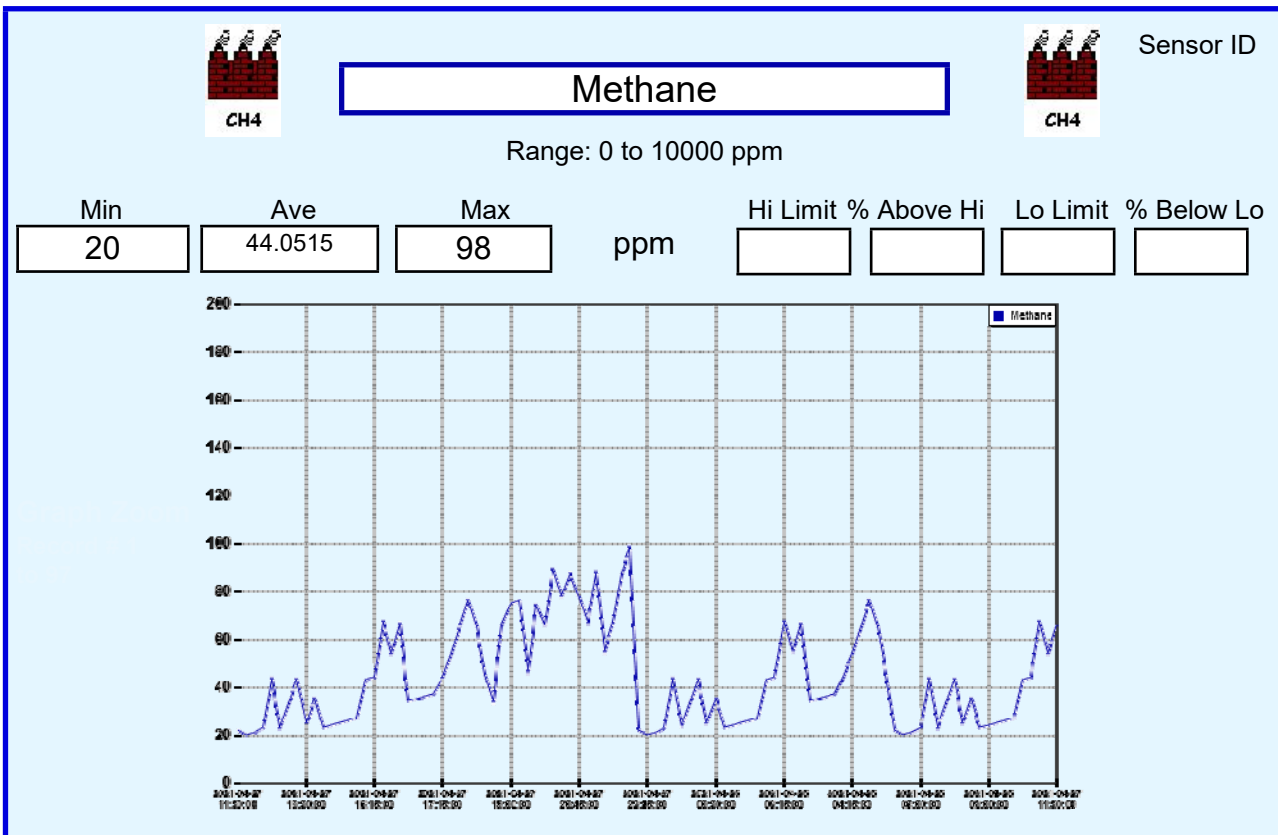
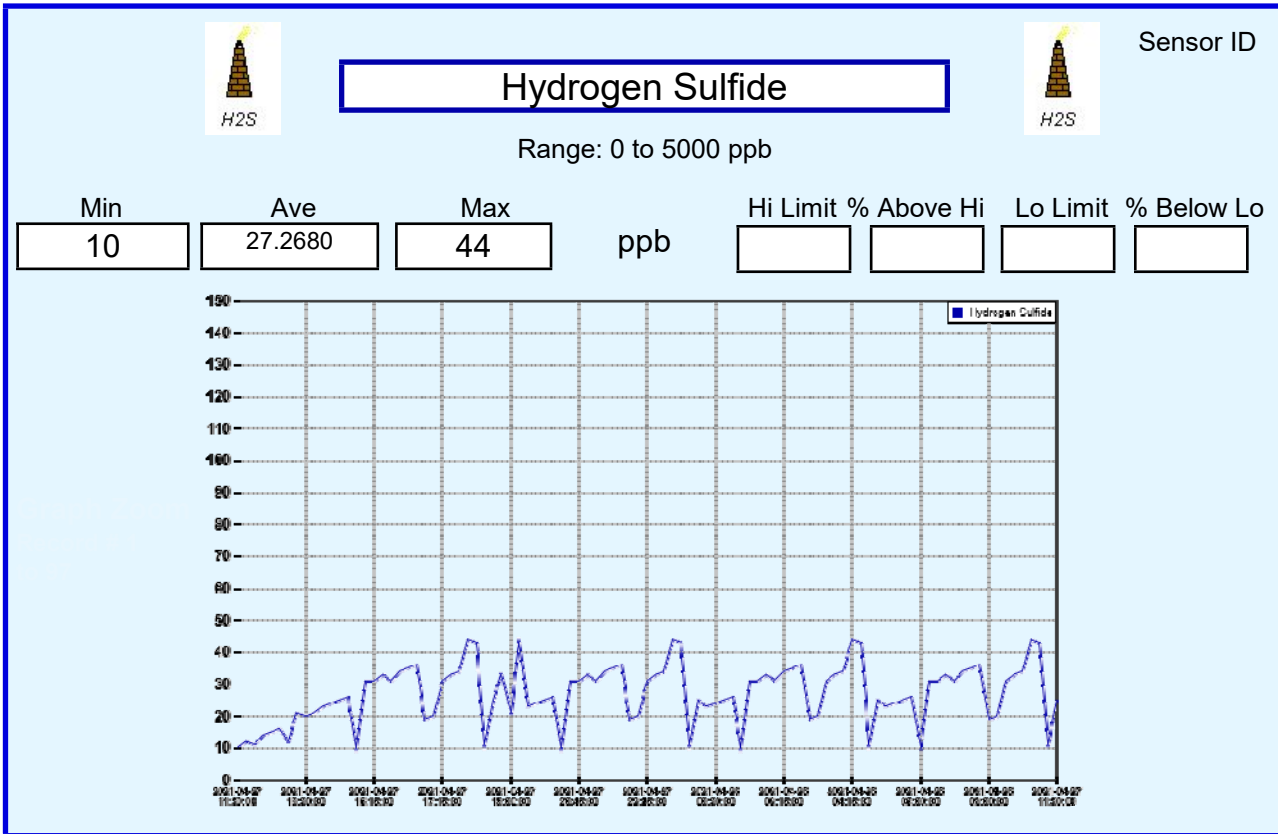
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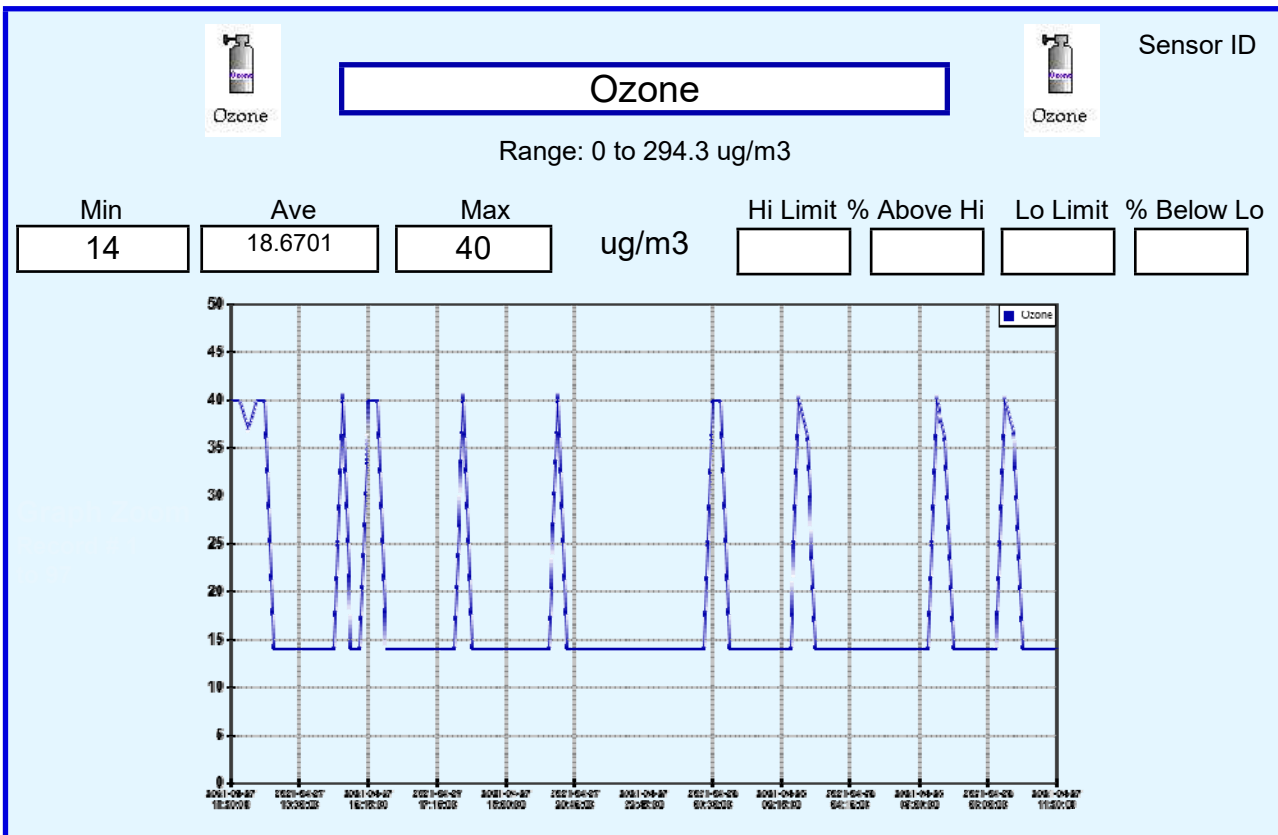
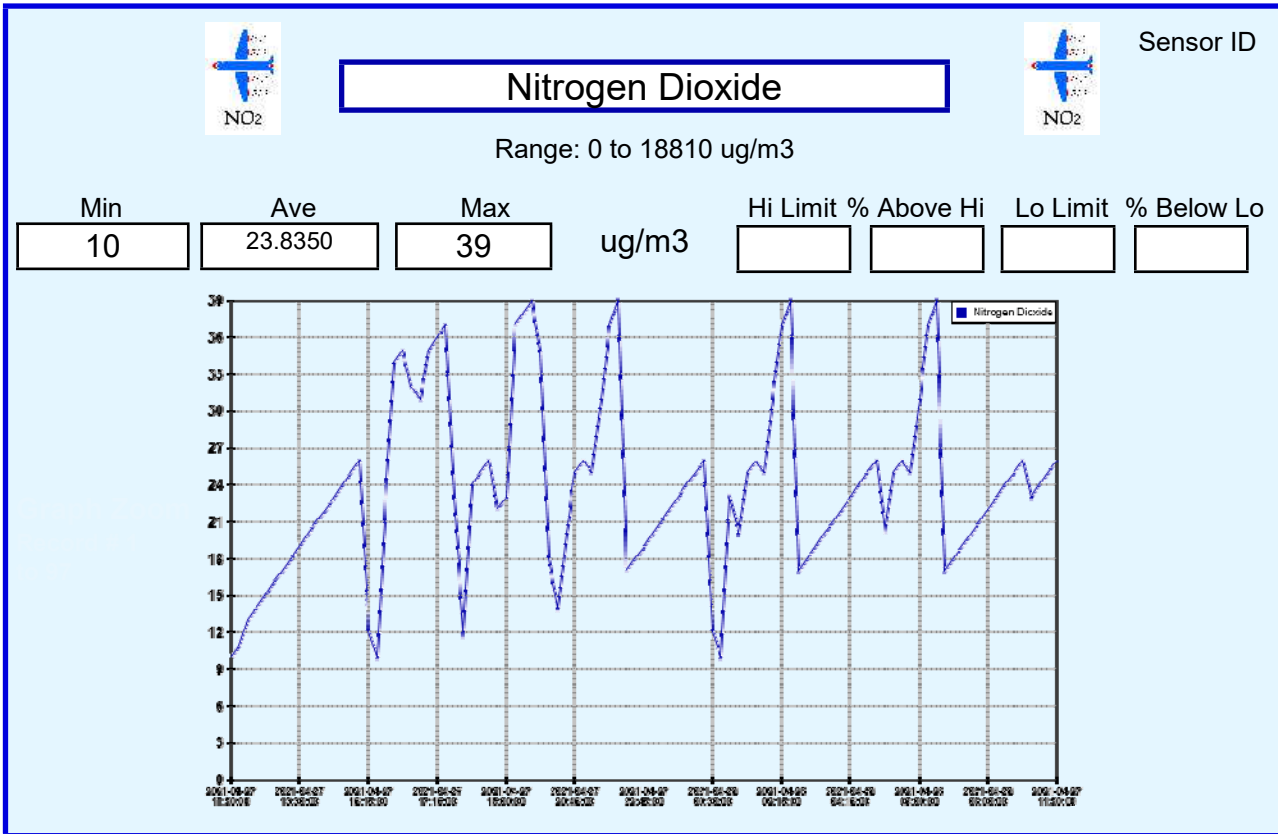
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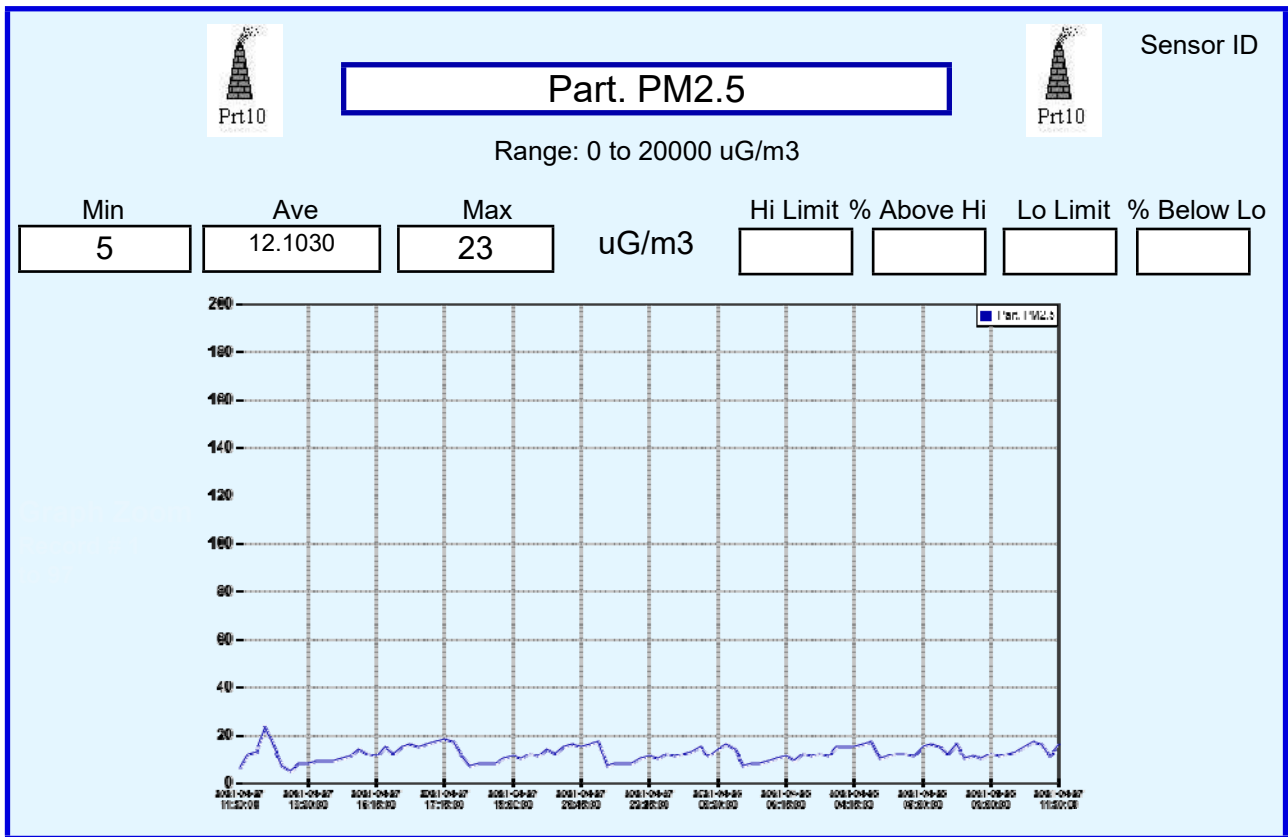
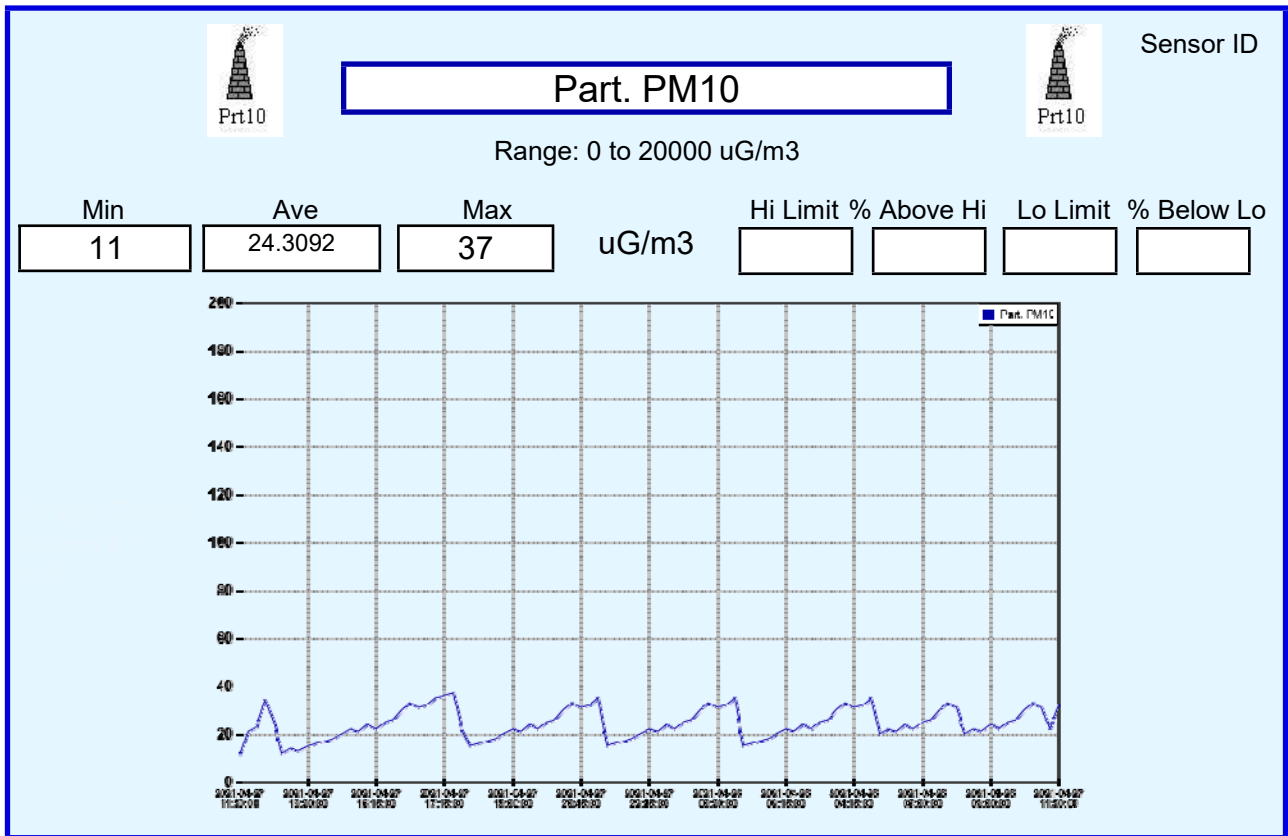
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Record Count **97**



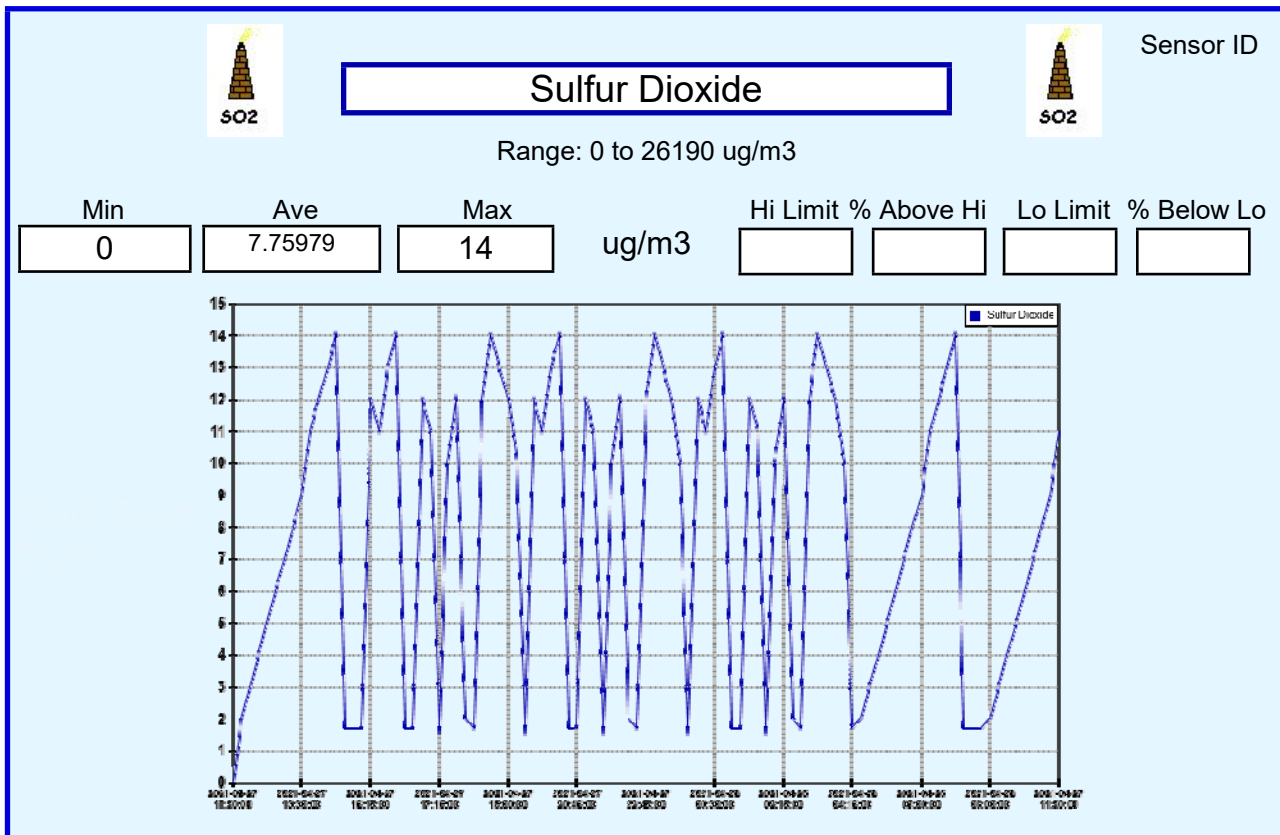
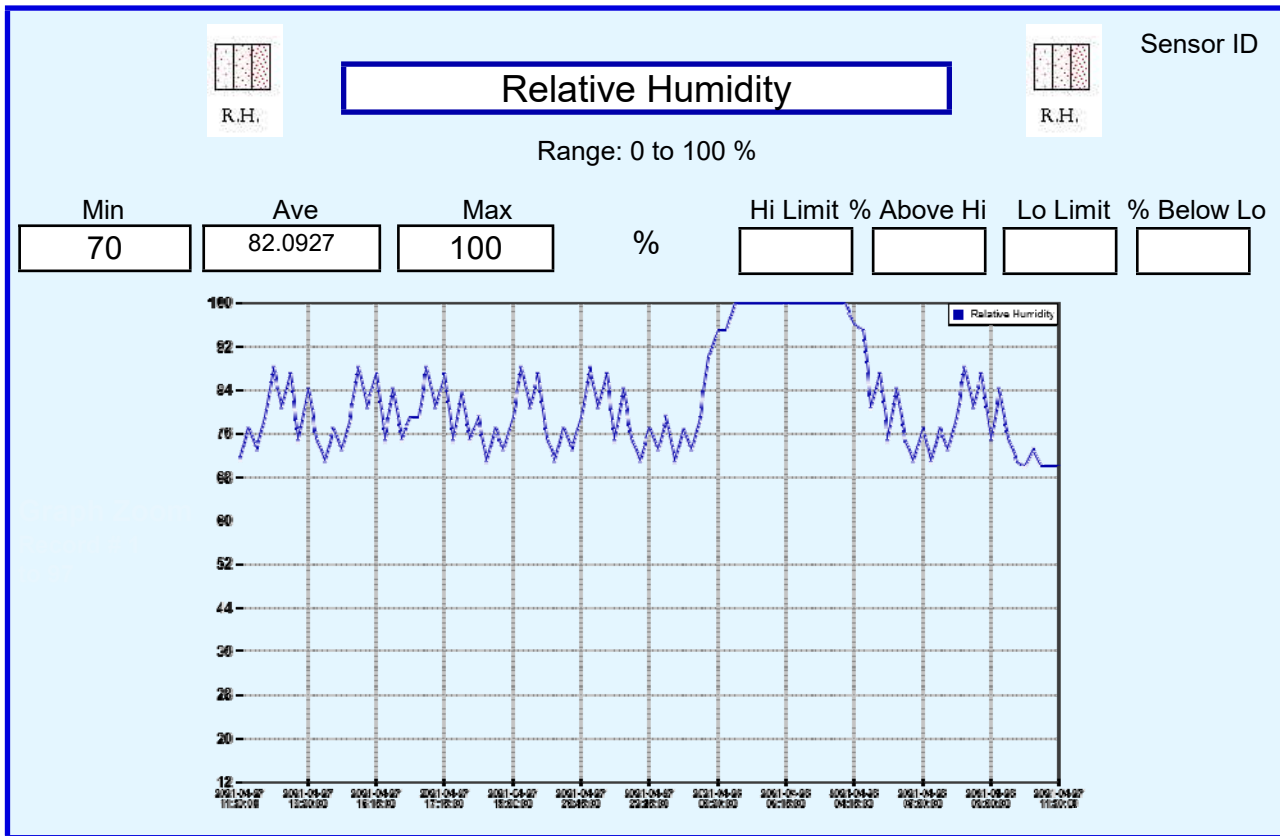
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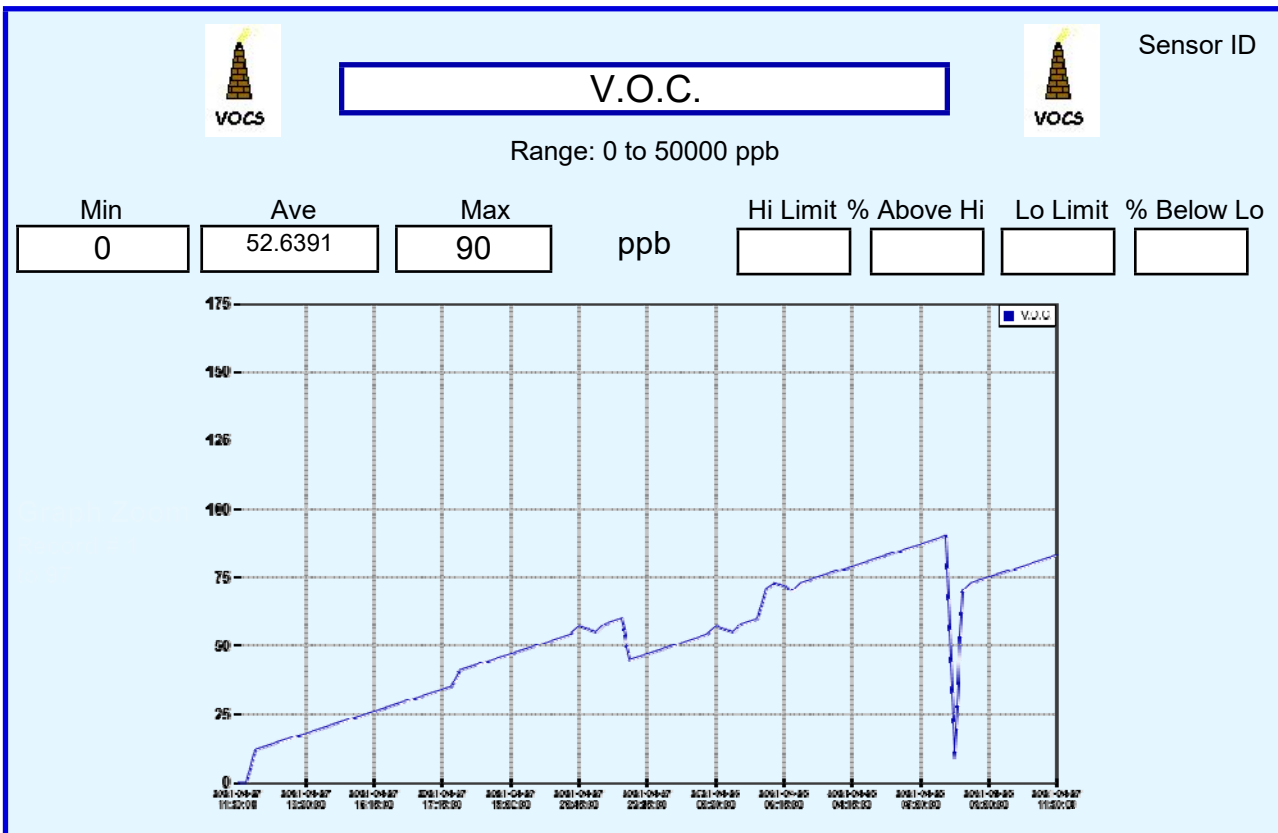
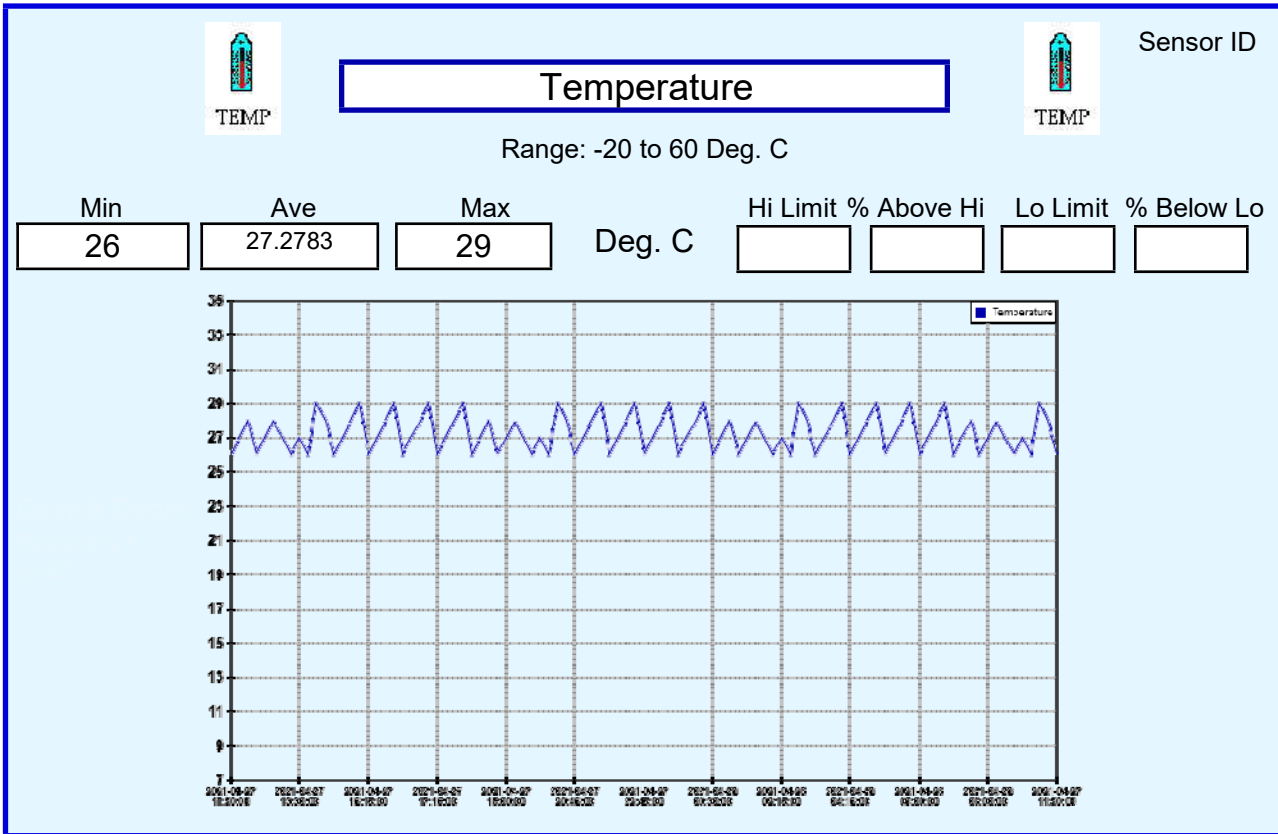
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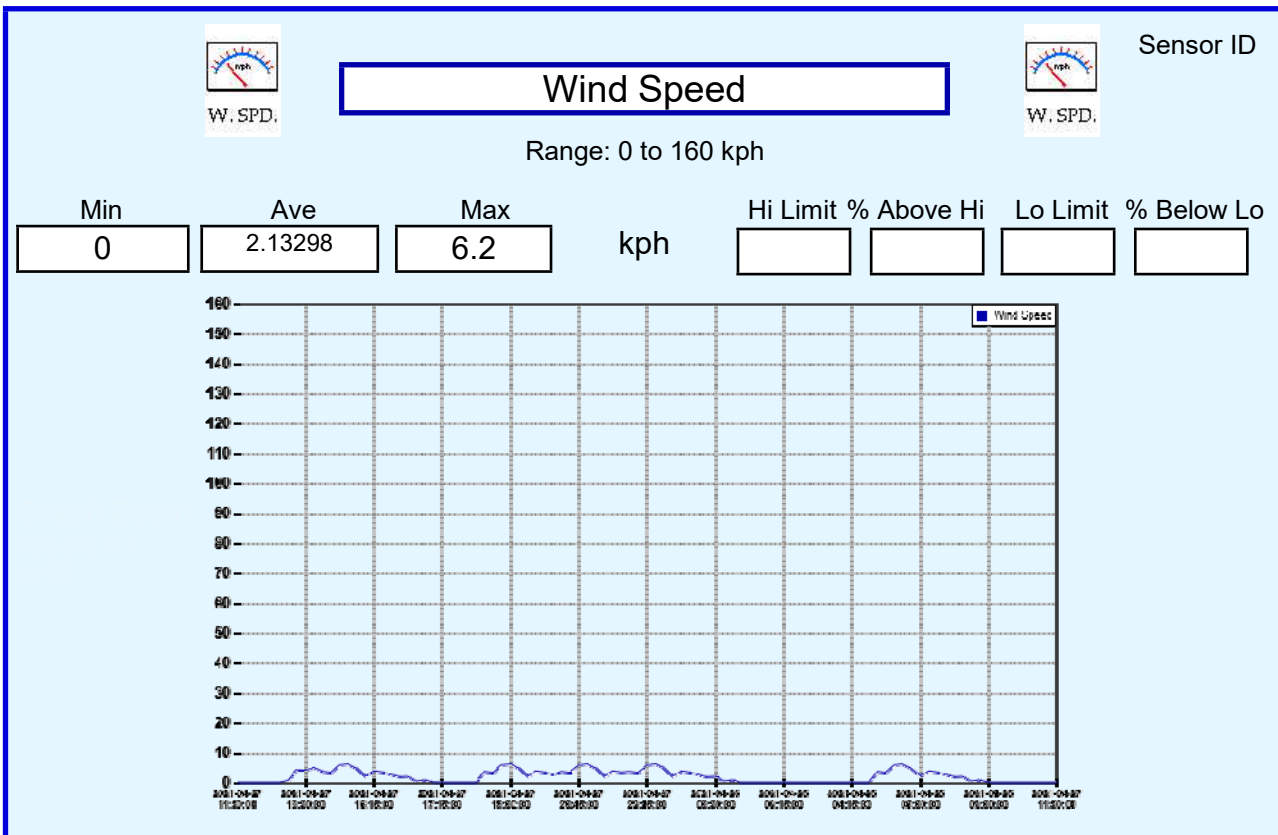
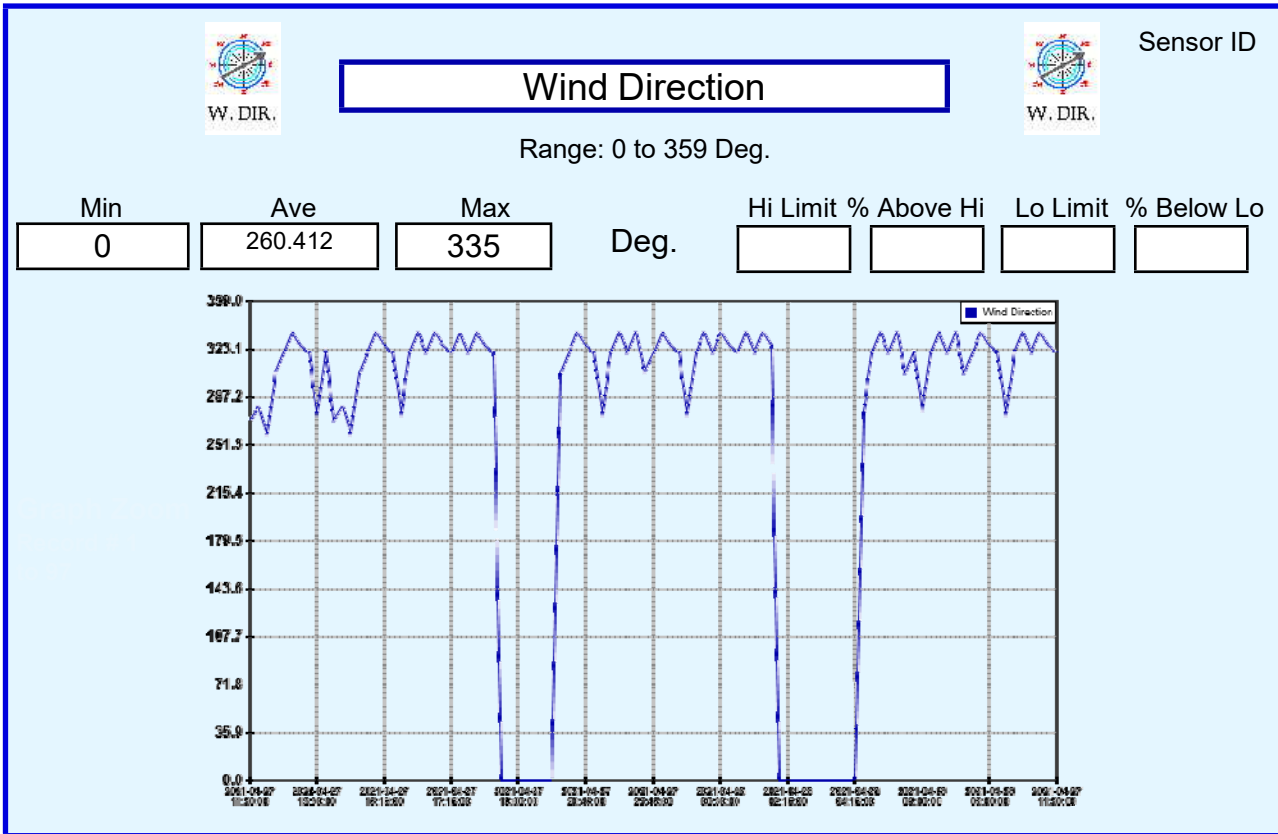
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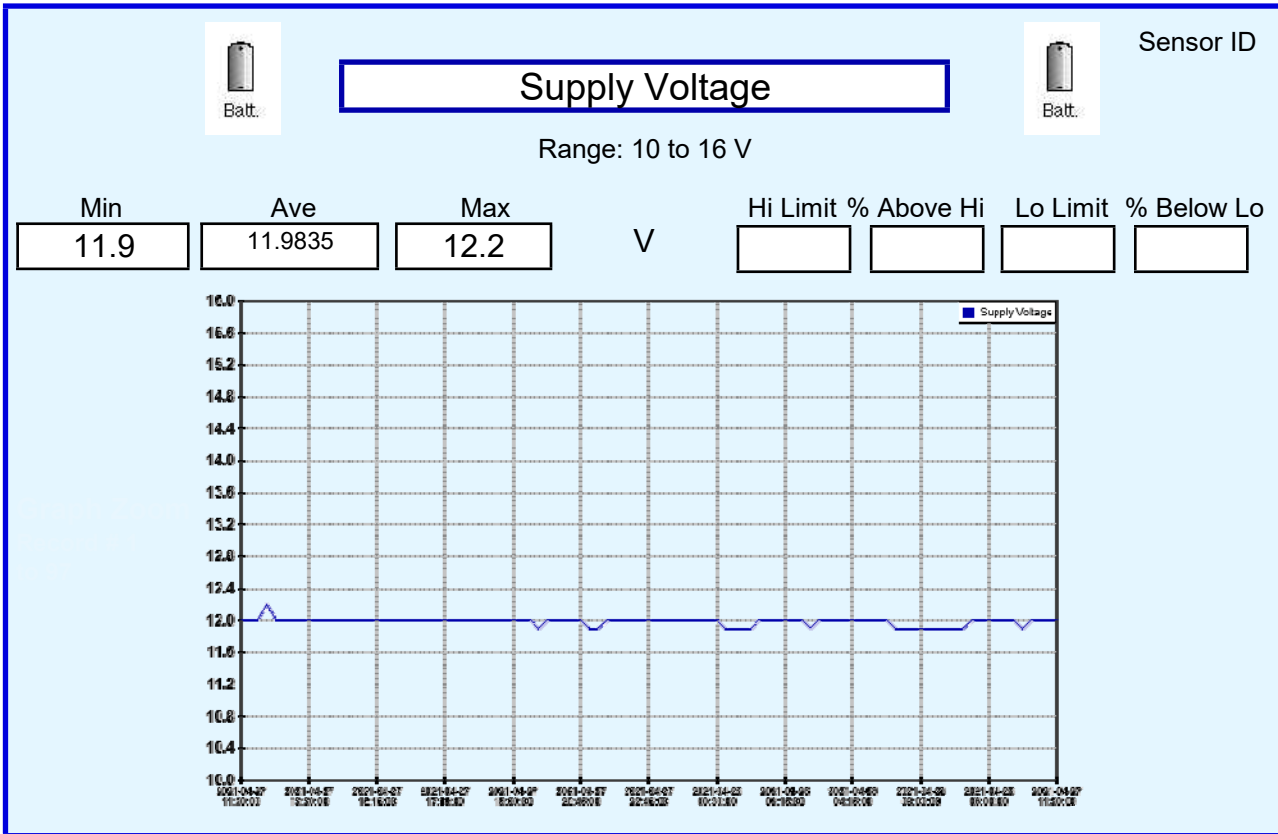
Environmental Report

Start: 12/22/2021 10:30 AM End: 12/23/2021 10:30 AM

Collected by:

Logger ID **912005**

Record Count **97**





Environmental Report

Record Cnt 97

12/22/2021

Start Date

10:30:00 AM

End Date

12/23/2021

10:30:00 AM

	NH3 ppm	CO2 ppm	CO mg/m3	H2S ppb	CH4 ppm	NO2 ug/m3	O3 ug/m3	PM10 uG/m3	PM25 uG/m3	RH %	SO2 ug/m3	TmpC Deg. C	VOCS ppb	WDir Deg.	WSpM kph	Pwr V
Ave	3.74123	379.453	.902061	27.2680	44.0515	23.8350	18.6701	24.3092	12.1030	82.0927	7.75979	27.2783	52.6391	260.412	2.13298	11.9835
Max	8	467	1.7	44	98	39	40	37	23	100	14	29	90	335	6.2	12.2
Min	1	301	0	10	20	10	14	11	5	70	0	26	0	0	0	11.9

Comments

Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



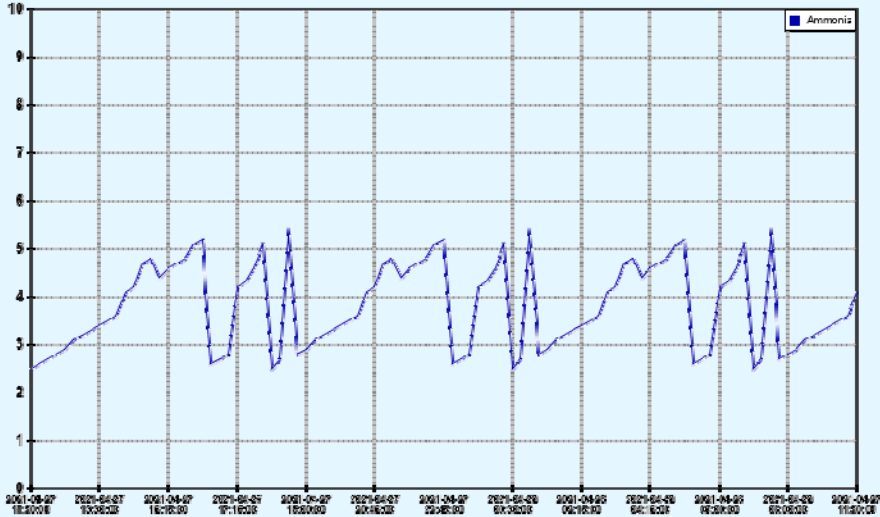
Ammonia



Sensor ID

Range: 0 to 100 ppm

Min	Ave	Max	Hi Limit % Above Hi	Lo Limit % Below Lo
2.5	3.79381	5.3		



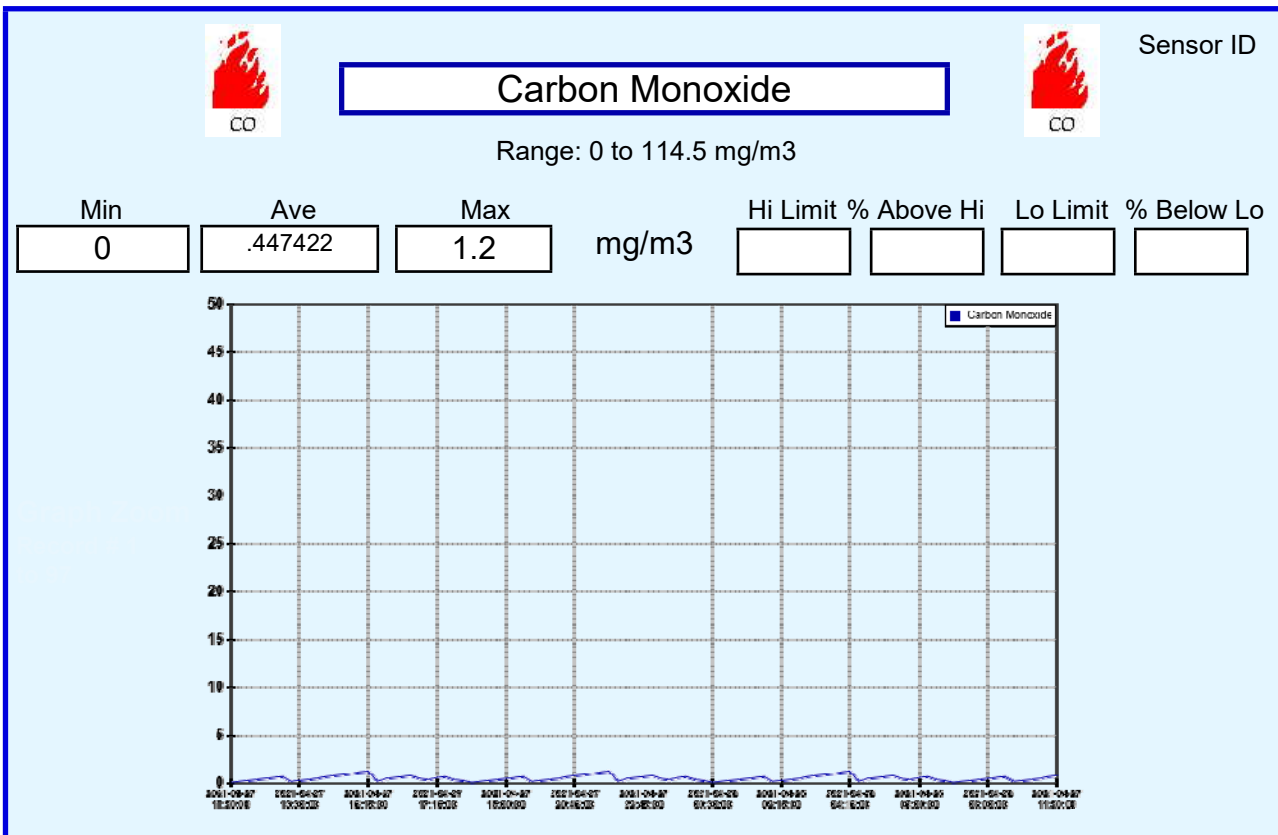
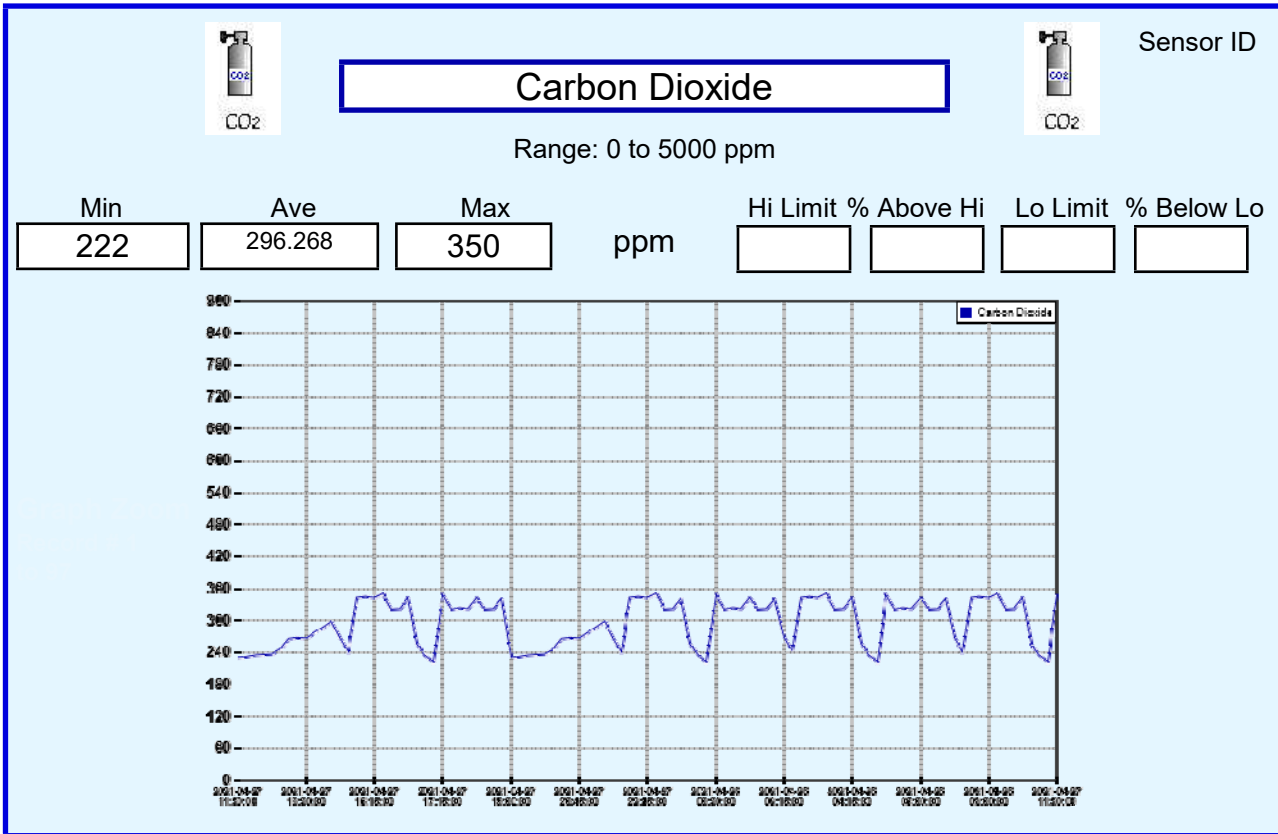
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Logger ID **912005**

Record Count **97**



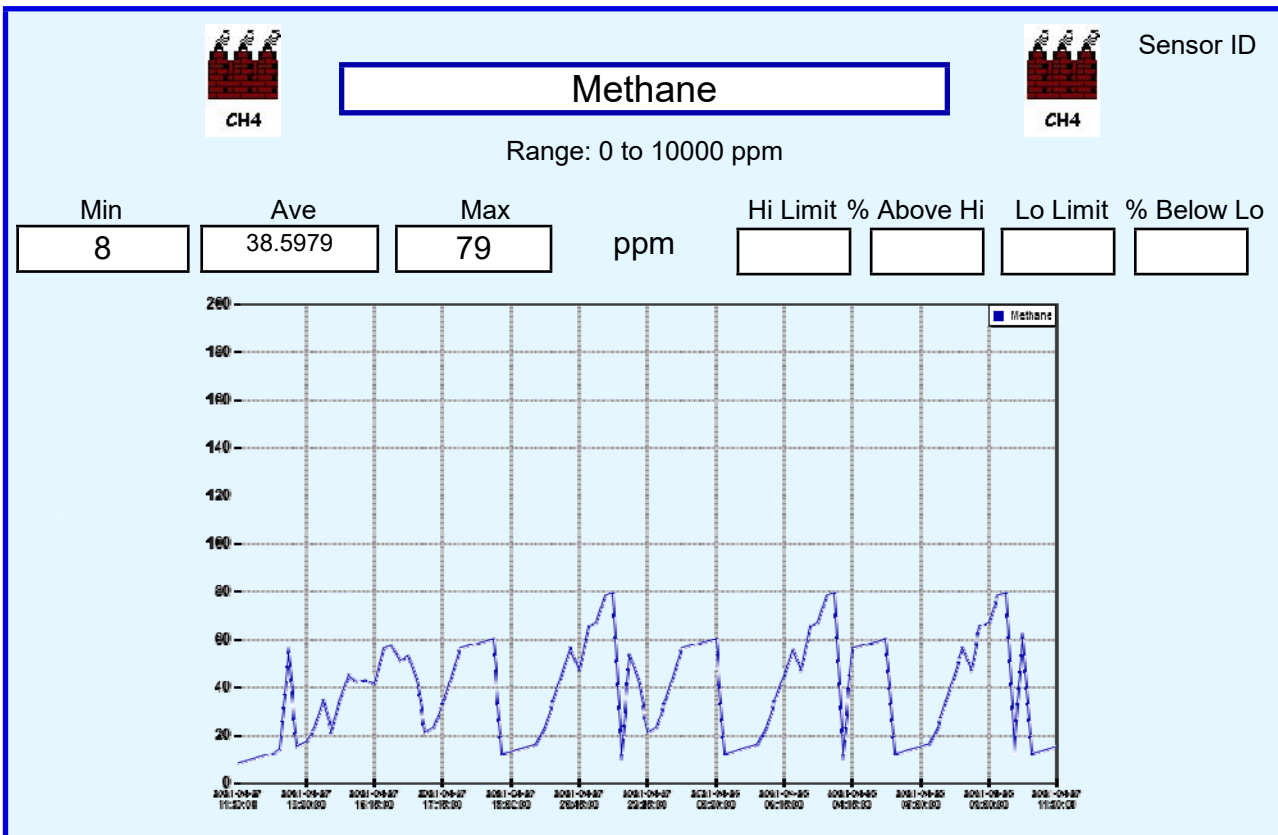
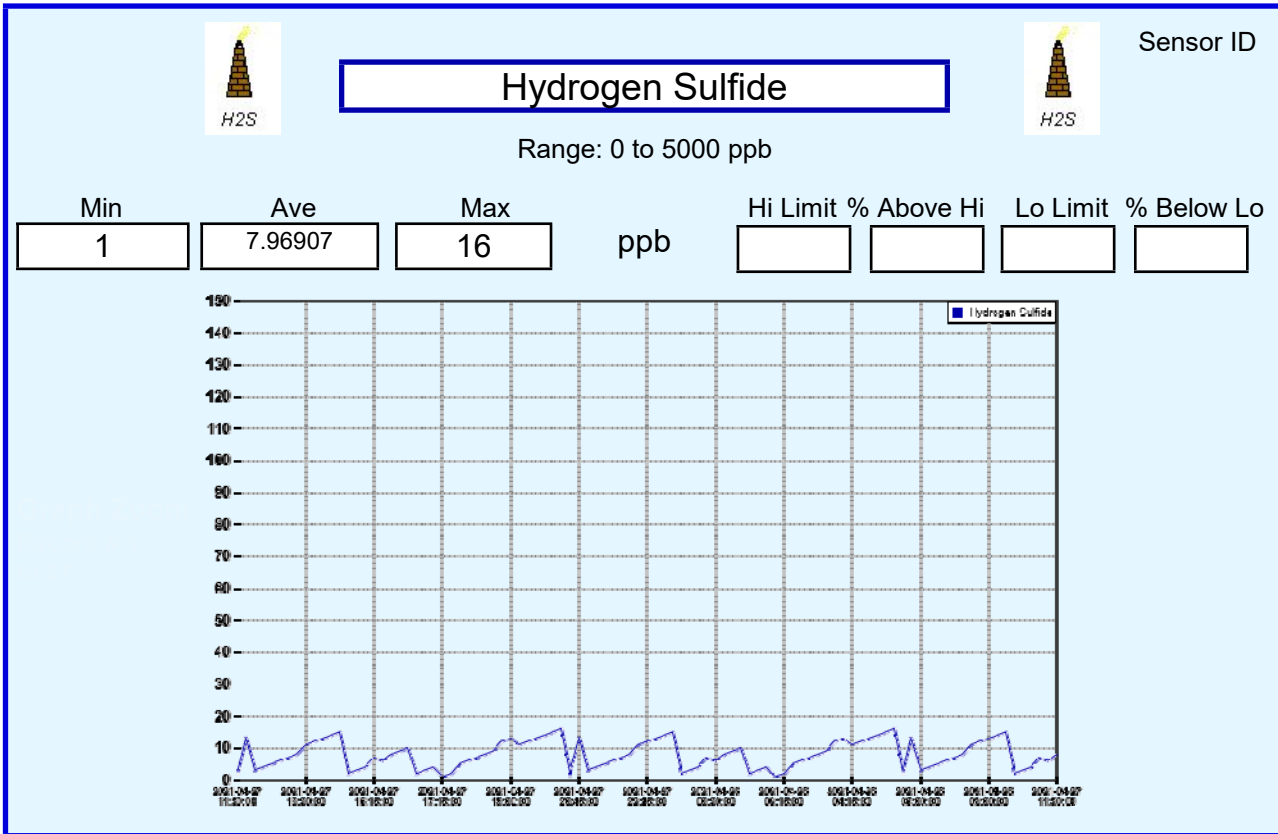
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



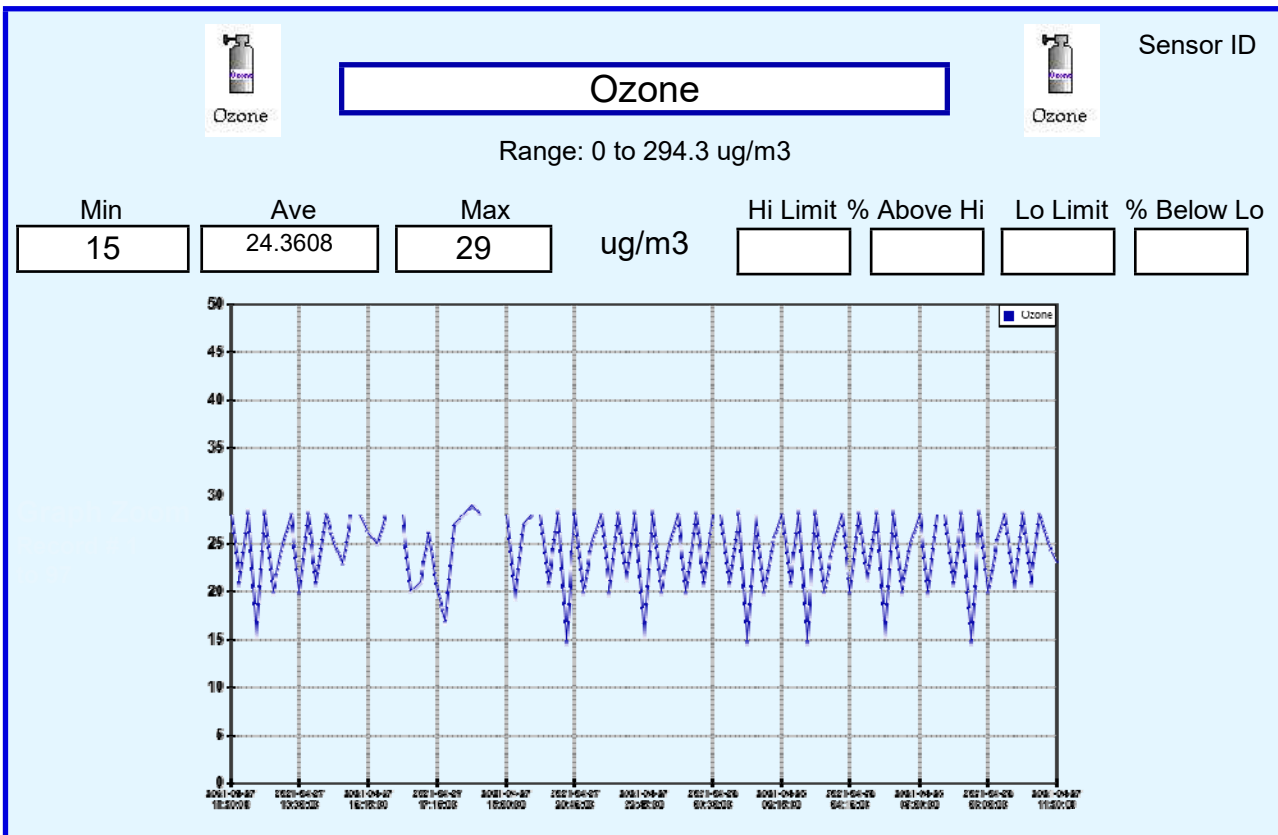
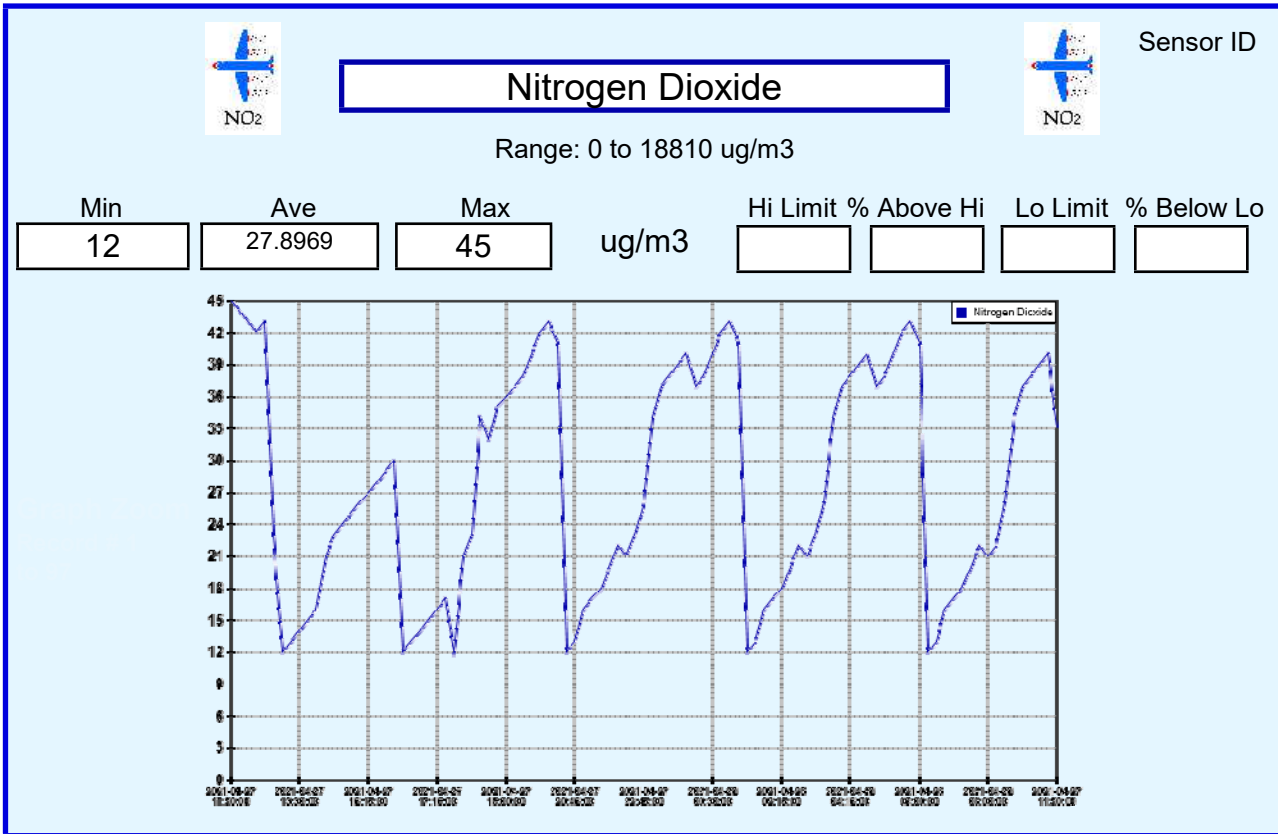
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



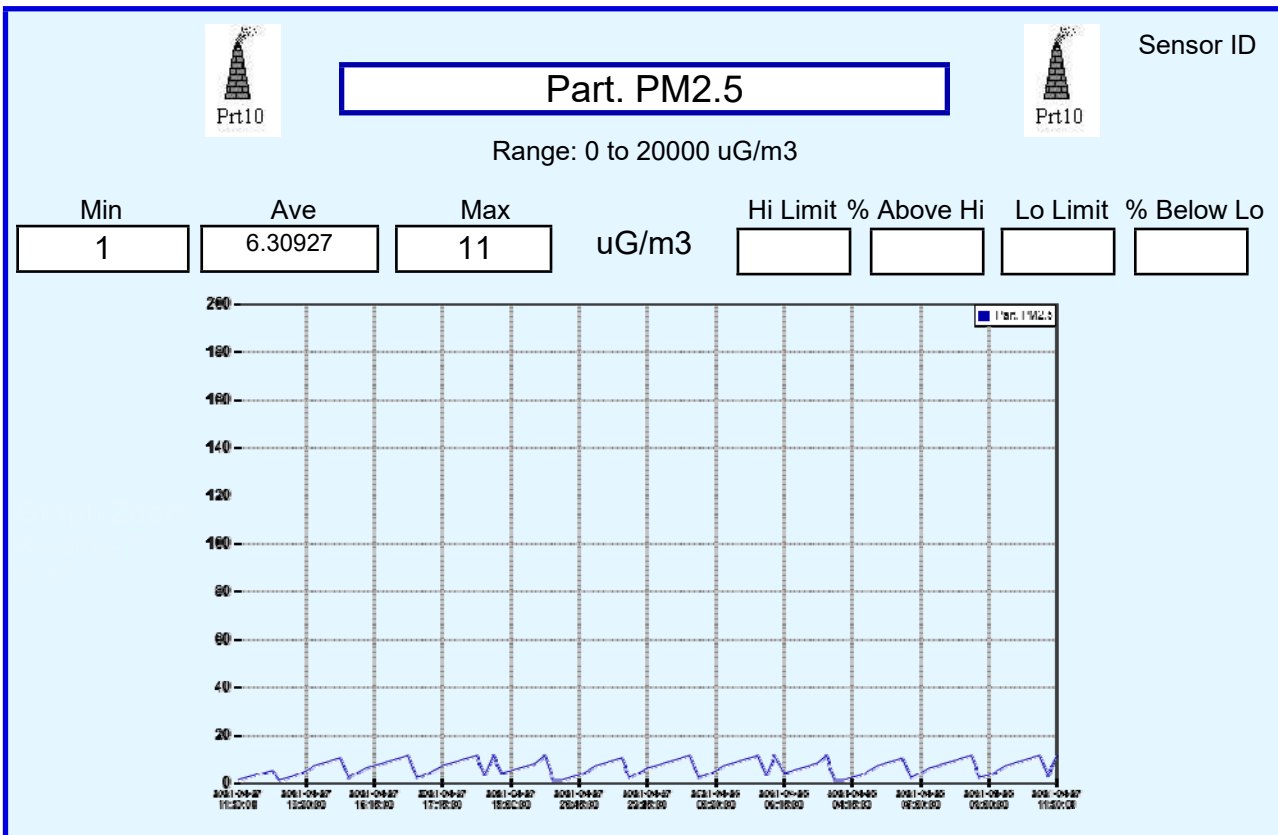
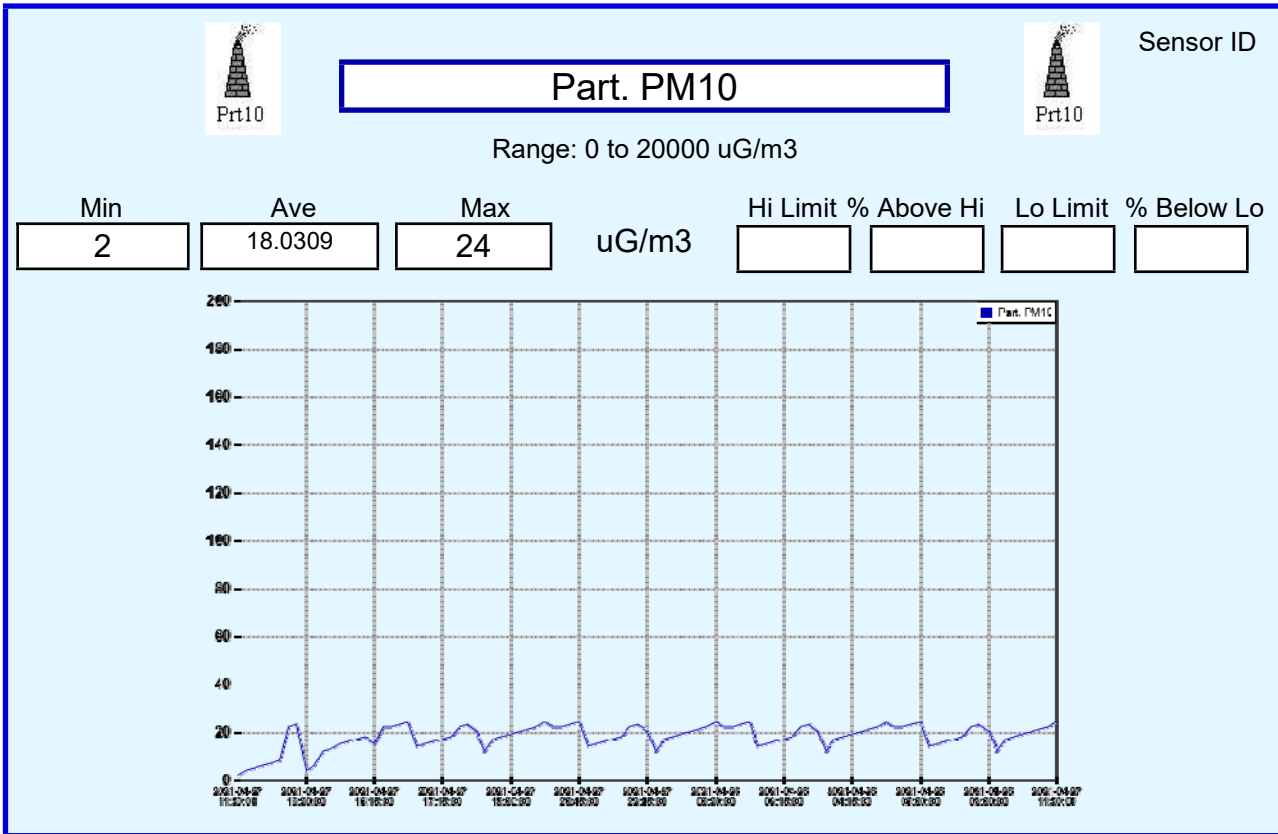
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



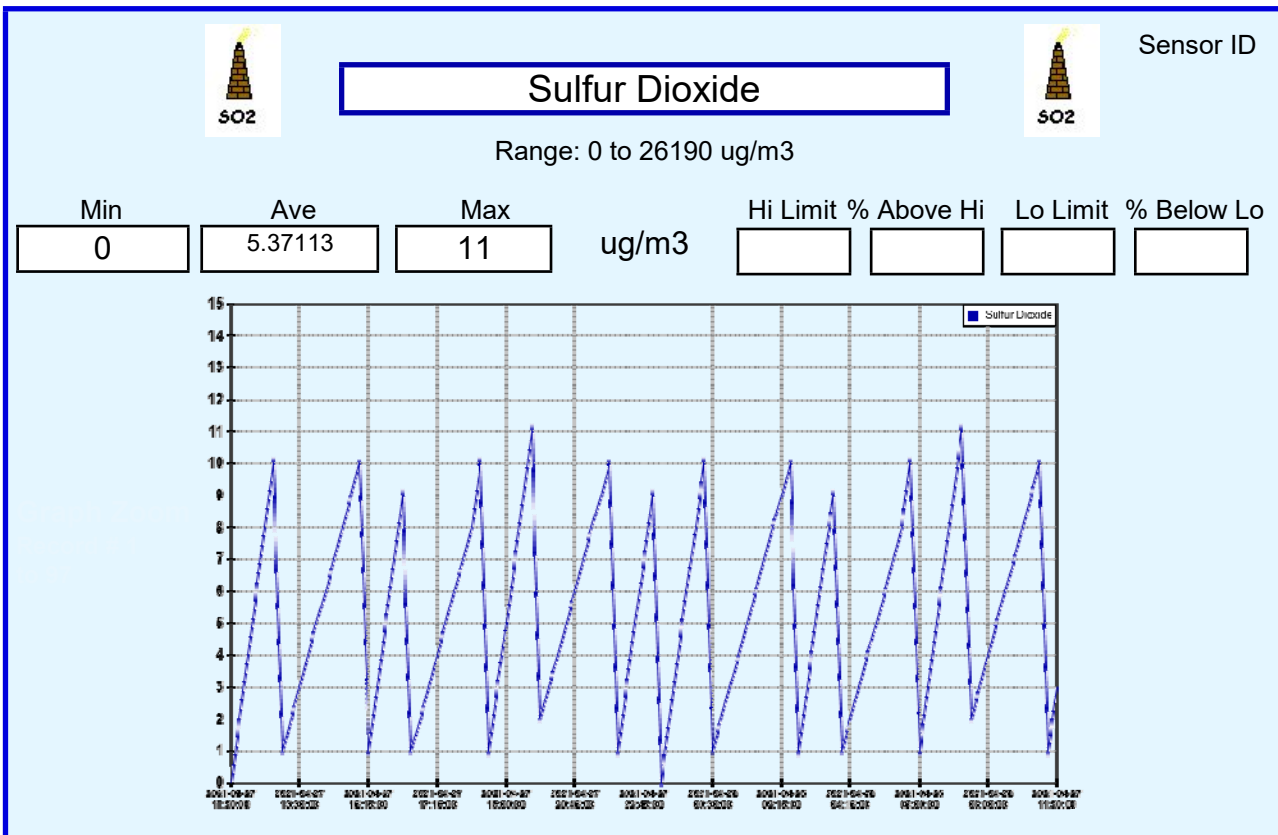
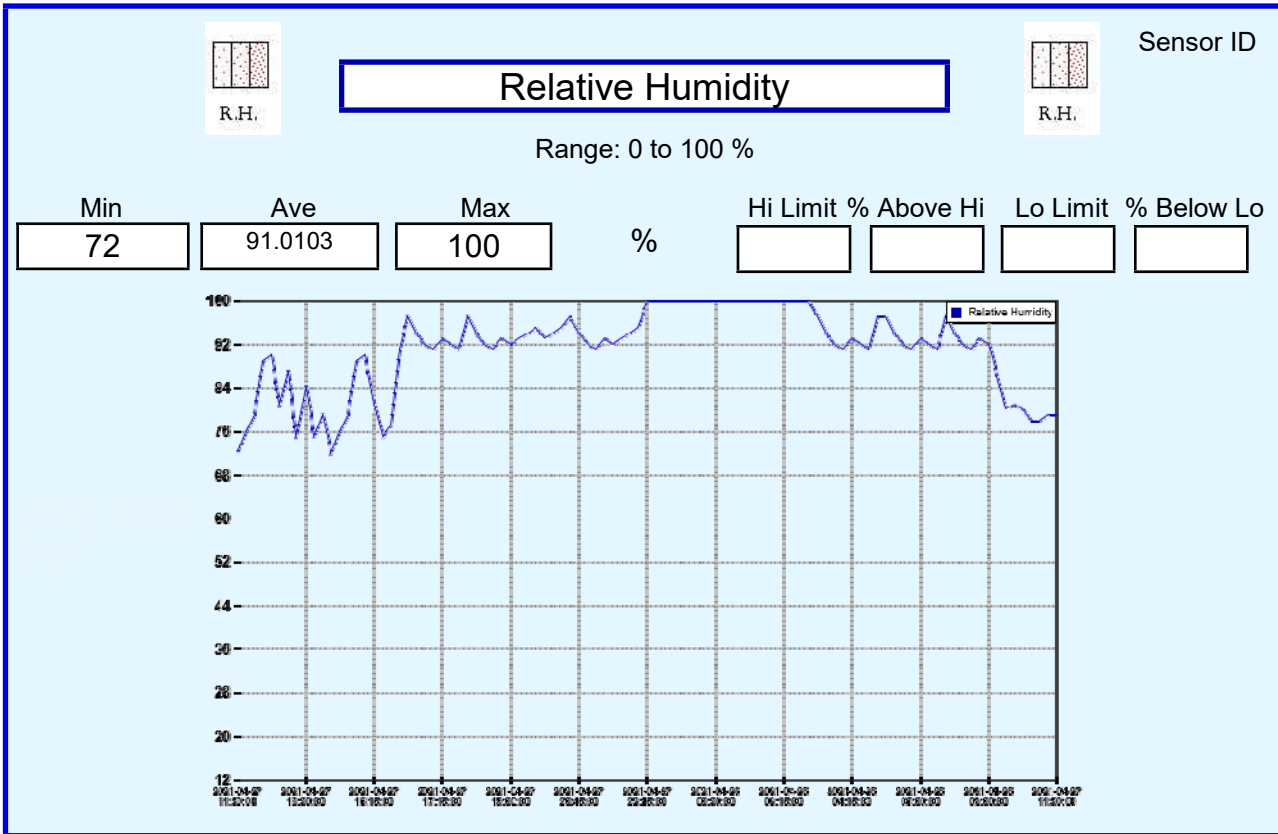
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



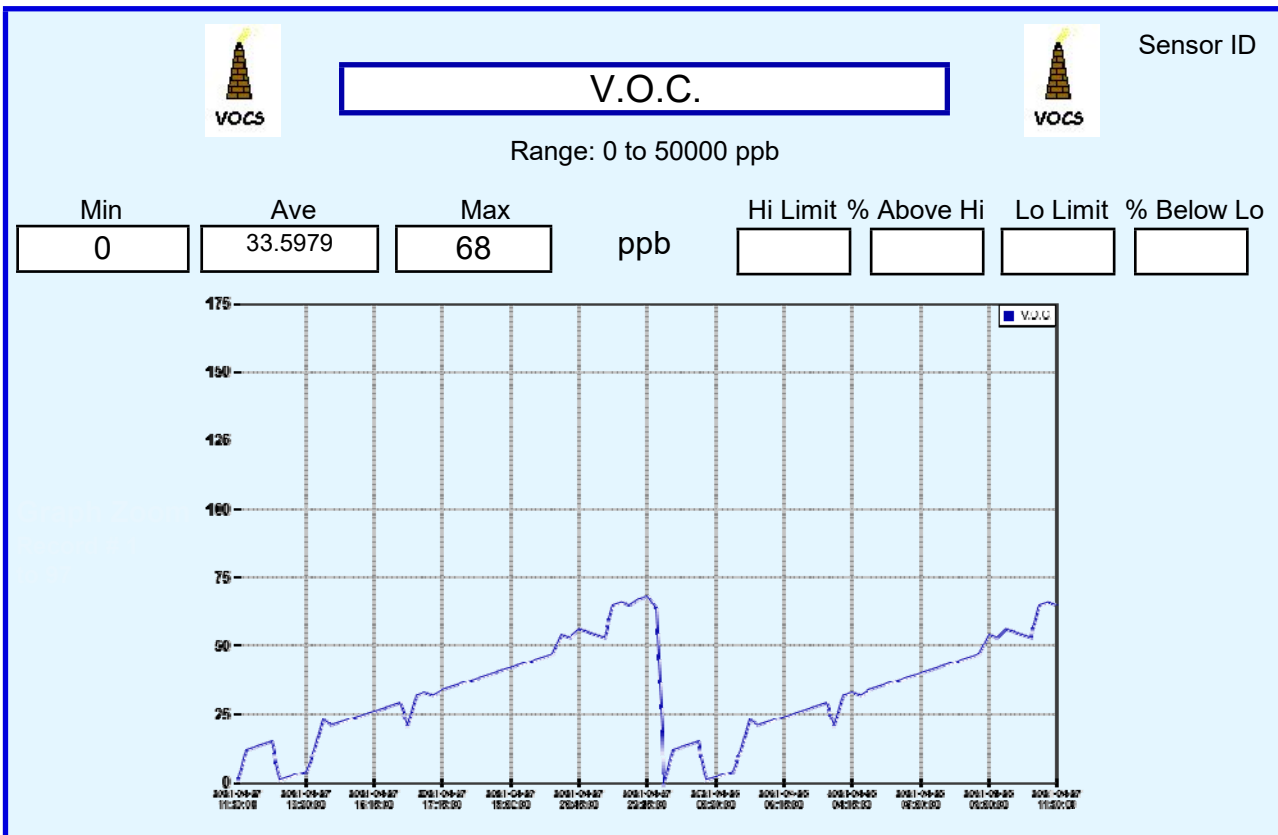
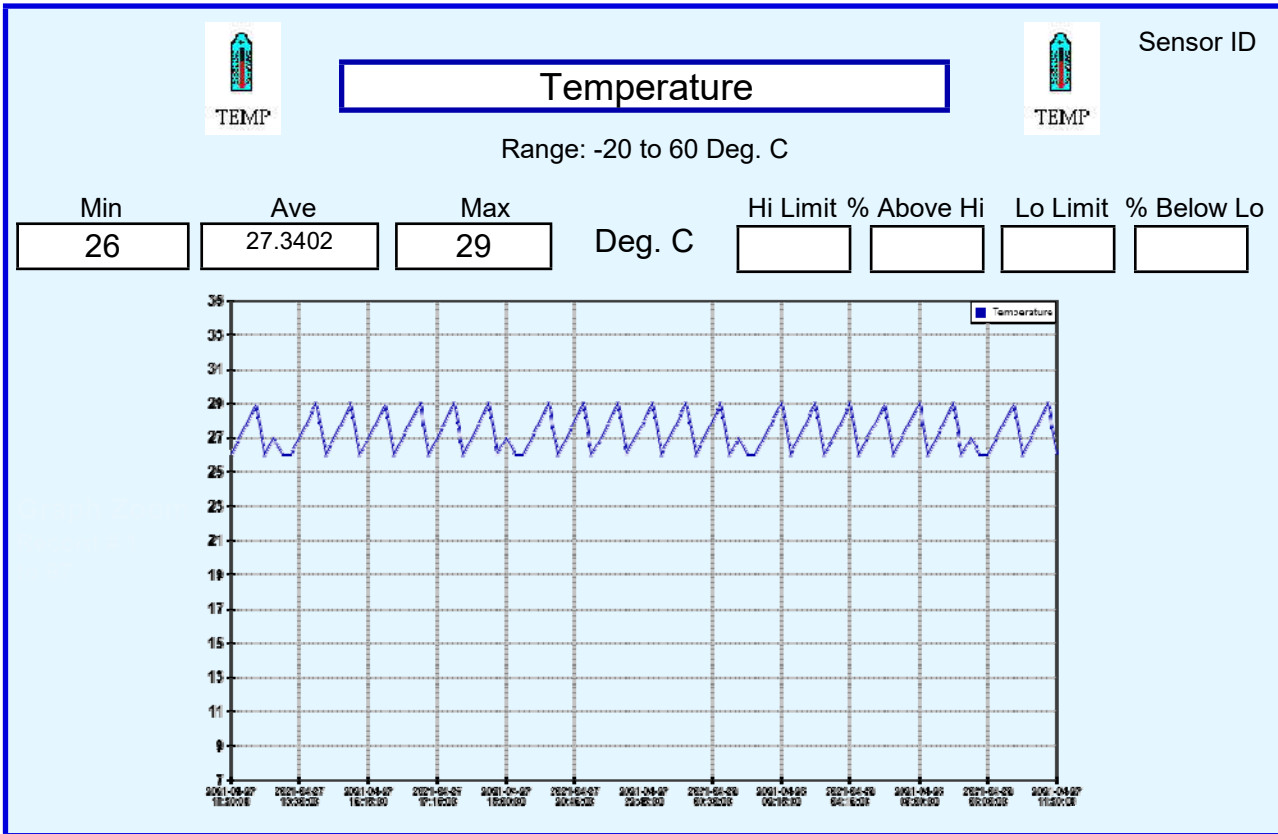
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



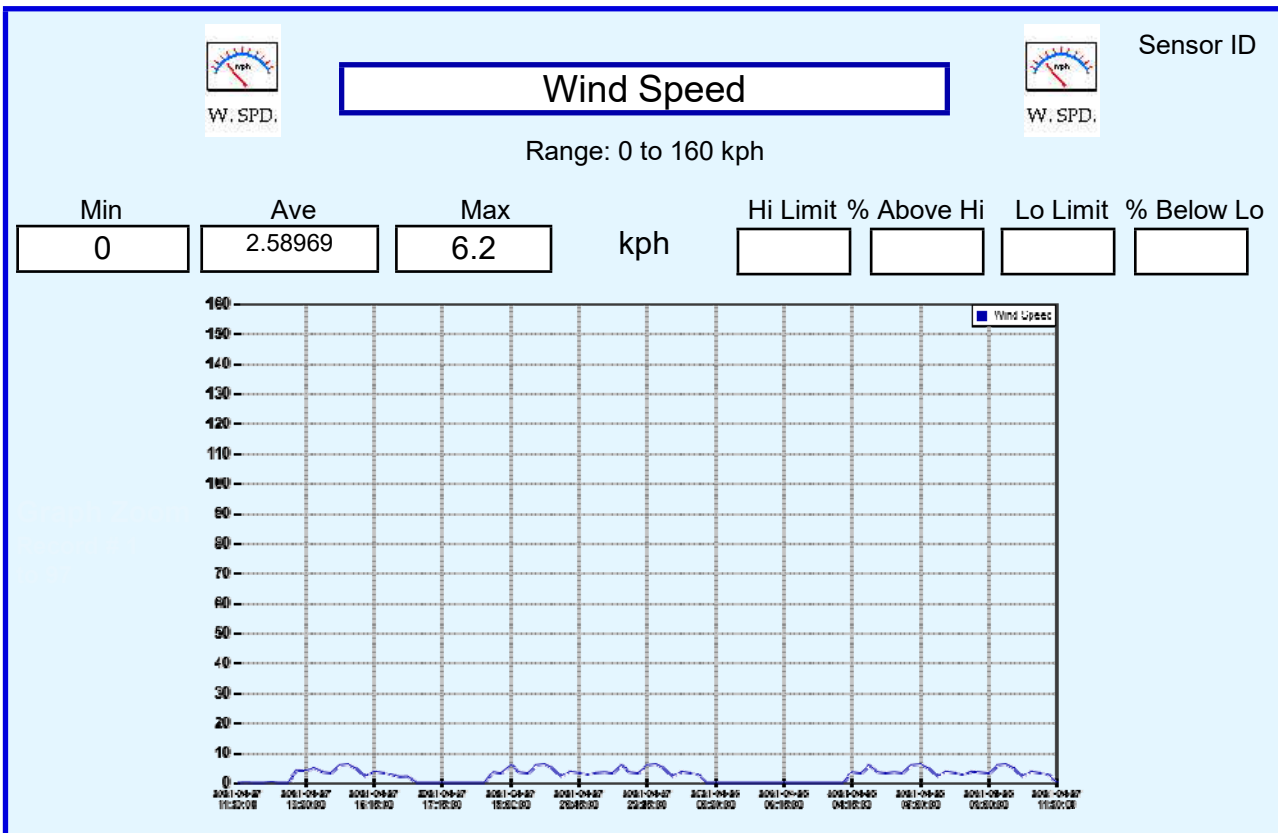
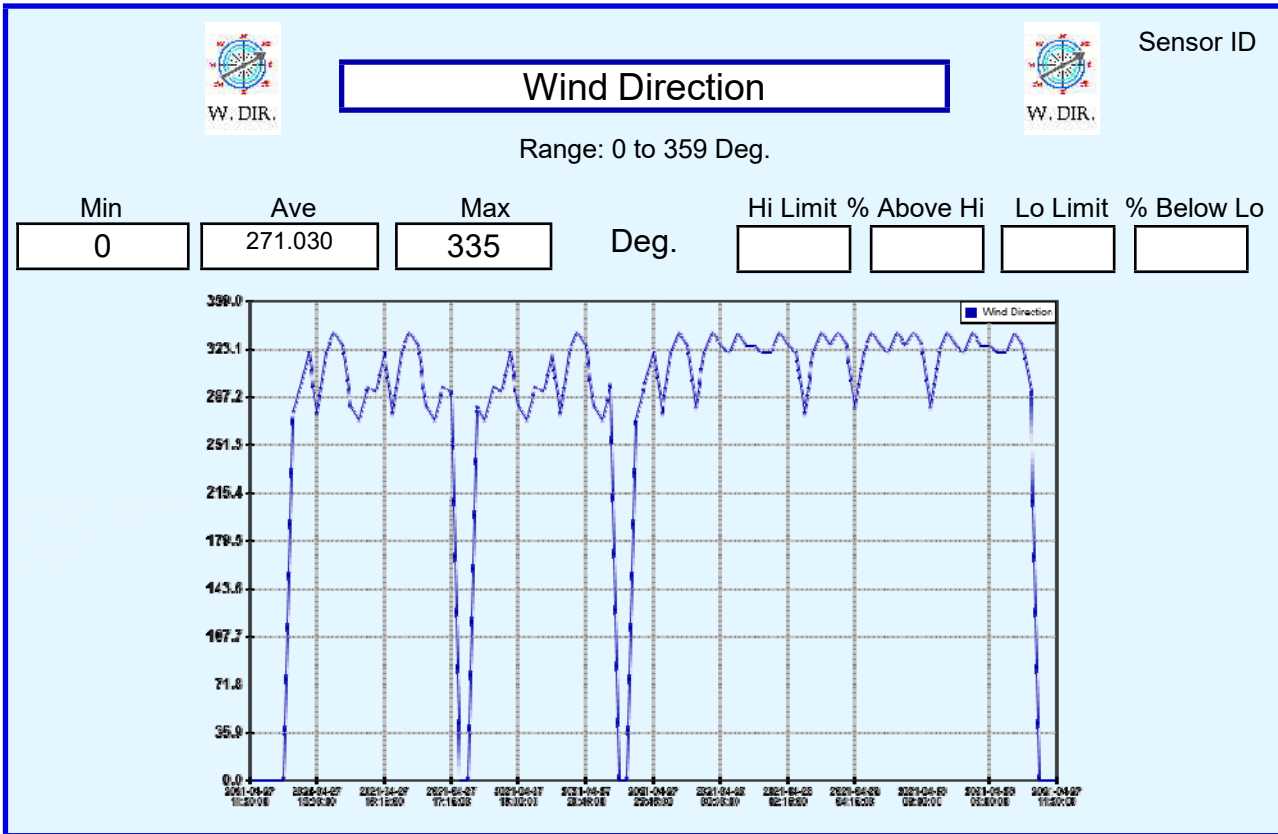
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**



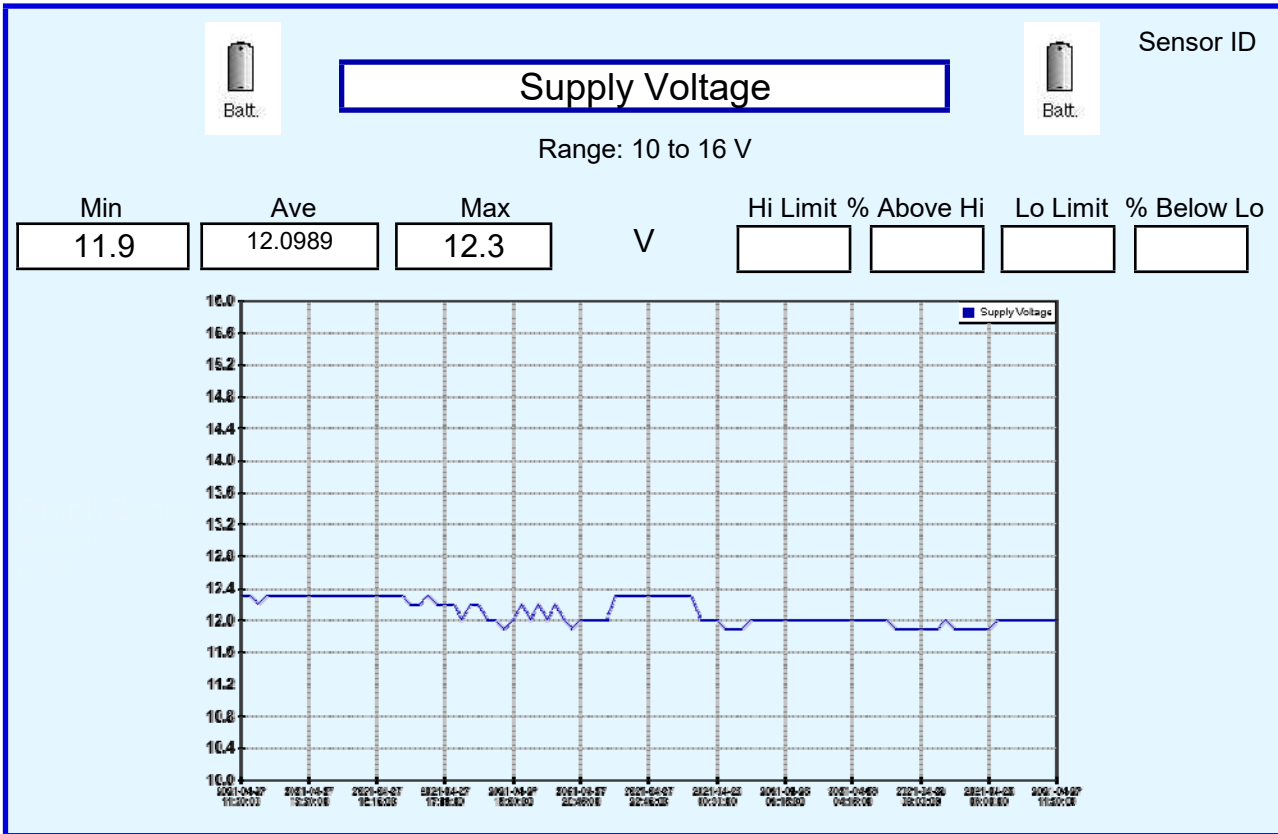
Environmental Report

Start: 12/23/2021 12:30 PM End: 12/24/2021 12:30 PM

Collected by:

Logger ID **912005**

Record Count **97**





Environmental Report

Record Cnt 97

12/23/2021

Start Date

12:30:00 PM

End Date

12/24/2021

12:30:00 PM

	NH3 ppm	CO2 ppm	CO mg/m3	H2S ppb	CH4 ppm	NO2 ug/m3	O3 ug/m3	PM10 uG/m3	PM25 uG/m3	RH %	SO2 ug/m3	TmpC Deg. C	VOCS ppb	WDir Deg.	WSpM kph	Pwr V
Ave	3.79381	296.268	.447422	7.96907	38.5979	27.8969	24.3608	18.0309	6.30927	91.0103	5.37113	27.3402	33.5979	271.030	2.58969	12.0989
Max	5.3	350	1.2	16	79	45	29	24	11	100	11	29	68	335	6.2	12.3
Min	2.5	222	0	1	8	12	15	2	1	72	0	26	0	0	0	11.9

Comments