

Initial Environmental Examination (IEE) Report

For

Construction of Canal (Channel 1) of June Cement Plant



Proposed by;



June Cement Industry Ltd.

Prepared by;

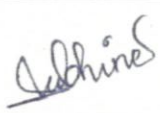




E Guard Environmental Services

December, 2019

Report Review Form

Report Title: Initial Environmental Examination (IEE) Report For Construction of Canal (Channel 1) of June Cement Plant	
Report Version: 00 Version	
Proponent: June Cement Industry Ltd. No.80, Saya San Road, Bahan Township, Yangon Region tinoo.june@gmail.com Tel: +95 9 795551179	Prepared by; E Guard Environmental Services Co., Ltd. No. (145 - A2 - A3), Thiri Mingalar Street, Ward No. (4), 8 mile, Mayangone Township, Yangon 11062, Myanmar Tel: +95 9 653332, 1 9667757 Fax: +95 1 9667757 E-mail: info@eguardservices.com URL: www.eguardservices.com Mobile +959 797005161

Prepared by: Daw Le Win Khine <div style="text-align: center;">1</div>	Position: Consultant
Submitted Date: 12/12/2019	Signature: 
Checked by: U Soe Min	Position: Consultant
Checked Date: 13/12/2019	Signature: 
Summary: IEE Report This document presents the Initial Environmental Examination (IEE) as required for providing services by Construction of Canal (Channel 1) of June Cement Plant Project	Approved by: 

Distribution:

- ☐ Internal
- ☒ Public
- ☐ Confidential

Disclaimer

This report has been prepared by third party; E Guard Environmental Services Co., Ltd. for June Cement Industry Ltd. for the project of Construction of Canal (Channel 1) of June Cement Plant located at near Kawt Pa Naw Village, Kyaikmaraw Township, Mawlamyine District, Mon State, Myanmar. The report preparation was done inside the framework of Myanmar EIA procedure 2015.

The analysis works had been done based on the provided data of the proposed plan of project from (the client) and onsite observation of environmental parameters guide by Myanmar Government Environmental Authority, Environmental Conservation Department, hereinafter ECD.

The impact assessment and mitigation measure are prepared based on the facts and figures of detail plan/ process of the project obtained from (the client).

Moreover, this report has been prepared in line with the prevailing active laws, rules, procedure, guidelines, and standards etc. of Myanmar legal system on (December/ 2019).

The drawings, sketches, maps and other illustrative figures in this report are for the demonstrative/ descriptive purposes only and not to be considered as approved boundary nor accepted territory nor recognized properties extend of any kind.

In case of dual or multiple meanings of the wordings, those wordings should be interpreted as relevant meaning to the concerned areas of discussed in this report.

The individual/ personal, organizational and commercial data and information found in this report are included based on the concerned authority's requirement. The privacy and trade secrets concerned are to be addressed to the concerned authority ECD.

Table of Contents

LIST OF FIGURES	v
LIST OF TABLES	vii
LIST OF ABBREVIATIONS	ix
အကျဉ်းချုပ်အစီရင်ခံစာ	1
1 . EXECUTIVE SUMMARY	5
2 . PROJECT DESCRIPTION.....	9
2.1 Background of the Project	9
2.2 Approval of Government Agencies for Channel 1	10
2.3 Project Location and Size	10
2.4 Construction Process and Technology.....	14
2.5 Operation Process and Technology	16
2.6 Utilities.....	18
2.7 Project alternative	21
3 . IDENTIFICATION OF THE PROJECT PROPONENT	23
3.1 Project Proponent Description	23
3.2 Information of Investment	25
3.3 Investment Plan.....	25
4 . IDENTIFICATION OF THE IEE EXPERTS	26
5 . POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK.....	28
5.1 National Laws and Regulations	28
5.2 Legal Commitments of Project Proponent on Relevant Laws.....	29
5.2.1 The Protection and Preservation of Cultural Heritage Regions Law (2019).....	29
5.2.2 Forest Law (2018)	29
5.2.3 Protection of Biodiversity and Protected Area Law (2018)	29
5.2.4 Myanmar Investment Rules (2017)	29
5.2.5 Myanmar Investment Law (2016)	30
5.2.6 Payment of Wages Law (2016)	31
5.2.7 Environmental Impact Assessment Procedure (2015).....	31
5.2.8 National Environmental Quality (Emission) Guidelines (2015)	32
5.2.9 Myanmar Fire Force Law (2015)	33

5.2.10 Environmental Conservation Rules (2014)	33
5.2.11 Employment and Skill Development Law (2013)	33
5.2.12 Minimum Wages Law (2013)	33
5.2.13 Conservation of Water Resources and Rivers Rules (2013)	34
5.2.14 Environmental Conservation Law (2012)	34
5.2.15 Settlement of Labour Disputes law (2012)	35
5.2.16 Social Security Law (2012)	35
5.2.17 Farm Land Law (2012)	35
5.2.18 Vacant, Fallow and Virgin Lands Management Law (2012)	36
5.2.19 Constitution 2008	36
5.2.20 Conservation of Water Resources and Rivers Law (2006)	36
5.2.21 Freshwater Fisheries Law (1991)	37
5.2.22 Public Health Law (1972)	37
5.2.23 The Canal Act (1905)	37
5.3 International Guidelines and Conventions	37
5.4 Authorized Institutions for the Project	38
5.5 Environmental Policy of June Cement Industry Ltd.	39
6 . DESCRIPTION OF THE SURROUNDING ENVIRONMENT	40
6.1 Methodology of Study	40
6.2 Physical Environment	40
6.2.1 Climate	40
6.2.2 Topography and Watershed Area of Channel 1	40
6.2.3 Earthquake Intensity	41
6.2.4 Flood	41
6.2.5 Hydrology	45
6.2.6 Soil	46
6.2.7 Access and Transportation	46
6.3 Sediment Characteristics	46
6.4 Air Quality	48
6.5 Water Quality	52
6.6 Noise Level	55
6.7 Wind Speed and Direction	57

6.8 Ecosystem	58
6.9 Socio-economic Environment.....	58
6.9.1 Demographic Profile.....	58
6.9.2 Economic Profile	59
6.9.3 Socia-economic Survey	60
7 . IDENTIFICATION AND ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS	62
7.1 Objectives of the Study	62
7.2 Phases of the Project	62
7.3 Assessment Methodology	62
7.4 Potential Impacts of Proposed Project	63
7.5 Potential Impacts and Their Significance	64
7.6 Mitigation Measures of Potential Impacts for Project Phases	71
7.6.1 Mitigation for Aesthetic Feature of Land	71
7.6.2 Mitigation for Air Pollution.....	72
7.6.3 Mitigation for Noise Level and Vibration	73
7.6.4 Mitigation for Water Pollution	73
7.6.5 Mitigation for Soil Contamination	74
7.6.6 Mitigation for Changes in Flow Regimes.....	74
7.6.7 Mitigation for Flora & Fauna and Aquatic Ecology.....	75
7.6.8 Local Socio-Economic Conditions	75
7.6.9 Occupational Health and Safety	76
7.6.10 Waste Disposal	77
8 . RESULTS OF THE PUBLIC CONSULTATION	79
8.1 Public Participation Processes	79
8.2 Comments of the Public and Project Proponent's Responses	80
9 . ENVIRONMENTAL MANAGEMENT PLAN.....	82
9.1 Institutional Requirements	82
9.2 Environmental Management Plan.....	83
9.3 Environmental Monitoring Plan	96
9.4 Fire Protection and Firefighting Plan.....	99
9.5 Emergency Preparedness and Response Plan	99

9.6 Corporate Social Responsible Plan.....	105
9.7 Community Grievance Redress Mechanism.....	106
10 . CONCLUSIONS AND RECOMMENDATIONS	107
10.1 Conclusion	107
10.2 Recommendations for Future Works	108
ANNEXES	109
Annex 1 Commitment of June Cement Industry Ltd.....	109
Annex 2 Commitment of E Guard Environmental Services.....	110
Annex 3 License of Canal Construction from DWIR.....	111
Annex 4 Recommendation of Land Ownership, from Kyaikmaraw Township GAD	114
Annex 5 Application to Use The Paddy Land by Other Means	115
Annex 6 Letter of DALMS, Mon State to Use the Paddy Land by Other Means	121
Annex 7 Farmland Form 15 - The Permit to Use the Paddy Land by Other Means	122
Annex 8 Site Photos in March 2019	123
Annex 9 Photo Records for Quality Measurements	124
Annex 10 Sediment Quality Result (1)	126
Annex 11 Surface Water Quality Result (1)	128
Annex 12 Groundwater Water Quality Result (1)	132
Annex 13 Layout of Drainage System of Channel 1	136
Annex 14 Public Consultation	137
Annex 15 CSR Programs undertaken by June Cement Industry Ltd. (2011 -2018).....	159
Annex 16 CSR Photo Records.....	160
REFERENCES	164

LIST OF FIGURES

Figure 2.1 Location map of proposed canal project in Kyaikmaraw Township, Mon State ...	10
Figure 2.2 Location of Channel 1	11
Figure 2.3 Status of the existing creek and its vicinity in March 2019	11
Figure 2.4 General layout plan of canal and cement plant	12
Figure 2.5 Cross section of channel 1	12
Figure 2.6 Plan of Channel 1	13
Figure 2.7 Construction Process of the Channel 1	14
Figure 2.8 Project Implementation Program of Channel 1 for EPC	16
Figure 2.9 Process Buildings of Channel 1	17
Figure 2.10 Example of operation process of Channel 1	18
Figure 2.11 Water treatment system for tube well water	18
Figure 2.12 Location of alternative jetty of Channel 1	22
Figure 3.1 Branch Office of June Cement Industry Ltd. in Mawlamyine Town.....	24
Figure 3.2 Hierarchy of Head office management of June Cement Industry Ltd.....	24
Figure 6.1 Topography and Watershed Area of Channel 1	41
Figure 6.2 Inundated areas of Flood 2002 in Kyaikmaraw Township (Source: MIMU)	42
Figure 6.3 Flood Affected Areas in Mon State in August 2019	43
Figure 6.4 Flooded Areas in Kyaikmaraw Township in August 2019	43
Figure 6.5 Landslide at Thae Phyu Kone on 9 August 2019	44
Figure 6.6 Flood Inundated Areas Around Channel 1 Project Site	45
Figure 6.7 Main Rivers in Kyaikmaraw Township	45
Figure 6.8 Location of Sediment Sampling Point.....	46
Figure 6.9 Haz-Scanner (EPAS)	48
Figure 6.10 Location of Air Quality Measurement	48
Figure 6.11 PM Results in Channel 1 Area in March 2019.....	50
Figure 6.12 Fluctuation of Air Pollutants During Dial Cycle in Channel 1 Area	50
Figure 6.13 Ozone Measurement in Channel Area in March 2019	51
Figure 6.14 Location of Surface Water Quality Measurement.....	52
Figure 6.15 Location of Ground Water Quality Measurement.....	52
Figure 6.16 Water Sampling Bottle	53
Figure 6.17 Digital Sound Level Meter	55

Figure 6.18 Noise Level at Channel	56
Figure 6.19 Davis Vantage Pro2 Wireless Weather Station	57
Figure 6.20 Wind Speed and Wind Direction (Blowing From) at Channel 1	57
Figure 6.21 Wind Class Frequency Distribution at Channel	57
Figure 6.22 Key Informant Interview for Socio-economic Survey	61
Figure 7.1 Potential of Impact of Channel 1	64
Figure 7.2 Impact's Significance in Project Phases	71
Figure 7.3 Green Belt Plantation of June Cement Industry Ltd.	72
Figure 7.4 Nursery Plants (Kantkaw and Khayay) for Green Belt Development	72
Figure 7.5 Location of Waste Water Treatment Plant (yellow highlighted)	78
Figure 9.1 Safety Flyer for Emergency Fire	101
Figure 9.2 Safety Flyer for Emergency Earthquake	102
Figure 9.3 Things for A Flood Emergency Kit.....	103
Figure 9.4 Flood Awareness Poster	104
Figure 9.5 Landslide Awareness Poster.....	105
Figure 9.6 Grievance Redress Mechanism	106

LIST OF TABLES

Table 2.1 Relevant Criteria for IEE and EIA of Proposed Project Type	9
Table 2.2 Construction Schedule of Channel 1	15
Table 2.3 Domestic Water Requirement for Construction and Operation of Channel 1	19
Table 2.4 Equipment for Construction and Operation of Channel 1	19
Table 2.5 Construction Work Volume and Quantity of Construction Materials	20
Table 2.6 Human Resources for Channel 1	21
Table 3.1 Project Proponent Information.....	23
Table 3.2 Investment plan for the whole project of June Cement Plant	25
Table 5.1 International Environmental Treaties and Agreements Signed By Myanmar Government.....	38
Table 6.1 Flood Affected Areas in Myanmar (as of 16 August 2019)	42
Table 6.2 Sediment Quality for Channel 1	47
Table 6.3 Ambient Air Quality of National Environmental Quality (Emission) Guidelines ..	49
Table 6.4 Air Quality Measurement for Channel 1 in March 2019.....	49
Table 6.5 Ozone Measurement	50
Table 6.6 Observed Ambient Air Quality Results for Selected Point	51
Table 6.7 Water Quality Parameters for both Surface Water and Ground Water of Channel.	53
Table 6.8 Effluent Levels for Ports, Harbours and Terminals of NEQG	53
Table 6.9 Surface Water Quality for Channel 1	54
Table 6.10 Ground Water Quality for Channel 1	55
Table 6.11 Noise level of National Environmental Quality (Emission) Guidelines.....	55
Table 6.12 Observed Values of Noise Level Measurement at Channel	56
Table 7.1 Impact Assessment Parameters and Its Scale	62
Table 7.2 Impact of Significance.....	63
Table 7.3 Potential Environmental Impacts, Project Activities, and Impact's Significance....	65
Table 7.4 Significance of Potential Impacts	71
Table 8.1 Participants List of Public Consultation	79
Table 8.2 Comments of the Public and Project Proponent's Responses	80
Table 9.1 HSE Team Structure of June Cement Industry for Channel 1	82
Table 9.2 Environmental Management Plan of Channel 1 of June Cement Plant.....	84
Table 9.3 Estimated Costs for Mitigation Measures of Channel 1	96

Table 9.4 Monitoring Plan of Environmental Quality for Channel 1	97
Table 9.5 Fire Emergency Evacuation Plan.....	99

LIST OF ABBREVIATIONS

Abbreviation	Description
°C	Degree Celsius
µg/m ³	microgram per cubic meter
ACGIH	American Conference of Governmental Industrial Hygienists
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
As	Arsenic
BOD	Biochemical Oxygen Demand
Cd	Cadium
CEM I and CEM II	type of cement to be produce by June Cement Industry Ltd.
CFU	colony-forming unit
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COD	Chemical Oxygen Demand
Cr	Chromium
CSR	Corporate Social Responsibility
Cu	Copper
DALMS	Department of Land Management and Statistics
dB (A)	Decibels A weighted
DO	Dissolved Oxygen
DWIR	Directorate of Water Resources and Improvement of River Systems
E (location)	East
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
g	acceleration of gravity
GAD	General Administration Department

Abbreviation	Description
HCFC	Hydro chlorofluorocarbons
HFC	Hydro fluorocarbons
Hg	Mercury
HSE	Health, Safety and Environment
HSE	Health, Safety and Environment
IEE	Initial Environmental Examination
IFC	International Finance Corporation
ISQG	Interim sediment quality guideline
kg	kilogram
km ²	square kilometer
l/c/d	liter per capita per day
Laeq	the A-weighted equivalent continuous sound level in decibels measured over a stated period of time
m	meter
mg	milligram
mg/l	milligram per liter
MIC	Myanmar Investment Commission
mm	millimeter
MOECF	Ministry of Environmental Conservation and Forestry
MONREC	Ministry of Natural Resources and Environmental Conservation
MOTC	Ministry of Transports and Communications
MSDS	Material Safety Data Sheet
MW	Mega Watt
N (location)	North
N	Nitrogen
NEQG	National Environmental Quality (Emission) Guidelines
Ni	Nickel
NO ₂	Nitrogen Dioxide
nos.	numbers
NTU	Nephelometric turbidity units
O ₃	Ozone

Abbreviation	Description
P	Phosphorus
Pb	Lead
PCB	Polychlorinated biphenyls
PM ₁₀	Particulate matters equal to or less than 10µm
PM _{2.5}	Particulate matters equal to or less than 2.5µm
ppb	part per billion
PPE	Personal Protective Equipment
ppm	part per million
PVC	Polyvinyl Chloride
RL	Reduced level
RO	Reverse osmosis
SO ₂	Sulphur Dioxide
TCU	True colour units
TSS	Total suspended solids
w/w	weight by weight
WHO	World Health Organization

အကျဉ်းချုပ်အစီရင်ခံစာ

အဆိုပြုထားသော တူးမြောင်းအမှတ်(၁) စီမံကိန်းသည် ဇွန် ဘီလပ်မြေ စက်မှုလက်မှုနှင့် ထုတ်လုပ်မှုလီမိတက်မှ တည်ဆောက်မည့် ဘီလပ်မြေစက်ရုံလုပ်ငန်း၏ အပိုင်းတစ်ခုဖြစ်ပါသည်။ စီမံကိန်းသည် မွန်ပြည်နယ်၊ မော်လမြိုင်ခရိုင်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီး၊ ကိုဩဒီနိတ်အမှတ် 16°C 22' 40.21" N နှင့် 97°C 46' 57.34" E ရှိ စုစုပေါင်း (၈၈၉.၉၆) ဧက ကျယ်ဝန်းသော မြေကွက်ပေါ်တွင် တည်ရှိပါသည်။ ရာနှုန်းပြည့် မြန်မာနိုင်ငံသားရင်းနှီးမြှုပ်နှံမှု ဖြစ်ပြီး အစုရှယ်ယာရှင်များမှ ထည့်ဝင်ငွေ (၃၀) ရာခိုင်နှုန်းနှင့် ချေးငွေ (၇၀) ရာခိုင်နှုန်းဖြင့် လုပ်ငန်းလည်ပတ်မည် ဖြစ်ပါသည်။ တူးမြောင်းအမှတ်(၁) စီမံကိန်းအတွက် မြေဧရိယာ (၁၈.၁၃) ဧက (၇၃,၃၆၀ စတုရန်းမီတာ) ကို အသုံးပြုပါမည်။ တူးမြောင်းဖောက်လုပ်ခွင့်နှင့် မြေအသုံးပြုခွင့် များလည်း ရရှိထားပြီး ဖြစ်ပါသည်။ အပြိုင်အနေအထား တည်ဆောက်ထားသော တာတမံနှစ်ခု ကြား၌ တူးမြောင်း ဖောက်လုပ်ပါမည်။ တည်ဆောက်ရေးကာလ (၁) နှစ်၊ ရင်းနှီးမြှုပ်နှံမှုကာလ နှစ် (၃၀) ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ညွှန်ကြားချက်နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ် ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းတွင် ဖော်ပြထားသော ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစားအရ တူးမြောင်းအမှတ်(၁) စီမံကိန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းကို ဆောင်ရွက်ကာ ဤ အစီရင်ခံစာကို ရေးသားပြုစုခြင်းဖြစ်ပါသည်။ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း၏ ရည်ရွယ်ချက် မှာ စီမံကိန်း၏လုပ်ငန်းဆောင်ရွက်ချက်များကြောင့် သဘာဝပတ်ဝန်းကျင်နှင့် လူသားများအပေါ် ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများကို ဖော်ထုတ်ရန်၊ ထိုသက်ရောက်မှုများ၏ ထိခိုက်နိုင်မှု အဆင့်ကို ဆန်းစစ်ရေးအခြေခံအချက်များနှင့်တကွ ဖော်ပြရန်နှင့် ထိခိုက်မှုလျော့ပါးရေး အစီအစဉ် များကို ရေးဆွဲဆောင်ရွက်ရန် ဖြစ်ပါသည်။

၂၀၁၉ ခုနှစ်၊ မတ်လတွင် ဆောင်ရွက်ခဲ့သည့် ကွင်းဆင်းတိုင်းတာမှုများအရ လေထု၌ အမှုန် ပါဝင်မှုပမာဏသည် ခြောက်သွေ့သောနေရာသီဖြစ်၍ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ NEQG တန်ဖိုးထက် အနည်းငယ်မြင့်မားနေသည်ကို တွေ့ရှိရပါ သည်။ မြစ်ကြမ်းပြင်နုန်းထဲတွင် နီကယ်ပါဝင်မှုပမာဏသည် ANZECC/ARMCANZ, 2000 လမ်းညွှန်ချက်တန်ဖိုးထက် အနည်းငယ်မြင့်မားနေပါသည်။ ၎င်းမှာ သဘာဝ သို့မဟုတ်/ နှင့် လူတို့ ဆောင်ရွက်ချက်များကြောင့် ဖြစ်နိုင်ပြီး ရေနုဓာတ်စနစ်အပေါ် သက်ရောက်မှုရှိ၊ မရှိကို သိရှိနိုင်ရန် မှာမူ ရာသီအလိုက်တိုင်းတာမှုများနှင့် အဆိပ်အာနိသင်စမ်းသပ်ခြင်း စသည့် သီးခြားလေ့လာမှုများ လိုအပ်ပါမည်။ မြေပေါ်ရေ (တူးမြောင်းအမှတ်(၁) တည်ဆောက်မည့် ချောင်း၏) တွင် ရေ၌ မပျော် ဝင်ဘဲ မျောပါသောအရာဝတ္ထုများ၏ စုစုပေါင်းပါဝင်မှုသည် NEQG တန်ဖိုးထက် မြင့်မားနေပြီး ၎င်းကို ခဲ စေခြင်း၊ အနည်ကျစေခြင်း၊ ကော့ဖြင့် စစ်ထုတ်ခြင်း၊ ကလိုရင်း၊ အိုဇုန်း၊ ခရမ်းလွန် ရောင် ခြည်ဖြတ်ကာ ပိုးသတ်ခြင်းတို့ဖြင့် သန့်စင်နိုင်ပါသည်။ မြေအောက်ရေတွင် အမှိုက်ပါဝင်မှုသည်

လည်း NEQG တန်ဖိုးထက် အနည်းငယ်မြင့်မားနေရာ အလားတူနည်းလမ်းများဖြင့် သန့်စင်နိုင်ပါသည်။ စီမံကိန်းဧရိယာရှိ ဆူညံမှုအဆင့်သည် NEQG သတ်မှတ်ချက်အတွင်း ရှိပါသည်။

စီမံကိန်း၏လုပ်ငန်းဆောင်ရွက်ချက်များကြောင့် တည်ဆောက်ရေး၊ လုပ်ငန်းလည်ပတ်ခြင်း၊ လုပ်ငန်းရပ်စဲခြင်းကာလများတွင် ပတ်ဝန်းကျင်၊ ဂေဟစနစ်၊ လူသားများနှင့် အညစ်အကြေးစွန့်ပစ်မှုအပေါ် သက်ရောက်မှု ရှိနိုင်ပါသည်။ စီမံကိန်း၏လုပ်ငန်းဆောင်ရွက်ချက်များ၊ ၎င်းတို့၏ သက်ရောက်မှုနှင့် ထိခိုက်မှုလျော့ပါးရေး အစီအစဉ်များကို အောက်ပါဇယားတွင် အကျဉ်းချုပ် ဖော်ပြထားပါသည်။

ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှု	ထိခိုက်မှုလျော့ပါးရေးဆောင်ရွက်ချက်
လေထုညစ်ညမ်းမှု	<ul style="list-style-type: none"> ဖုန်ပျံလွင့်သောနေရာများတွင် ရေဖြန်းခြင်း၊ ယာယီအုပ်ဆိုင်းထားခြင်း။ တည်ဆောက်ရေးပစ္စည်းများကို ဖုံးအုပ်၍ ယာဉ်ဖြင့်သယ်ယူခြင်း။ ဖုန်မထစေရန် ယာဉ်၏အမြန်နှုန်းကို ထိန်းချုပ်ခြင်း။ မီးခိုးထုတ်စနစ်ကောင်းမွန်သော ယာဉ်များကို သုံးခြင်း။ အမှိုက်မီးရှို့ခြင်းကို တားမြစ်ခြင်း။ ပုံမှန်အလုပ်ချိန်အတွင်း အကောင်းဆုံးတည်ဆောက်ရေး နည်းလမ်းများဖြင့် ဆောင်ရွက်ခြင်း။ ဖုန်ကာပစ္စည်းများ၊ ကောင်းမွန်သော လေဝင်လေထွက်စနစ်၊ လေအေးပေးစနစ်များ ထားရှိခြင်း။ သက်ဆိုင်ရာဌာနက သတ်မှတ်ထားသော ရေယာဉ်အမျိုးအစားကိုသာ အသုံးပြုခြင်း။
ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> ထိန်းချုပ်ရေးစနစ်ကောင်းသော စက်များ၊ လုပ်ငန်းခွင်ကာကွယ်မှု၊ ဆူညံသံဟန့်တားသည့် ပစ္စည်းများ အသုံးပြုခြင်း။ ဒီဇယ်မီးစက်ကို အသံလုံစွာ ထားခြင်း။ ဆူညံသောနေရာတွင် လုပ်ရသော အလုပ်သမားများကို အလှည့်ဖြင့် လုပ်စေခြင်း။ နားကြပ်ကဲ့သို့ အကြားအာရုံကာကွယ်ရေးကိရိယာများ ပံ့ပိုးခြင်း။ သစ်ပင်စိုက်ခင်းများဖြင့် ဆူညံသံလျော့ပါးရေးဧရိယာများ ထား ခြင်း။
ရေထုညစ်ညမ်းမှု	<ul style="list-style-type: none"> မိုးရာသီတွင် မြေကြီးလုပ်ငန်း မဆောင်ရွက်ခြင်း။ ညစ်ညမ်းရေများ အတ္ထရိုမြစ်တွင်း မဝင်စေရန် ရေတားတံ တည်ဆောက်ခြင်း။ ရေဆိုးများကို လက်ရှိရေဆိုးမြောင်းအတွင်းသို့ စွန့်ပစ်ခြင်း။ အလုပ်သမားများအတွက် ယာယီအိမ်သာများ ထားပေးခြင်း။ ဆီနှင့်အမဲဆီများသယ်ရာနှင့် သိုလှောင်ရာတွင် စိမ့်တားပစ္စည်းများ သုံးခြင်း။ ဆီနှင့်အမဲဆီသုံးသောနေရာများတွင် စိမ့်တားကြမ်းခင်း ထား ခြင်း။ ရေထိန်းတံ၊ ရေမြောင်း၊ ရေကျော်၊ ရေတံခါးပါသည့် ရေစီးဆင်းမှုစနစ်ကို တည်ဆောက်ခြင်း။ မြေပေါ်စီးဆင်းရေအားလုံးကို ရေမြောင်းများမှတစ်ဆင့် တူးမြောင်းနှင့် အပြိုင် တည်ရှိနေသော ရေသွင်းမြောင်းထဲသို့ စီးစေခြင်း။

ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှု	ထိခိုက်မှုလျော့ပါးရေးဆောင်ရွက်ချက်
ရေထုညစ်ညမ်းမှု အဆက်	<ul style="list-style-type: none"> ဆီဖိတ်စဉ်မှု ပြန်လည်ကုစားရေးအစီအစဉ် ရေးဆွဲဆောင်ရွက်ခြင်း။ လောင်စာနှင့်ဆီများ၏ Material Safety Data Sheets (MSDS) ထားရှိခြင်း။ တူးမြောင်းရေ၏အရည်အသွေးကို NEQG သတ်မှတ်ချက်အတိုင်း ထိန်းသိမ်းထားခြင်း။
မြေညစ်ညမ်းမှု	<ul style="list-style-type: none"> မိုးရာသီတွင် မြေကြီးလုပ်ငန်း မဆောင်ရွက်ခြင်းနှင့် မြေတူးနေရာ ရှိ လျှောစောက်များ၏ ခိုင်ခန့်မှုကို ပုံမှန်စစ်ဆေးခြင်း။ ဆီဖိတ်စဉ်မှု ကာကွယ်ရေးပစ္စည်းများ သုံးခြင်း။
ရေစီးဆင်းမှုပုံစံ ပြောင်းလဲခြင်း	<ul style="list-style-type: none"> ယာယီရေတားတံ တည်ဆောက်စဉ် အနည်ပိုချမှုကို ထိန်းချုပ်ရန် နှင့် ရေအမြင့်၊ ရေစီးနှုန်း ပြန်လည်ရရှိရန် သေချာစွာ ရေလွှဲခြင်း။ ညစ်ညမ်းရေများ အတ္တရံမြစ်တွင်း မဝင်စေရန် ရေတားတံ တည်ဆောက်ခြင်း။ ရေဆိုးများကို လက်ရှိရေဆိုးမြောင်းအတွင်းသို့ စွန့်ပစ်ခြင်း။ တူးမြောင်းကြောင့် လျော့နည်းသွားသော ရေပမာဏနှင့် ဆီလျော်သော အနိမ့်ဆုံး ရေစီးနှုန်း သတ်မှတ်ထားရှိခြင်း။ မူလရေစီးမှုပုံစံကို ပြန်လည်ရရှိစေမည့် ရေပမာဏကို ထုတ်လွှတ်ပေးခြင်း။ လိုအပ်သောရေပမာဏကို ထိန်းသိမ်းနိုင်ရန် နှုန်းများကို ဖယ်ရှားခြင်း။
အပင်၊ သတ္တဝါနှင့် ရေဂေဟစနစ်	<ul style="list-style-type: none"> နှုန်းစွန့်ပစ်ရာနေရာနှင့် စွန့်ပစ်သည့်နည်းလမ်းကို သေချာရွေးချယ်ခြင်း။ သက်ဆိုင်ရာဌာနက သတ်မှတ်ထားသော၊ ကောင်းမွန်စွာ ထိန်း သိမ်းပြုပြင်ထားသည့် ရေယာဉ်အမျိုးအစားကိုသာ အသုံးပြုခြင်း။ တူးမြောင်းကြောင့် လျော့နည်းသွားသော ရေပမာဏနှင့် ဆီလျော်သော အနိမ့်ဆုံး ရေစီးနှုန်း သတ်မှတ်ထားရှိခြင်း။ စွန့်ထုတ်အရည်ကို NEQG သတ်မှတ်ချက်အတိုင်း ထိန်းသိမ်းထားခြင်း။ အလုပ်သမားများ၏အမှိုက်၊ အညစ်အကြေးများကို သေချာစွာ စွန့်ပစ်ခြင်း။
ဒေသဆိုင်ရာ လူမှုစီးပွားရေး အခြေအနေ	<ul style="list-style-type: none"> အသိပေးဆိုင်းဘုတ် သို့မဟုတ် မကျေနပ်မှုများကို ပြန်လည်ဖြေ ရှင်းပေးမည့် ကော်မတီမှတစ်ဆင့် ရေယာဉ်အဝင်အထွက် အချိန် ဇယားကို ရေလုပ်သားများအား အသိပေးခြင်း။ ငါးဖမ်းရာသီတွင် ရေယာဉ်သွားလာမှုအကြိမ်အား လျှော့ချခြင်း။ ရေယာဉ်သွားလာနေစဉ်၌ပင် ရှေ့မှ လှေငယ်ဖြင့် ငါးဖမ်းပိုက်ကွန်များတည်နေရာကို အချက်ပြသတိပေးခြင်း။ ဒေသခံလူထု၏မကျေနပ်ချက်များကို အသိပေးနိုင်ရန် တာဝန်ရှိပုဂ္ဂိုလ်၏ ဖုန်းနံပါတ် သို့မဟုတ် အရေးကြီးကိစ္စများအတွက် ဖုန်းနံပါတ်ကို ကြေငြာပေးထား ခြင်း။
လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး	<ul style="list-style-type: none"> ခြံစည်းရိုးနှင့် အန္တရာယ်ကင်းရှင်းရေးအသိပေးဆိုင်းဘုတ်များ တပ်ဆင်ထားခြင်း။ ရှေးဦးသူနာပြုစုခြင်းအပါအဝင် အန္တရာယ်ကင်းရှင်းရေး ဆောင်ရွက်ချက်များ စီမံကိန်းနေရာအတွင်း လုံလောက်စွာ ရရှိနိုင်ခြင်း။ ကျန်းမာရေးဌာနနှင့်အတူ ကာကွယ်ရေးလုပ်ငန်းများကို ဆောင်ရွက်ခြင်း။ အလုပ်သမားများကို တစ်ကိုယ်ရည်ဘေးအန္တရာယ်ကာကွယ်ရေးပစ္စည်းများပေးခြင်း။ အဆိုပါ ပစ္စည်းများအား အသုံးပြုပုံကို သင်တန်းပေးခြင်း။ လုပ်ငန်းခွင်စိတ်ချမ်းမြေ့စေရေးအတွက် လိုအပ်သော အဆောက်အအုံများ ထားရှိပေးခြင်း။

ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှု	ထိခိုက်မှုလျော့ပါးရေးဆောင်ရွက်ချက်
စွန့်ပစ်အစိုင်အခဲ	<ul style="list-style-type: none"> • ရုံးအတွင်းနှင့် လုပ်ငန်းလည်ပတ်ရာနေရာ၌ အမှိုက်ပုံးများ ထားရှိ ပေးခြင်း။ • နောက်ဆုံးစွန့်ပစ်နေရာမတိုင်မီ အမှိုက်များကို စနစ်တကျ စုဆောင်း၊ ထုပ်ပိုး၍ သတ်မှတ်နေရာ၌ ထားခြင်း။ • မလိုလားအပ်သောလုပ်ငန်းခွင်နှင့် ပတ်ဝန်းကျင်သက်ရောက်မှုများကို ရှောင်ရှားရန် အမှိုက်ထားရာနေရာကို နေ့စဉ်သန့်ရှင်းခြင်း။
စွန့်ပစ်အရည်	<ul style="list-style-type: none"> • သင့်တော်ကောင်းမွန်သည့် စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုစနစ်ကို ဆောင်ရွက်ရန်။ • သီးခြားမိလ္လာကန်များ၊ ရေဆိုးသန့်စင်စက်များပါသည့် မိလ္လာနှင့်ရေဆိုးစနစ်ဖြင့် ရေဆိုးများကို စွန့်ထုတ်ခြင်း။ • မိုးရေနှင့် မြေပေါ်ရေများကို အဖုံးမပါ မြေကြီးမြောင်းနှင့် စုဆောင်းသယ်ယူကာ အပြင်ဘက် ရေသွင်းမြောင်းသို့ စီးဆင်းစေခြင်း။
အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> • လုပ်ငန်းခွင်မှထွက်ရှိလာသော အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ အတွက် သီးခြားသိုလှောင်နေရာ သတ်မှတ်ထားခြင်း။ • ယင်တို့ကို အဖုံးပါထည့်စရာတွင် ကောင်းစွာ ထည့်၍ ယိုစိမ့်မှုမရှိစေရန် နောက်ထပ်ထည့်စရာ၌ ထားရှိခြင်း။ • ပစ္စည်းသွင်းသူနှင့် လက်ကားရောင်းသူ သို့မဟုတ် ခွင့်ပြုချက်ရ စွန့်ပစ်ပစ္စည်းစုဆောင်းသူများကို ပြန်ပေးသည့်နည်းလမ်းဖြင့် စွန့်ပစ်ခြင်း။

အချက်(၄)ချက်ပါ စီတန်းမှုအစဉ်ဖြင့် သက်ရောက်မှုများ၏ ထိခိုက်နိုင်မှုကို ဆန်းစစ်ထားပါသည်။ ဆန်းစစ်ချက်အရ စီမံကိန်း၏လုပ်ငန်းဆောင်ရွက်ချက် အများစုသည် ထိခိုက်မှုအဆင့် အနိမ့်ဖြစ်ပြီး အချို့မှာ ထိခိုက်မှုအဆင့် အလယ်အလတ်ဖြစ်ကာ ပတ်ဝန်းကျင်ဆိုင်ရာဆောင်ရွက်မှုအတွက် ပိုမိုတိုးမြှင့်လုပ်ဆောင်ရန် လိုအပ်ကြောင်း တွေ့ရှိရပါသည်။ လူမှုစီးပွားရေးတိုးတက်ဖွံ့ဖြိုးမှုသည် အဆိုပြုစီမံကိန်း၏ ကောင်းကျိုးများ ဖြစ်ပါသည်။

စီမံကိန်း၏ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းကို ရှင်းလင်းတင်ပြခြင်းနှင့် အများပြည်သူသဘောထားရယူခြင်း အခမ်းအနားကို ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်တွင် ကျိုက်မရောမြို့နယ်၌ ကျင်းပခဲ့ပါသည်။ ဤအခမ်းအနားမှရရှိလာသော သဘောထားမှတ်ချက်များကိုပါ ထည့်သွင်းစဉ်းစားလျက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို ရေးဆွဲထားပါသည်။ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးများကို ဇွန် ဘီလပ်မြေ စက်မှုလက်မှုနှင့် ထုတ်လုပ်မှုလီမိတက်၏ ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်ဝန်းကျင်ရေးရာအဖွဲ့က စောင့်ကြပ်ကြည့်ရှုပါမည်။

1 . EXECUTIVE SUMMARY

The proposed Channel 1 (canal) project is a part of Cement Plant to be developed by June Cement Industry Ltd. It is located on the plot of 889.96 acres near Kawt Pa Naw Village, Kyaikmaraw Township, Mawlamyine District, Mon State, Myanmar at the coordinates 16 ° 22' 40.21" N and 97° 46' 57.34" E. The said project is 100% Myanmar citizen's investment with the share ratio of 30% equity and 70% loan. The Channel 1 will utilize 18.13 acres (73,360 square meters) of land. The permissions for canal construction and land utilization have been already received. Two parallel embankments will be built to form the channel between them. Construction period is one year and the investment year is 30 years.

According to the ECD's comments and relevant criteria for IEE project type described in Myanmar EIA Procedures, IEE for Channel 1 is carried out to identify the potential impacts due to the project activities on the natural environment and human beings, to highlight the significance of impacts with assessment parameters and its scales and to formulate mitigation measures.

The quality measurement in March 2019 shows that PM_{2.5} is slightly higher than NEQG value due to the dry season. Nickel concentration in river bed sediment is slightly higher than ANZECC/ARMCANZ, 2000 Guideline values. It might be natural Ni sources or/ and anthropogenic sources and in order to determine whether this exceeding level might be a risk to aquatic ecosystem, seasonal quality measurement and specific studies for example toxicity testing, are required. Total Suspended Solids in surface water (Channel 1) is higher than NEQG value and it can be treated by coagulation, sedimentation, and filtration, disinfection using chlorine, ozone and ultraviolet irradiation. Ground water has turbidity which is slightly higher than NEQG value and it can be treated by coagulation, sedimentation, filtration, and disinfection using chlorine, ozone and ultraviolet irradiation. Noise level in the project area is consistent with NEQG value.

The project activities may cause impacts on environmental resources, ecological resources, human and waste disposal in construction, operation and decommissioning phases. The summary of impacts of project activities and mitigation measures are described as below:

Potential Environmental Impacts	Mitigation Measures
Air pollution	<ul style="list-style-type: none">• Spray water and install temporary cover over dust propagation area.• Properly cover the vehicles transporting construction materials.• Control the speed of the vehicles not to spread out the dust.• Use the machineries and equipment with efficient exhaust system to maintain exhaust emission.• Restrict the burning of waste materials.• Apply the best construction practices with normal working hours.• Provide masking agents and adopt efficient ventilation and air-conditioning systems.• Use the ships of which types are approved by DWIR.

Potential Environmental Impacts	Mitigation Measures
Noise Level and Vibration	<ul style="list-style-type: none"> • Apply properly designed control system of equipment, occupational preventive measures and temporary noise barriers for noise attenuation. • Build noise closure for diesel generator. • Allow workers employing in high noise areas on shifts. • Provide hearing protective wear such as earplugs, earmuffs, etc. to these workers. • Provide earplugs and other hearing protective wears to the worker. • Organize noise barriers and buffer areas by tree planting.
Water pollution	<ul style="list-style-type: none"> • Avoiding earth work in rainy season. • Construct embankment to prevent the polluted water flowing into Ataran River. • Discharge wastewater into existing sewer line. • Provide temporary toilets for labour. • Use leak proof containers for storage and transportation of oil and grease. • Keep the impervious floors of oil and grease handling areas. • Build the drainage system with embankment, earth drain, a culvert and two sluices with flap gates for the whole cement plant. • Manage all the surface water in the cement plant area to pass through the earth drain and finally flow into the irrigation canal parallel to the Channel 1. • Use the well-maintained ships approved by DWIR. • Adopt the oil spill remediation plan covering physical, chemical, thermal and biological remediation methods. • Obtain material Safety Data Sheets (MSDS) of the fuel and oils. • Maintain the water quality of the Channel 1 according to National Environmental Quality (Emission) Guidelines.
Soil Contamination	<ul style="list-style-type: none"> • Avoid earthwork excavation and to regularly assess the stability of disrupted slopes especially in monsoon season. • Use oil spill equipment and adequate secondary containment.
Changes in Flow Regimes	<ul style="list-style-type: none"> • Ensure the diversion scheme to reproduce the flow and the water level of the stream and to control the sediment during the coffer dam construction. • Construct embankment to prevent the polluted water flowing into Ataran River. • Discharge wastewater into existing sewer line. • Set minimum flow requirements for the depleted stretch of the channel. • Release the environmental water that would closely replicate the natural flooding regime for the proposed project, • Remove the sediment deposited to maintain the required water level.

Potential Environmental Impacts	Mitigation Measures
Flora & Fauna and Aquatic Ecology	<ul style="list-style-type: none"> • Careful selection of disposal site of sediments and disposal method. • Operate the well-maintained ships, as the rules of DWIR, to • Set minimum flow requirements for the depleted stretch. • Maintain the effluent level according to National Environmental Quality (Emission) Guidelines. • Carefully dispose the waste generated from the employee as per waste management plan.
Local socio-economic conditions	<ul style="list-style-type: none"> • Inform the fishermen about the schedule of ships via the signboards and Grievance Redress Committee in advance, • Reduce the number of shipping time to the lowest during the fishing season. • Point out the fishing nets with the small boat in front of the barges, even in the shipping event, • Make the contact number of responsible person available or set up 24 hour hot line number to inform the grievance or complaint of the local people.
Occupational Health and Safety	<ul style="list-style-type: none"> • Install site fencing and safety signage • Ensure that adequate safety measures including first aid facilities are available on the project site. • Carry out preventative action with adequate health facilities. • Facilitate education and awareness programs for communicable diseases. • Provide personal protective equipment (PPE) including mask, safety gloves, ear plugs, helmets and safety boots, and first aid facilities to the employees and staff. • Conduct training for using PPE at work place and first aid. • Supply canteen, toilets, hostels, football field and park, nursery school and clinic to the employees for satisfactory working environment.
Solid Waste	<ul style="list-style-type: none"> • Provide rubbish bins in office and at suitable points in the operation area • Properly collect solid wastes, well packed and stores at a designated area before the final disposal point. • Clean the waste storage area daily to avoid any undesirable working condition and environmental impacts.
Liquid Waste	<ul style="list-style-type: none"> • Adopt the appropriate waste management system. • Manage the waste water with sanitary system composed of three separate septic tanks and waste water treatment plant. • Collect storm water and surface water by the open earth drains of drainage system and discharge into the irrigation canal outside the Channel 1 area.

Potential Environmental Impacts	Mitigation Measures
Hazardous Waste	<ul style="list-style-type: none"> • Designate isolated storage for hazardous wastes released from the site • Install fire extinguishers near storage of hazardous wastes. • Keep all hazardous wastes in good primary containers with covers and secondary containment to avoid the leakage from the primary container. • Dispose all hazardous wastes by delivering back to the suppliers and wholesaler or licensed waste collectors.

A ranking scale of four parameters is applied in this report to assess the significance of the impacts. Results of analysis mention that most of the project activities are low significant and some are moderate significant to be improved for environmental performance. Social and economic developments are positive impacts of the proposed project.

Public consultation is held on 15 June 2019 in Kyaikmarwa Township. By taking into account the comments from that public consultation, EMP is prepared. Environmental qualities are monitored by HSE Team of June Cement Industry Ltd.

2 . PROJECT DESCRIPTION

2.1 Background of the Project

June Cement Industry Ltd. has submitted a proposal for Greenfield cement plant with a kiln capacity of 5000 ton per day with an annual production of approximately 2.1 to 2.3 million tons of Portland cement manufactured by dry processing method in Myanmar, to Myanmar Investment Commission (MIC) in August 2015. In September 2016, Environmental Impact Assessment (EIA) Report for the whole project has been prepared and submitted to Environmental Conservation Department (ECD). ECD gives some comments on EIA report to carry out the separate Initial Environmental Examinations (IEEs) for main project activities such as mining.

Moreover there is no project type of canal construction, described in Myanmar Environmental Impact Assessment Procedures (29 Dec 2015). In this context, with an advice of E Guard Environmental Services Co., Ltd., the project proponent decides to prepare the separate IEE report of channel for transportation of raw materials and finished products, and item 117 in Annex 1 of Procedures, Ports, Harbours and Terminals (ports, harbours, and terminals for cargo and passengers transfer) has been referred for the proposed project of which area is 7.34 hectares (18.13 acres) less than 25 hectares.

Table 2.1 Relevant Criteria for IEE and EIA of Proposed Project Type

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့်အရွယ်အစား
၁၁၃	အခြားကြီးမားသော မြို့ပြတည်ဆောက်ရေး လုပ်ငန်းများ (မြစ်ရေ၊ ပင်လယ်ရေထိန်း နှင့်တည်ဆောက်ခြင်း၊ ကမ်းလွန် ပင်လယ်ရေတားဆီးခြင်းလုပ်ငန်း)	အရှည် ၂ ကီလိုမီတာ အောက် နှင့် ဧရိယာ ၂၅ ဟက်တာအောက်	အရှည် ၂ ကီလိုမီတာနှင့်အထက် သို့မဟုတ် ဧရိယာ ၂၅ဟက်တာနှင့်အထက်
၁၁၄	သောင်တူးခြင်း	စုစုပေါင်း တန်ချိန် ၅၀၀၀၀၀ အောက်	စုစုပေါင်း တန်ချိန် ၅၀၀၀၀၀ နှင့်အထက်
၁၁၅	မြစ်ကြောင်းထိန်းသိမ်းခြင်း (ရေမျက်နှာပြင် ထိန်းချုပ် ခြင်း၊ ရေထည်ထိန်းချုပ်ခြင်း)		အရွယ်အစားအားလုံး
၁၁၆	သင်္ဘောသွားလာရေး (ကုန်စည်နှင့် ခရီးသည် ပို့ဆောင်ရေးအတွက် ရေယာဉ် များပြေးဆွဲခြင်း၊ပြုပြင် ထိန်းသိမ်းခြင်း)	အရွယ်အစားအားလုံး	ဝန်ကြီးဌာနက ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း ပြုလုပ်ရန် လိုအပ်သည်ဟု သတ်မှတ် သည့် စီမံကိန်း လုပ်ငန်းအားလုံး
၁၁၇	ဆိပ်ကမ်းတည်ဆောက်ခြင်း (ကုန်ပစ္စည်းတင်ဆောင်ရန် နှင့်ခရီးသည်ပို့ဆောင်ရေးယာဉ်များဆိုက်ကပ်ရန်ဆိပ်ကမ်း၊ ဆိပ်ခံတံတား၊ ကုန်လှောင်ရုံ)	ဧရိယာ ၂၅ ဟက်တာအောက်	ဧရိယာ ၂၅ ဟက်တာနှင့်အထက်

No.	Type of Economic Activity	Criteria for IEE Type Economic Activities	Criteria for EIA Type Economic Activities
113.	Other Large Civil Works Construction (embankments, seawalls, offshore breakwater)	Length < 2 km and Area < 25 ha	Length ≥ 2 km or Area ≥ 25 ha
114.	Dredging	Total < 500,000 t	Total ≥ 500,000 t
115.	River Channel Conservation (surface water & water volume control)		All sizes
116.	Shipping (operation and maintenance of ships used for the transport of bulk cargo, and goods, and ship breaking)	All sizes	All activities where the Ministry requires that the Project shall undergo EIA
117.	Ports, Harbours, and Terminals (ports, harbours, and terminals for cargo and passengers transfer)	Area < 25 ha	Area ≥ 25 ha

2.2 Approval of Government Agencies for Channel 1

The proponent has got the approval from the Directorate of Water Resources and Improvement of River Systems (DWIR) for canal construction and navigation, and the approval can be seen in Annex 3. The Channel 1 area is within the 29.60 acres of farmland of which Kwin Number is 407/Ka and Kwin Name is Mei Ka Yo East Kwin. Holding number of the plots are 17, 18 and 20. Kyaikmaraw Township GAD recommends that Form 7 – Permit to work on the farmland, is granted for these plots of farmland to Dr. Nu Nu Win, Managing Director of June Cement Industry Ltd (Annex 4). The project proponent has also applied the permit to use the paddy land by other means, to Kyaikmaraw Township DALMS (Annex 5). Then Kyaikmaraw Township DALMS recommends the application (Annex 6) and Farmland Form 15 – Permit to use the paddy land by other means, is given to Dr. Nu Nu Win, by Central Farmland Management Committee, Nay Pyi Taw (Annex 7).

2.3 Project Location and Size

The proposed Channel 1 (canal) project is located on the plot of 889.96 acres near Kawt Pa Naw Village, Kyaikmaraw Township, Mawlamyine District, Mon State, Myanmar at the coordinates 16 ° 22' 40.21" N and 97° 46' 57.34" E. The project site is about 40 kilometers south-east from Mawlamyine Town and 8 kilometers south from Kyaikmaraw Town. The canal area is about 18.13 acres (73,360 square meters) with the elevation of 7 meters above the sea level as shown in Figure 2.1. The canal will be excavated in the place of existing creek flowing into Ataran River. The cement plant area is between the said creek and another small creek.

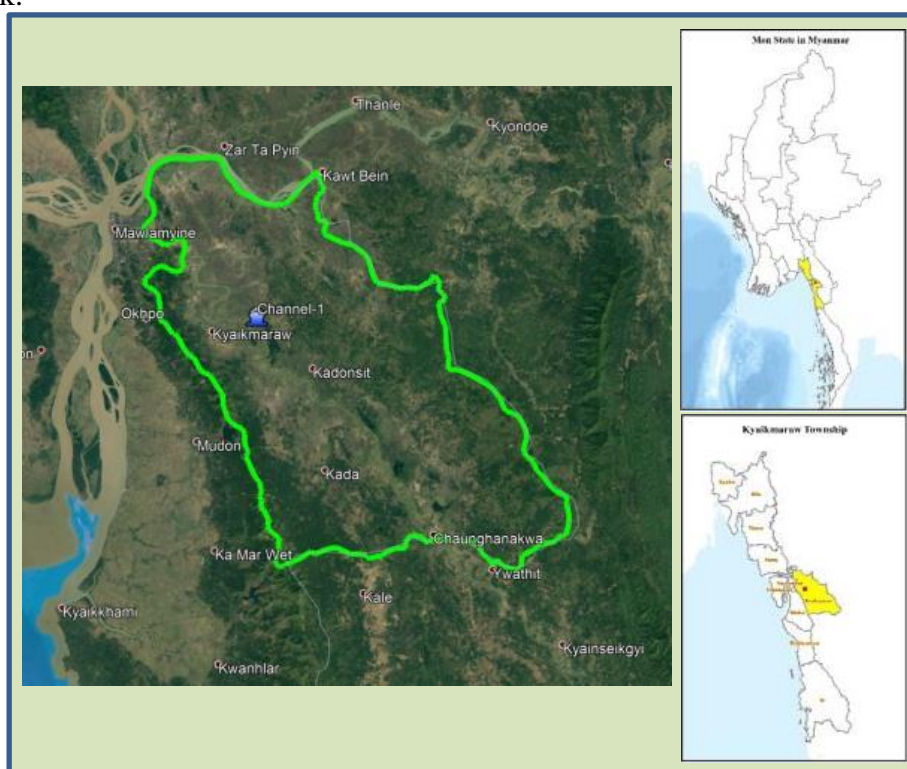


Figure 2.1 Location map of proposed canal project in Kyaikmaraw Township, Mon State



Figure 2.2 Location of Channel 1



Figure 2.3 Status of the existing creek and its vicinity in March 2019

The main infrastructure of the proposed project is the Channel 1 itself although the channel is one of the appurtenance structures of June Cement Plant. It is constructed to accommodate the port requirement for loading and unloading facilities of cement bags. The length of the canal is 560 meters. The base width of the canal is 70 meters and the surface width is 131 meters. The canal depth is 12 meters and the canal bed is at the elevation of 5.5 meters below the mean sea level i.e. RL (-) 5.5 meter. The cross section of the channel is trapezium in shape and the area of the cross section is 1,206 square meters.



Figure 2.4 General layout plan of canal and cement plant

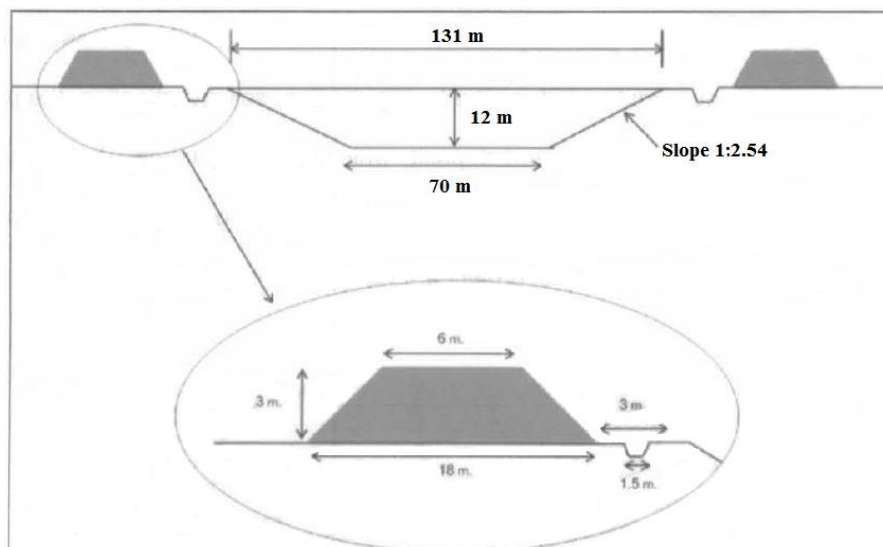


Figure 2.5 Cross section of channel 1

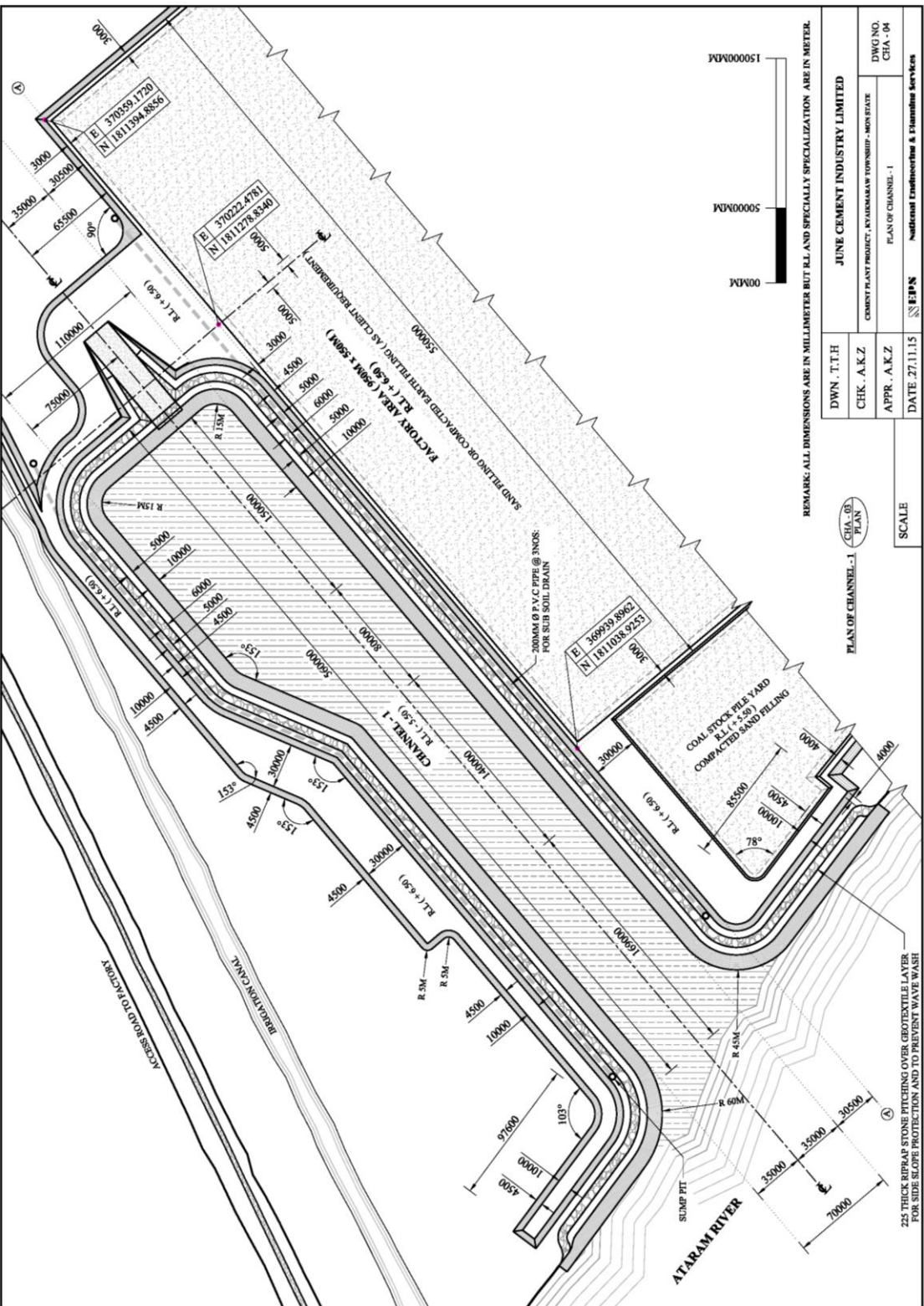


Figure 2.6 Plan of Channel 1

2.4 Construction Process and Technology

The channel is designed as a waterway connecting existing Ataran River for carrying cement bag to improve the safety, efficiency, reliability and cost. The optimum design of the channel is prepared by National Engineering and Planning Services Co., Ltd. (NEPS) in November 2015. The detailed design report is being prepared so far. Based on the optimum design of NEPS, construction process and technology are generally determined for the channel 1.

Estimated construction period is a year and construction process generally consists of some criteria such as topographic and geometric surveying, access road laying, site-cleaning, dyke or coffer dam construction, earth work excavation, leveling and filling, grading, trenching, transportation and storage of construction materials and embankment construction. However, according to the actual situation of works, the construction process may change slightly during the construction phase. Step of construction process and schedule of the proposed Channel 1, are described in Figure 2.7 and Table 2.2.

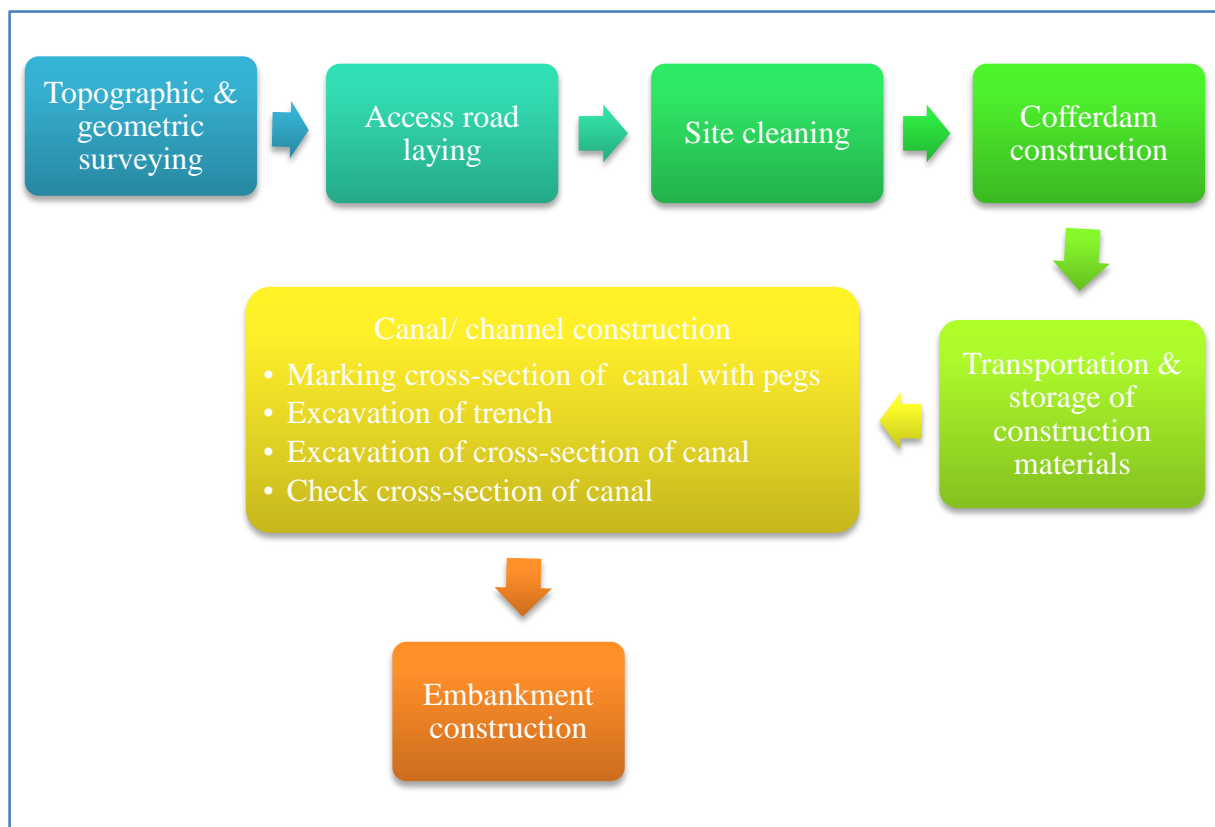
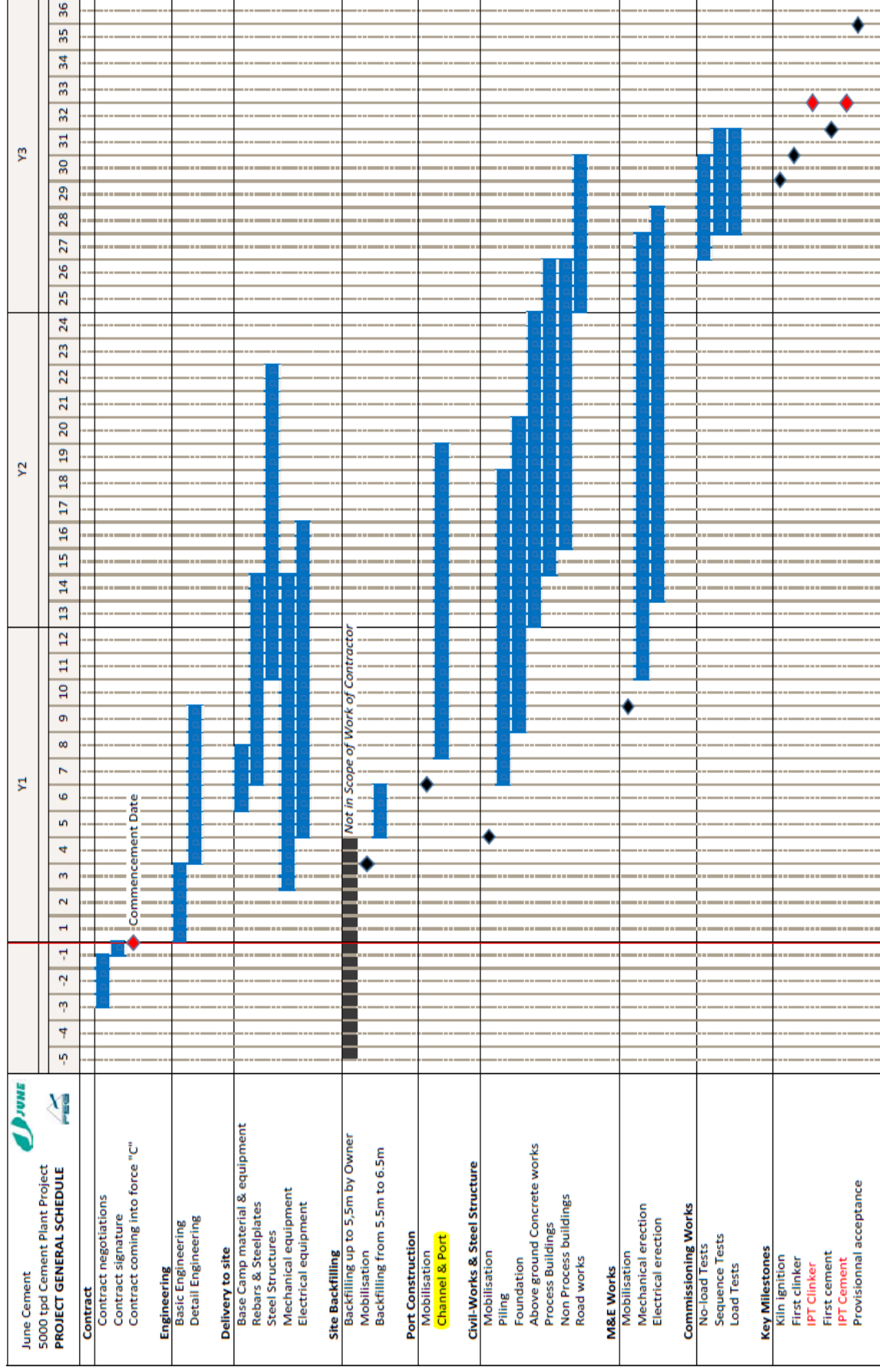


Figure 2.7 Construction Process of the Channel 1

Table 2.2 Construction Schedule of Channel 1



The Channel 1 will be constructed by dredging the existing creek which flows into the Ataran River. Two parallel embankments will be built to form the channel between them. The Channel is a canalized stream and thus only light protection of banks against erosion is needed. Riprap stone pitching over geotextile layer will be made in embankment for side slope protection and prevention of wave wash. Sump pit and sub-soil drains will be kept in embankment of channel for dewatering to control the seepage. At the entrance of the canal, major bends with relevant radii will be built to assist navigation of the ships.

As per the feasibility study in 2015 and EIA in 2016, the periodic flood with a depth of 2~3 meters above existing ground level happens in the project site. In order to avoid this flood, the location of the cement plant will be raised 3 meters above the existing ground level. Moreover the boring result of soil investigation shows that the project area is covered by Alluvium deposit made up of clay and weathered limestone. The overburden soil is good up to 2 meter depth but the rest of 27 meter depth is not qualified for channel construction. So special method such as dewatering of excavation for foundation works, will be performed to get a dry base for foundations of canal and good water-table stability. The risk of construction will be mitigated with the right engineering works.

The construction company will be selected through a tendering system by the project proponent for EPC (Engineering, Procurement and Construction) Contract. The construction technology to be used for the Channel 1 will be considered in details after this bidding process. Project implementation program for EPC is described in Figure 2.8.

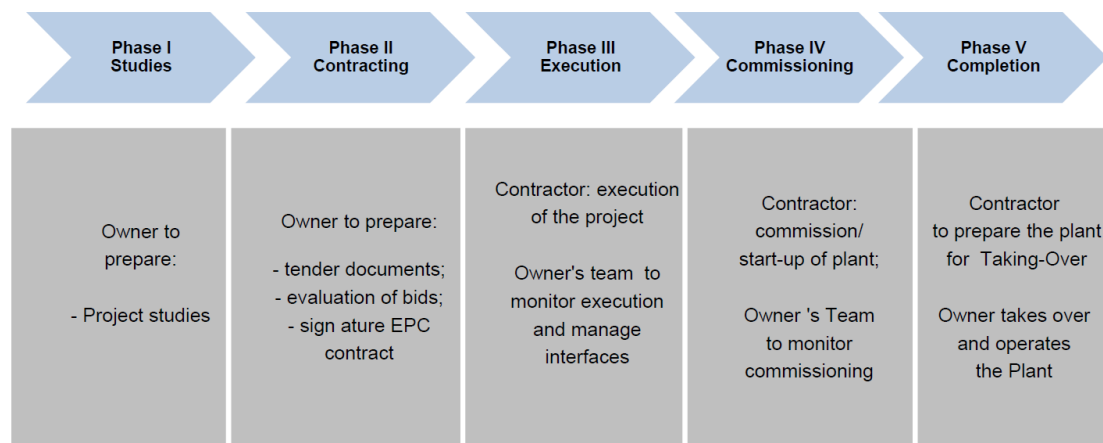


Figure 2.8 Project Implementation Program of Channel 1 for EPC

2.5 Operation Process and Technology

The Channel 1 is a canalized creek and the main operation of the channel is transportation of finished products i.e. sling bags of cement: CEM I and CEM II. The sling bags will be pelletized by the pelletizer and stored in a specific storage area. Then they are carried to the shiploader by the tractors and lifted by the shiploaders to the barges in the channel. The detailed operation procedures will be determined after selecting the EPC contractor. The process buildings of Channel 1 are described in Figure 2.9 and example of operation process in Figure 2.10.

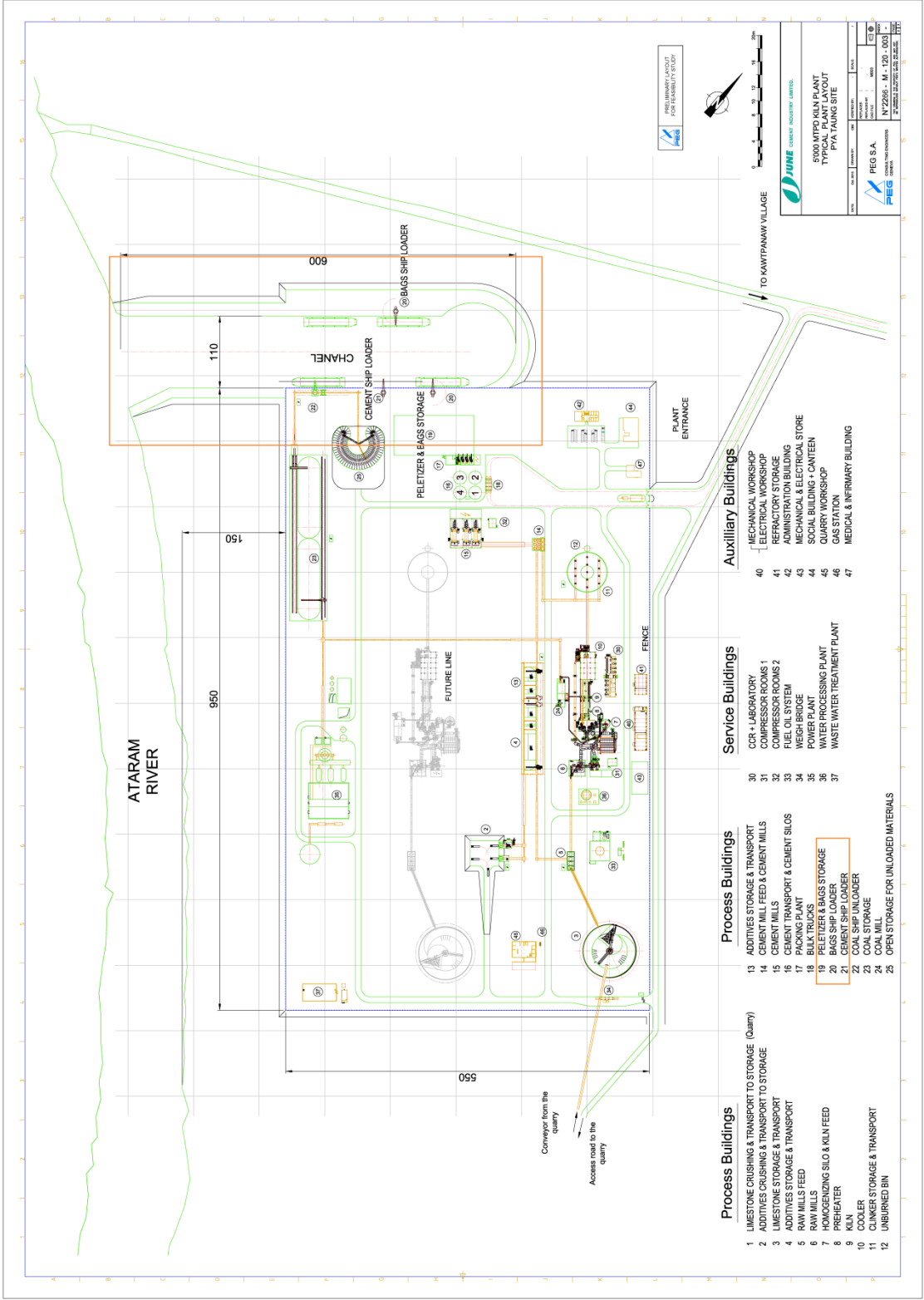


Figure 2.9 Process Buildings of Channel 1
(Red boundary area represents Peletizer & Bags Storage, Bags Ship Loader and Cement Ship Loader)

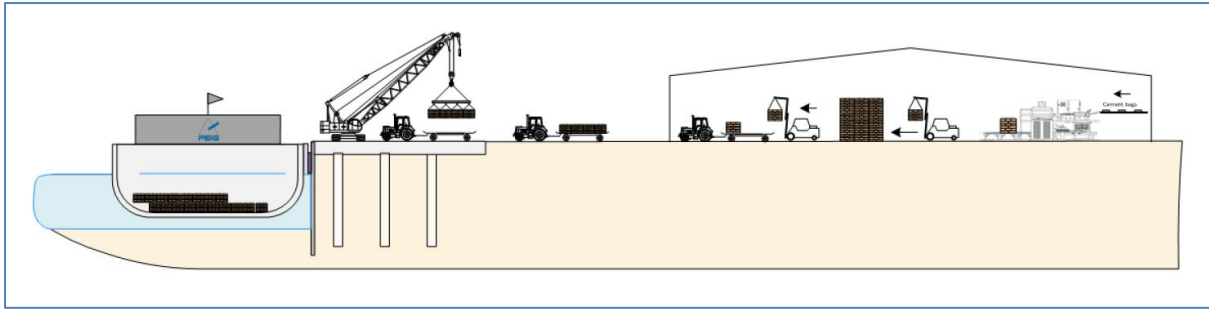


Figure 2.10 Example of operation process of Channel 1

2.6 Utilities

Water Requirement: The main source of water supply for construction and operation activities of the Channel 1 is Ataran River. The water supply system with sub-systems such as filtering system, firefighting system, piping network and wetland, will be installed by the EPC Contractor. Channel construction works mainly require 45,265 gallons. Throughout the operation of Channel 1, the river water will be utilized for navigation of the barges and ships, and the storage capacity of the channel is 178,411,237 gallons.

The contractor will use the tube wells that will be dug in the cement plant area, to provide the drinking water. Before digging the tube well, the pumping test will be carried out to estimate hydraulic properties of an aquifer system i.e. transmissivity, hydraulic conductivity and storativity of aquifer. As per the pumping test results, tube well will be designed and located for drinking water security of the proposed project. The tube well water will be treated by the water treatment system including sand filter, carbon filter and reverse osmosis (RO) system.

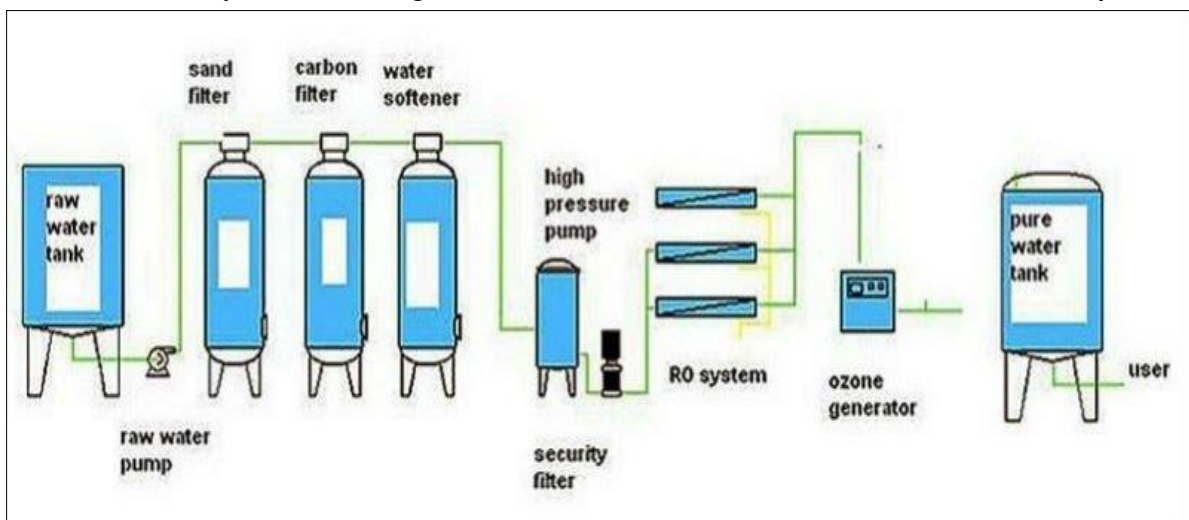


Figure 2.11 Water treatment system for tube well water

The estimated daily water requirement for employees for both construction and operation are estimated as shown in Table, by referencing WHO 2003 "Domestic Water Quantity, Service Level and Health". As per WHO reference, the water requirement is assumed as intermediate access (average quantity about 50 l/c/d including drinking water).

Table 2.3 Domestic Water Requirement for Construction and Operation of Channel 1

Project Phase	Estimated Employees	Water Requirement (gallons)
Construction	100	1312
Operation	43	568

Energy and Fuel Requirement: In the project area, there is no access of electricity from national grid and hence the power will be obtained from a newly constructed coal-fired power plant (25 MW x 2 nos.) of June Cement Industry Ltd. and from 600 kVA Diesel Generator. The detailed information of power plant will be described in Environmental Impact Assessment Report of Coal-fired power plant of June Cement Factory. Electrical works, materials and equipment will be consistent with Myanmar Standards and electrical codes of practice. Annual electricity requirement is estimated as 4.5 MW for Channel 1.

For power plant, the coal might be imported from Indonesia and information of annual coal requirement is not available at this stage. The coal will be transported by barge passing Ataran River to the plant. Required petrol and diesel for vehicles and generator will be sourced locally, supplied by the barge and stored at a designated area in the site i.e. Fuel oil system of the cement plant. To handle the leakage and spillage of the diesel, an interception with sand will be kept under the tank. Estimated annual fuel requirement for the construction of the project is 412 gallons.

Construction Materials and Equipment: Construction materials are stones for rip-rap of channel, soil for filling around the channel, 200 mm-diameter PVC pipes and other concrete work related materials. The rip-rap stones are obtained from the lime stone quarry of June Cement Industry Ltd. and the stones will be transported by trucks from the quarry to the project site area. The excavated soil of the channel will be used for backfilling the embankment area. Stock pile area of construction materials will be kept in the project area. Other construction materials will be available from local sources and generally be transported to the site by trucks. Then they will be stored properly in specified area as per their varieties. Construction equipment and machineries for Channel 1 are shown in Table 2.4 and estimated construction work volume and quantity of construction materials are described in Table 2.5.

Table 2.4 Equipment for Construction and Operation of Channel 1

Item	Name of equipment	Unit	Quantity
1	Hydraulic excavator	set	2
2	Dump truck	set	2
3	Roller (for compaction)	set	1
4	Pump	set	10
5	Concrete mixer	set	1
6	Loader	set	2
7	Pile driving machine	set	1
8	Dozar	set	2
9	Crane	set	1

Table 2.5 Construction Work Volume and Quantity of Construction Materials

Sr. No.	Particulars	Quantity	Cement	Sand	Geotextile (MXL 90)	Fuel	Timber Planks	Timber Scantling	Nail & Spike	Buoy (Navigator)	Aggregate	Gravel	Handrail	Distemper	Grass	Humus	Rubble Stone	8" O.P.V.C Pipe	Water	Rebar	Binding Wire	Thin Plastic Sheet
1	Site Clearing	1,000 Item																				
2	Chaung Closing Embankment	12891.515 M ³																				
3	Base Stripping (Cutting Only)	10108.088 M ³																				
4	Earth Work Excavation By Machine (Cutting - 1) { From N.G.L To R.L (- 0.50) }	335577.528 M ³																				
5	Earth Work Excavation By Machine (Cutting - 2) { From R.L (- 0.50) To R.L (- 5.50) }	273189.125 M ³																				
6	Earth Work Excavation By Manual	14288.866 M ³																				
7	800MM Ø Bore Pile Work At End Of Ramp	157.300 Dep:M																				
8	Form Work Shuttering (4 Time Use)	342.157 M ²					1.69	2.76	110.48													
9	C - 20 Work (1:3:6)	32.777 M ³	151.53	5.56		23.15					11.11								46.30			
10	C - 25 Work (1:2:4)	47.246 M ³	313.98	7.67		33.37					15.35								66.74			
11	C - 30 Work (1:1 1/2 :3)	502.431 M ³	4499.78	81.59		354.87					163.24								709.73			
12	Thin Plastic Sheet	1367.021 M ²																				15451.78
13	Mild Steel Reinforcement Work	26.337 Ton																		28.24	533.14	
14	Geotextile (MXL 90) One Layer	77756.247 M ²			81644.06																	
15	Sand Filling With 95% Compaction	2625.301 M ³		1160.38																		
16	Earth Filling With 95% Compaction	113032.441 M ³								5050.16												
17	Buoy (Navigator)	1465.919 RM																				
18	2000 P.V.C Drain Pipe	3529.290 RM																12158.58				
19	Handrail	131.238 RM											430.59									
20	Painting Work With Distemper (3 Coats)	118.474 M ²												89.27								
21	Grass Turfing	8130.729 M ²		139.85											8130.73	139.85						
22	Dry Stone Pitching	2789.894 M ³															1083.87					
23	Graded Filter	4411.613 M ³										1764.65										
Total			4965.28	1395.05	81644.06	411.39	1.69	2.76	110.48	5050.16	189.70	1764.65	430.59	89.27	8130.73	139.85	1083.87	12158.58	822.77	28.24	533.14	15451.78
Grand Total			4965.50	1395.00	81644.00	412.00	1.69	2.76	111.00	5051.00	189.75	1764.75	431.00	90.00	8131.00	140.00	1084.00	12159.00	823.00	28.24	533.00	15452.00

Human Resources: June Cement Industry Ltd. is the owner of the whole cement plant project, including Channel 1. Thus the project owner will manage the Channel 1 as Head Office Management at Corporate Level. In this circumstance, required personnel for Channel 1 will cover not only the employees from EPC Contractor's side for channel operation and maintenance but also Head Office Management Team of June Cement Industry Ltd. Human resources for Channel 1 will be considered as shown in Table 2.6.

Table 2.6 Human Resources for Channel 1

No.	Type of Personnel	Department	Number of Persons	Remarks
1	Board of Directors	Head Office Management	Not available	Corporate level of June Cement Industry Ltd. for the whole cement plant project
2	Corporate Office Staff	Head Office Management	8	Corporate level of June Cement Industry Ltd. for the whole cement plant project
3	Administration Staff	Head Office Administration	19	Administration of June Cement Industry Ltd. for the whole cement plant project
4	Operation Employees including ship loading personnel	Operation Department	9	Management of EPC Contractor for Channel 1 operation
5	Maintenance Employees	Maintenance Department	4	Management of EPC Contractor for Channel 1 maintenance
6	Security Staff	Other Services Department	3	Management of EPC Contractor for Channel 1
	Total		43	

2.7 Project alternative

June Cement Industry Ltd. has considered the alternative options for the infrastructure of loading and unloading cement bags. It is to construct the jetty in the shaded area as shown in below figure. When the construction cost of the Channel 1 is greater than that of alternative jetty, the Channel 1 will be replaced with the jetty. But at this stage, the design of the jetty has not been prepared yet.

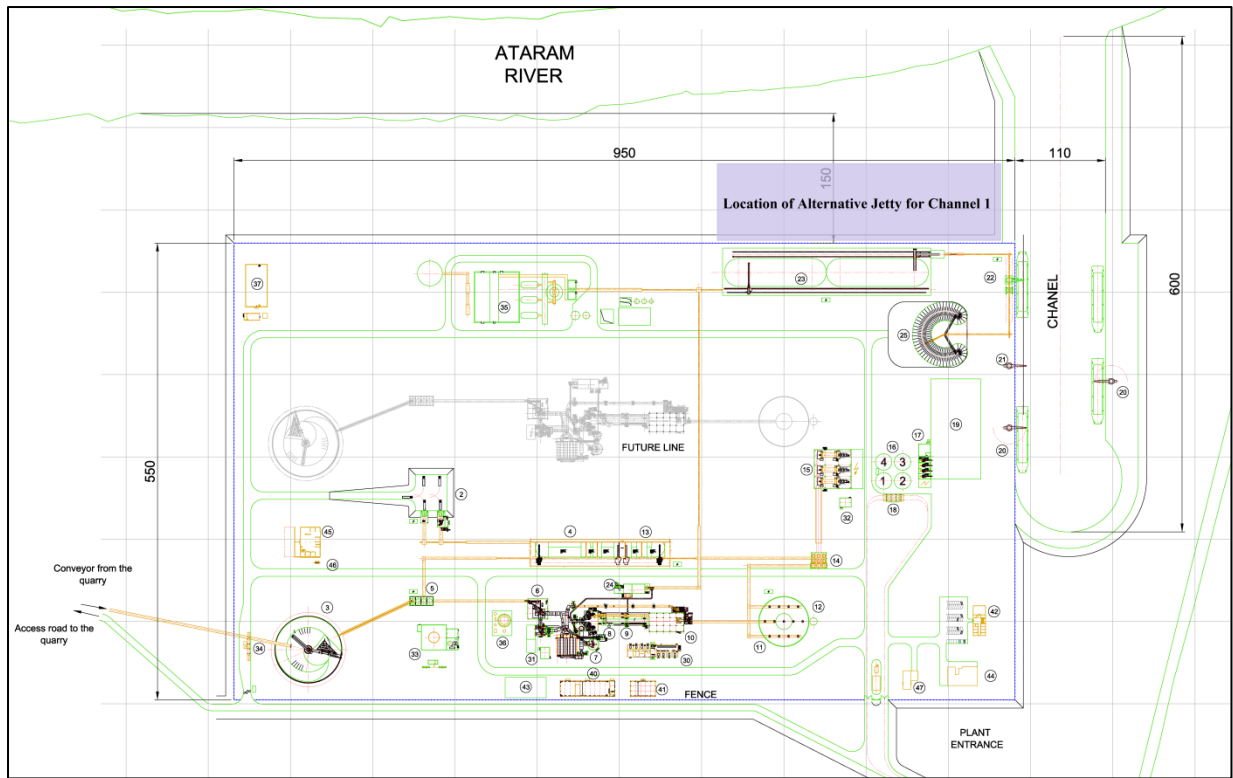


Figure 2.12 Location of alternative jetty of Channel 1

3 . IDENTIFICATION OF THE PROJECT PROPONENT

3.1 Project Proponent Description

The project proponent for proposed Channel 1 of Cement Plant is June Cement Industry Ltd. and it is a part of the June Group of Companies. Under Myanmar Citizens Investment Law (2012), the overall proposal for the investment of the Greenfield cement plant with a klin capacity of 5000 ton per day, has been submitted to Myanmar Investment Commission. The said overall proposal covers the implementation of the proposed project, the Channel 1. There are four members in board of directors of June Cement Industry Ltd. and their information is shown in Table 3.1.

Table 3.1 Project Proponent Information

စဉ်	အမည်	နိုင်ငံသားစိစစ်ရေး ကဒ်ပြားအမှတ်	ရာထူး	နေရပ်လိပ်စာ
၁။	ဒေါ်နုနုဝင်း	၁၀/မလမ(နိုင်) ၁၄၃၂၄၀	မန်နေဂျင်း ဒါရိုက်တာ	အမှတ်(၈၀)၊ ဆရာစံလမ်းသွယ်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့။
၂။	ဦးအောင်မိုး	၁၂/အလန(နိုင်) ၀၃၃၆၃၄	ဒါရိုက်တာ	အမှတ် (၁၁/၁၃)၊ သရဖီလမ်း၊ အလုံမြို့နယ်၊ ရန်ကုန်မြို့။
၃။	ဦးမြင့်ခိုင်	၁၂/ကတတ(ဧည့်) ၀၀၀၂၉၁	ဒါရိုက်တာ	အမှတ်(၈၀)၊ ဆရာစံလမ်းသွယ်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့။
၄။	ဦးမြင့်စိုး	၁၂/ဗဟန(နိုင်) ၀၄၈၆၈၄	ဒါရိုက်တာ	အမှတ် (၂၇)၊ ရွှေတောင်ကုန်း ရိပ်သာ၊ အင်လျားမြိုင်လမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်။

June Cement Industry Ltd. has established a branch office in Mawlamyine Town to communicate the local people effectively and information of project accountable person is stated as below.

Accountable Name	U Tin Oo
Position in Organization	Project Director
Name of Principle Organization	June Cement Industry Ltd.
Organization Address	No.80, Saya San Road, Bahan Township, Yangon Region
Contact Number	+95 9 795551179
Email Address	tinoo.june@gmail.com



Figure 3.1 Branch Office of June Cement Industry Ltd. in Mawlamyine Town

According to the organizational experience in the project management, June Cement Industry Ltd. has decided to proceed the project with an EPC Turnkey form of contract. The execution of the project involves negotiation with Lenders, Government bodies, local stakeholders and main contractor for EPC contract. Head office management of June Cement Plant covers both operational and strategic activities for the project execution. Hierarchy of Head office management of June Cement Industry Ltd. can be seen in Figure 3.2.

OWNER'S PROJECT ORGANISATION

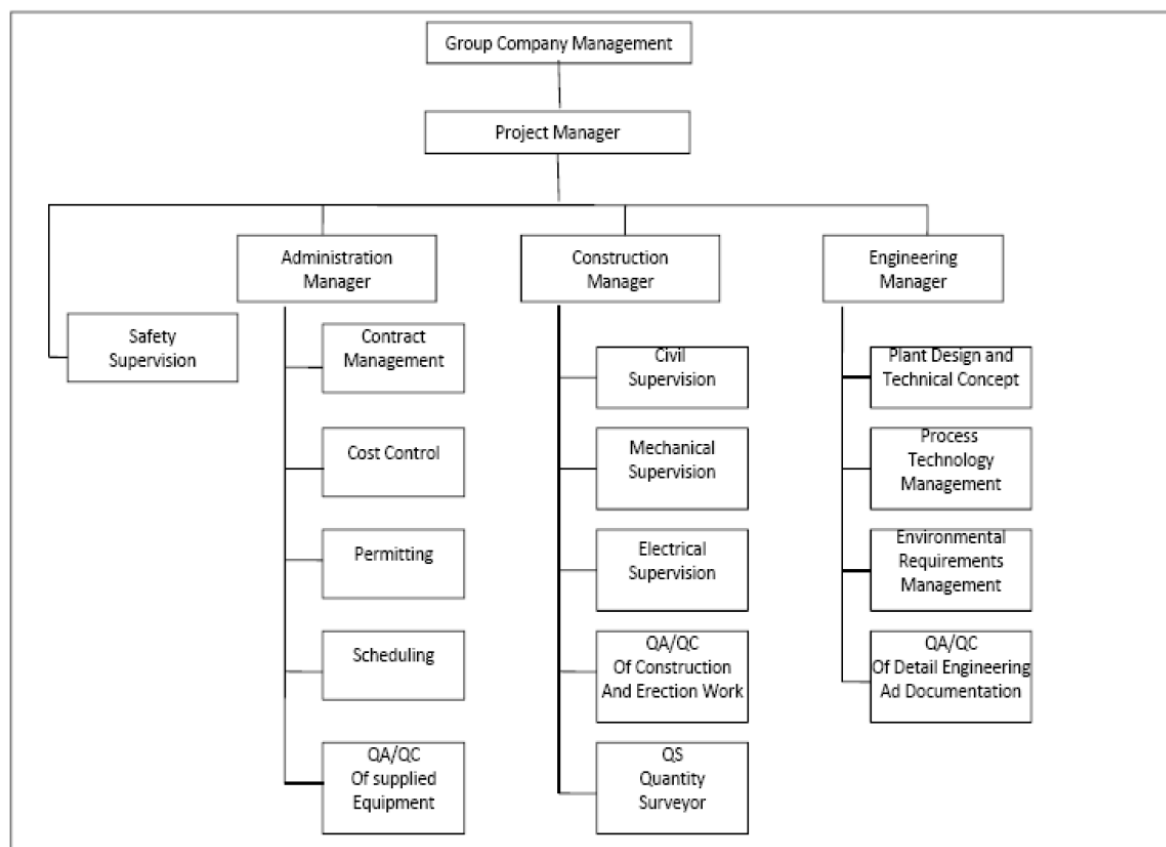


Figure 3.2 Hierarchy of Head office management of June Cement Industry Ltd.

3.2 Information of Investment

The overall investment data of June Cement Plant are mentioned below.

Company name	- June Cement Industry Ltd.
Type of business	- Manufacturing the Portland cement by dry process in Myanmar
Type of investment	- 100% Myanmar citizen's investment
Type of business organization	- Limited company by shares
Type of share	- 100,000,000 Kyats/ share
Number of share	- 50,000
Share ratio	- 30% of equity + 70% of loan
Duration of investment	- 30 years
Internal rate of return	- 11 %
Payback period	- 8 years and 3 months

3.3 Investment Plan

The project proponent's investment plan for Channel 1 is 10 % of the whole project of Cement Plant, as shown below.

Table 3.2 Investment plan for the whole project of June Cement Plant

No.	Description	USD in Million
1	Project Development, Special Foundation & Building	2.18
2	Mechanical and Electrical & Mobile Equipment	2.82
3	Office equipment	0.01
4	Cash	0.57
	Total investment for Channel 1	5.58

4 . IDENTIFICATION OF THE IEE EXPERTS

Initial Environmental Examination of the Channel 1 of June Cement Plant is conducted by E Guard Environmental Services Co., Ltd. The environmental study was carried out by the study team listed below and the following is a summary of team members' responsibilities during the study period.

The specific objectives of the IEE study are as follows:

- To conduct preliminary examination of the environmental consequences of the project
- To describe the existing environmental conditions of the proposed project site
- To collect detailed information about used of process, technology, equipment and machinery for proposed project
- To assess the potential environmental impacts of the proposed project
- To develop environmental management plan (EMP) with site specific environmental mitigation measures and monitoring standards guidelines for the proposed project
- To carry out public consultation to address any issues in concern with implementation of this project.

U Tin Aung Moe (Director)

Tin Aung Moe is a Consultant who holds Transitional Consultant Certificate No 0103, described expertise are Facilitation of meeting, Land use, Risk Assessment and Hazard Management, RS and GIS. He is one of the founding members of E Guard. He has been working for Environment Assessment and Environmental technologies development and capacity building for the Developing countries in Asia and Pacific Region. He is responsible for the policy and institutional linkages and harmonization of E Guard.

Daw Le. Win Khine (Consultant)

Daw Le. Win Khine, a consultant, has Bachelor Degree in Civil Engineering from Yangon Technological University and Master Engineering in Water Engineering & Management from Asian Institute of Technology. She has 10-year experience in planning, construction management and making design of hydropower projects. She performed identification and assessment of potential negative environmental impacts and benefits; assessment of significance of impacts; formulation of environmental management plan with mitigation measures and environmental monitoring plan for the proposed project.

Daw Hnin Yee Mon Mon (Project Associate)

Daw Hnin Yee Mon Mon is a Project Associate who received Bachelor of Civil Engineering from Meiktila Technological University in Feb 2017. She has more than two years of experiences in conduction stakeholder engagement and public consultation, site visit. Her

contributions on preparation of IEE for this project are secondary data and laws and regulations collection and assists to Consultant.

U Aung Moe Oo (Project Associate)

U Aung Moe Oo is a Project Associate, who received his Bachelor Degree in Chemical Engineering from Western Yangon Technological University in 2016. He has more than two years of experience in environmental quality analysis. He specializes in Environmental Quality such as air quality, water quality, soil quality, noise level, vibration intensity and more. He is also responsible for data analysis and interpretation of environmental baseline data of this project.

U Wana Zaw (Surveyor)

U Wana Zaw is a matriculate and he has more than three years of surveyor experience. He specializes in instrumentation and field data collection of environmental condition of the site and measuring of environment baseline data.

The full address of the company conducting is as followed.



E Guard Environmental Services Co., Ltd.

**No. (145 - A2 - A3), Thiri Mingalar Street, Ward No. (4), 8 mile, Mayangone Township,
Yangon 11062, Myanmar**

Tel: +95 9 653332, 1 9667757

Fax: +95 1 9667757

E-mail: info@eguardservices.com

URL: www.eguardservices.com

5 . POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

5.1 National Laws and Regulations

The applicable national laws and regulations for environmental protection of the proposed project, which will be followed by the project proponent are compiled and presented in *reverse chronological order* as below. The Environmental Conservation Law is the main governing law. The others are the policy, constitution, regulations on environmental impact assessment and initial environmental examination, Conservation of Water Resources and Rivers Law, Myanmar Investment Law, Farm Land Law, Social Security Law and etc.

1. The Protection and Preservation of Cultural Heritage Regions Law (2019)
2. Forest Law (2018)
3. Protection of Biodiversity and Protected Area Law (2018)
4. Myanmar Investment Rules (2017)
5. Myanmar Investment Law (2016)
6. Payment of Wages Law (2016)
7. Environmental Impact Assessment Procedure (2015)
8. National Environmental Quality (Emission) Guidelines (2015)
9. Myanmar Fire Force Law (2015)
10. Environmental Conservation Rules (2014)
11. Employment and Skill Development Law (2013)
12. Minimum Wages Law (2013)
13. Conservation of Water Resources and Rivers Rules (2013)
14. Environmental Conservation Law (2012)
15. Settlement of Labour Disputes law (2012)
16. Social Security Law (2012)
17. Farm Land Law (2012)
18. Vacant, Fallow and Virgin Lands Management Law (30th March, 2012)
19. Constitution 2008
20. Conservation of Water Resources and Rivers Law (2006)
21. Freshwater Fisheries Law (1991)
22. Public Health Law (1972)
23. The Canal Act (1905)

5.2 Legal Commitments of Project Proponent on Relevant Laws

5.2.1 The Protection and Preservation of Cultural Heritage Regions Law (2019)

Purpose: To ensure the protection of cultural heritages and the cultural heritage area from the damage by the natural disaster or man-made.

- ✓ Section 22 (c): The project proponent has to apply to get the permission of Regional Preservation Committee and abide by the conditions in permission if the project area is in the cultural heritage area.

5.2.2 Forest Law (2018)

Purpose: To ensure in carrying out the project with the permission of Ministry of Natural Resources and Environmental Conservation if the project land is forest land or forest covered land. This law focuses as follow:

- ✓ The project proponent has to obtain the permission of Ministry of Natural Resources and Environmental Conservation before starting the work if the project land is forest land or forest covered under sub- section (a) of section 12.

5.2.3 Protection of Biodiversity and Protected Area Law (2018)

Purpose: To ensure abiding by the prohibitions and stipulations to protect biodiversity and protected area.

- ✓ The project proponent has to avoid entering the prohibited area located in protected area without permission under sub-section (a) of section35.
- ✓ The project proponent has to avoid digging on the land or carrying out any activity in protected area under sub-section (c) of section35.
- ✓ The project proponent has to avoid extracting, collecting or destroying in any manner, any kind of wild or cultivated plant in protected area under sub-section (d) of section35
- ✓ The project proponent has to avoid polluting soil, water and air, damaging a water-course or poisoning water, electrification, using chemical or explosive materials in protected area under sub-section (a) of section39.
- ✓ The project proponent has to avoid possessing or disposing of toxic objectives or mineral wastes in protected area under sub-section (b) of section39.

5.2.4 Myanmar Investment Rules (2017)

- ✓ The project proponent has to comply with the conditions of the permit issued by MIC and applicable laws when making the investment, under rule 202.
- ✓ The project proponent has to fully assist while negotiating with the authority for settling the grievance of the local community which has been affected due to investment, under rule 203.

- ✓ The project proponent has to submit the passport, expertise evidence or document of degree and profile to the MIC office for approval if decide to appoint a foreigner as a senior management, technician expert or consultant according to sub-section (a) of section 51 of Myanmar Investment Law, under rule 206.

5.2.5 Myanmar Investment Law (2016)

Purpose: To ensure the appointing of employees, fulfilling the rights of employees, avoiding any injury to environment, social and cultural heritage, insure the prescribed insurance in line with the above law. This law focuses as follows,

- ✓ The project proponent has to register the land lease contract at the specific registration office, under sub-section (d) of section 51 of said law. (if the land lease contract is needed)
- ✓ The project proponent has to appoint the nationalities in the various levels of administrative, technical and expert work by the arrangement to develop their expertise, in line with the sub-section (b) of section 51 of said law.
- ✓ The project proponent has to appoint the nationalities only in normal work without expertise, in line with the sub-section (c) of section 51 of said law.
- ✓ The project proponent has to appoint either foreigner or nationality with the appointment agreement in accord with the law, in line with the sub-section (d) of section 51 of said law.
- ✓ The project proponent has to comply with the international best practices, existing laws, rules and procedures to not damage, pollute, and injure to environment, cultural heritage and social, in line with the sub-section (g) of section 65 of said law.
- ✓ The project proponent has to close the project after paying the compensation to the employees in accord with the existing laws if violates the appointment agreement or terminate, transfer or suspend the investment or reduce the number of employees , in line with the sub-section (i) of section 65 of said law.
- ✓ The project proponent has to pay the wages or salary to the employees in accord with the laws, rules, order and procedures in the suspension period, in line with the sub-section (j) of section 65 of said law.
- ✓ The project proponent has to pay the compensation or injured fees to the respected employees or their inheritors if injury in or loss of part of body or death caused by work, in line with the sub-section (k) of section 65 of said law.
- ✓ The project proponent has to stipulate the foreign employees to respect the culture and custom and abide by the existing laws, rules, orders, directives, in line with the sub-section (l) of section 65 of said law.
- ✓ The project proponent has to abide by labour laws, in line with the sub-section (m) of section 65 of said law.

- ✓ The project proponent has to pay the compensation to the injured person for damages if damages to environment or socio-economy are occurred by misuse of project, in line with the sub-section (o) of section 65 of said law.
- ✓ The project proponent has to allow to inspect in anywhere of project if Myanmar Investment Commission inform to inspect the project, in line with the sub-section (p) of section 65 of said law.
- ✓ The project proponent has to obtain the permission of MIC before EIA process and report back this process to MIC, in line with the sub-section (q) of section 65 of said law.
- ✓ The project proponent has to insure the prescribed insurance by rules, under section 73 of said law.

5.2.6 Payment of Wages Law (2016)

Purpose: To ensure the way of payment and avoiding delay payment to the employees. This law focuses as follows:

- ✓ The project proponent has to pay the wages in accord with the section 3 and 4 of said law under section 3 & 4 of said law.
- ✓ The project proponent has to submit with the agreements of employees & reasonable ground to department if it is difficult to pay because of force majeure included in natural disaster, under section 5 of said law.
- ✓ The project proponent has to abide by the provisions of section 7 to 13 in chapter (3) in respect of deduction from wages.
- ✓ The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours, under section 14 of said law.

5.2.7 Environmental Impact Assessment Procedure (2015)

- ✓ The project proponent has to be liable for all adverse impacts caused by doing or omitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102.
- ✓ The project proponent has to support, after consultation with effected persons by project, relevant governmental organization, governmental department and other related persons to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102.
- ✓ The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103.

- ✓ The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104.
- ✓ The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105.
- ✓ The project proponent has to continuously monitor all adverse impacts in the pre-construction phase, construction phase, operation phase, suspension phase, closure phase and post-closure phase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under paragraph 106.
- ✓ The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under paragraph 107.
- ✓ The project proponent has to submit the monitoring report semiannually or prescribed time by Ministry in line with the schedule of EMP, under paragraph 108.
- ✓ The project proponent has to prepare the monitoring report in accord with the rule 109.
- ✓ The project proponent has to show this monitoring report in public place such as library, hall and website and office of project for the purpose to know this report by public within 10 days from the date which the report is submitted to the Ministry. Moreover has to give the copy of this report, by email or other way which way agreed with the asked person, to any asked person or organization, under paragraph 110.
- ✓ The project proponent has to allow inspector to enter and inspect in working time and if it is needed by Ministry has to allow inspector to enter and inspect in the office and work-place of project and other work-place related to this project in any time, under paragraph 113.
- ✓ The project proponent has to allow inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under paragraph 115.
- ✓ The project proponent has to allow inspector to inspect the contractor and sub-contractor who implements on behalf of project, under paragraph 117.

5.2.8 National Environmental Quality (Emission) Guidelines (2015)

- ✓ The project proponent has to emit, discharge or dispose anything in line with the standards stipulated in said guideline.

5.2.9 Myanmar Fire Force Law (2015)

Purpose: To ensure to prevent the fire, to provide the precautionary material and apparatuses, if the fire caused in the project area to be defeated because the project is business in which electricity and any inflammable materials such as petroleum are used. So, the project owner has to institute the specific fire service in line with the above law. This law focuses the following.

- ✓ The project proponent has to institute the specific fire services if it is needed, under sub-section (a) of section 25.
- ✓ The project owner has to provide materials and apparatuses for fire precaution and prevention, Sub-section (b) of section 25.

5.2.10 Environmental Conservation Rules (2014)

- ✓ The project proponent has to avoid emit, discharge, or dispose, direct to discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public, under sub- rule (a) of rule 69.
- ✓ The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem, under sub-rule (b) of rule 69.

5.2.11 Employment and Skill Development Law (2013)

Purpose: To ensure the job security and to develop the employee's skill with the fund of project owner:

- ✓ The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.
- ✓ The project proponent has to carry out the training programs with the policy of Skill Development Body to develop the employment skill of employees who is appointed or will be appointed, under section 14 of said law.
- ✓ The project proponent has to monthly pay to the fund, which is fund for development of skill of employees, not less below 0.5 percentage of the total payment to the level of worker supervisor and the workers below such level, under sub-section (a) of section 30 of said law.
- ✓ The project proponent has to promise not to deduct from the payment of employees for above mentioned fund, under sub-section (b) of section 30 of said law.

5.2.12 Minimum Wages Law (2013)

Purpose: To ensure the project owner pay the wages not less than prescribed wages and notify obviously this wages in work place, moreover to be inspected.

- ✓ The project proponent has to pay the wages in line with section 12 of said law.
- ✓ The project proponent has to notify the prescribed wages obviously in work place under sub-section (a) of section 13 of said law.
- ✓ The project proponent has to correctly record the lists, schedules, documents and wages and report these to the relevant department and give if these are asked while inspecting, in accord with the stipulations under sub-section (b)(c)(d) of section 13 of said law.
- ✓ The project proponent has to allow to be inspected by the inspector, under sub-section (d) and (e) of section 13 and section 18 of said law.
- ✓ The project proponent has to allow holiday for medical treatment if the employee's health is not fit to work, under sub-section (f) of section 13 of said law.
- ✓ The project proponent has to allow holidays without deducting from the wages if one of parents or one of family dies, under sub-section (g) of section 13 of said law.

5.2.13 Conservation of Water Resources and Rivers Rules (2013)

Purpose: To obtain the permit for navigation of barges and loading/ unloading goods in the area of river-creek boundary, bank boundary and waterfront boundary.

- ✓ The project proponent has to obtain the permit for navigation of barges and loading/ unloading goods in the area of river-creek boundary, bank boundary and waterfront boundary, issued by the Ministry of Communication and Transport before the operation of the Channel 1 and abide by the conditions in permit (rule 76 A).

5.2.14 Environmental Conservation Law (2012)

Purpose: To construct a healthy and clean environment and to conserve natural and cultural heritage for the benefit of present and future generations; to maintain the sustainable development through effective management of natural resources and to enable to promote international, regional and bilateral cooperation in the matters of environmental conservation.

- ✓ The project proponent has to pay the compensation for damages if the project will causes injuries to environment, under the sub-section (o) of section 7 of said law
- ✓ The project proponent has to purify, emit, dispose and keep the polluted materials in line with the stipulated standards, under section 14 of said law
- ✓ The project proponent has to install or use the apparatus which can control or help to reduce, manage, control or monitor the impacts on the environment, under section 15 of said law.
- ✓ The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition included in prior permission, issued by the ministry, or not, under section 24 of said law.

- ✓ The project proponent has to comply with the terms and conditions included in prior permission, under section 25 of said law.
- ✓ The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification and procedure issued by said law, under section 29.

5.2.15 Settlement of Labour Disputes law (2012)

Purpose: To ensure negotiation and discussion between employees and project proponent, abiding the decision of Tribunal. This law focuses as follows:

- ✓ The project proponent has to not absent to negotiation within the stipulated time for complaint, under section 38 of said law.
- ✓ The project proponent has to not change the existing stipulations for employees within conducting period before Tribunal, under section 39 of said law.
- ✓ The project proponent has to not close the work without negotiation, discussion on dispute in accord with this law, decision by Tribunal, under section 40 of said law.
- ✓ The project proponent has to pay the compensation decided by Tribunal if violates any act or any omission to damage the interest of labour by reducing of product without efficient cause, under section 51 of said Law.

5.2.16 Social Security Law (2012)

Purpose: The project proponent has to create the social security for the employees because the project is the business under the Myanmar Citizen Investment Law. To ensure the social security for employees of the project, the project owner has to register to the social security offices and to pay the prescribed fund.

- ✓ The project proponent has to register to the respected social security office, under sub-section (a) of section 11 of said law
- ✓ The project proponent has to pay the social security fund for at least four types of social security included in sub-section (a) of section 15, under section 15 of said law.
- ✓ The project proponent has to pay the fund which has to be paid myself and together with the fund which has to be paid from their salary by the employees .Moreover the project owner will pay the cost for paying the above mentioned fund only myself under sub-section (b) of section 18 of said law.
- ✓ The project proponent has to pay the fund for accident, under sub-section(b) of section 48 of said law. (but this fund is not related to workmen compensation so if it is needed compensation must be separately paid by the Workmen compensation Act)
- ✓ The project proponent has to make correctly and submit the list and record provided in section 75 to respected social security office, under section 75 of said law.

5.2.17 Farm Land Law (2012)

Purpose: To ensure the right to use the farm land and sufficient compensation for

acquisition of the farm land. This law focuses the following matters:

- ✓ The project owner has to abide by the decision of relevant Ministry with the coordination with the Central Administrative Body of the Farmland for paying the compensation if it is needed acquisition farm land, under section 26 of said law.
- ✓ The project proponent has to obtain the permission of the Central Administrative Body of Farmland for the land use change from paddy field land to other land use under sub-section (a) of section 30.
- ✓ The project proponent has to obtain the permission of the Mon State Government with the recommendation of Mon State Administrative Body of Farmland for the land use change from farm land other than paddy field land to other land use under sub-section (b) of section 30.

5.2.18 Vacant, Fallow and Virgin Lands Management Law (2012)

Purpose: To ensure the project land is clearly get as the project land.

- ✓ Sub-section (d) of section 10 - The project proponent will ensure to get permitted areas for the project land by the Central Administrative Body on Vacant, Virgin and Fallow Land.
- ✓ Sub-section (a) of section 19- The project proponent will promise to return the land if any antique object is found in the project area.
- ✓ Sub-section (d) of section 19- The project proponent will promise to return the land if any resource is found in the project.

5.2.19 Constitution 2008

- ✓ Section 45: The Union shall protect and conserve natural environment.
- ✓ Section 96: The national legislature can, but does not need to, enact laws to protect the environment and help restore areas degraded or damaged by mining and forestry activities or those that have experienced destruction of plants, wildlife, and habitat.
- ✓ Section 196: State and Division Legislatures also have the power to regulate environmental protection, but within the boundaries of legislation passed by the National Legislature
- ✓ Section 390 (b): Every citizen has the duty to assist the Union in carrying out the environmental conservation, preservation and safeguard of cultural heritage, protection and preservation of public property and striving for development of human resources.

5.2.20 Conservation of Water Resources and Rivers Law (2006)

Purpose: The project proponent will avoid the disposal of stipulated materials into river creek.

- ✓ The project proponent has to obtain the permission for construction of canal, issued by the Directorate of Water Resource and Rivers Development before starting the project, under section 6 (a).

- ✓ The project proponent has to avoid any performing to damage to the river, creek and water resource, under sub-section (a) of section 8.
- ✓ The project proponent has to avoid disposing the fuel, chemicals, toxic substances, other substances and explosive substances from the bank to the river under sub-section (a) of section 11 of said law.
- ✓ The project proponent has to avoid disposing any material, which may damage or change the water way, from the bank to the river under section 19 of said law.

5.2.21 Freshwater Fisheries Law (1991)

Purpose: According to the sub-section (e) of section 2 of said law, the freshwater area includes any river, creek, pond and water area so the project will be near by the river or creek which is freshwater area the safety of freshwater and aquatics. This law focuses as follow:

- ✓ The project proponent has to avoid any water pollution and disturbing to fish & other aquatic lives in any fresh-water such as river, creek under section 40 of said law.

5.2.22 Public Health Law (1972)

Purpose: To ensure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department.

- ✓ The project owner will cooperate with the authorized person or organization in line with the section 3 and 5 of said law.
- ✓ Section 3 - The project proponent has to abide by any instruction or stipulation for public health.
- ✓ Section 5 - The project proponent has to allow any inspection, anytime, anywhere if it is needed.

5.2.23 The Canal Act (1905)

Purpose: To use and control for public purposes the water of all rivers and streams flowing in natural channels and of all lakes and other natural collections of still water.

- ✓ Section 21 – The project proponent (who desires to use the water of any canal) may apply to construct or improve a water-course at the cost of the applicants.

5.3 International Guidelines and Conventions

Besides National Laws and Regulations, World Health Organization's Guidelines, and IFC Performance Standards are referred for Initial Environmental Examination of the proposed project. Moreover, the project proponent will follow the international environmental treaties and conventions signed by Myanmar Government, as shown below.

Table 5.1 International Environmental Treaties and Agreements Signed By Myanmar Government

Emission to Air	Vienna Convention for Protection of the Ozone Layer (1993)
	Montreal Protocol on Substances that Deplete the Ozone Layer (1993)
	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (1993)
	Copenhagen Amendment to the Montreal Protocol on Substances that deplete the Ozone Layer (1993)
	United Nations Framework Convention on Climate Change (UNFCCC)(1994)
	Kyoto Protocol to the Convention of Climate Change (2003)
Hazardous Waste	Stockholm Convention on Persistent Organic Pollutants (2004)
	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (2015)
	Asean Agreement on Transboundary Haze Pollution (2003)
Biodiversity, Forests, and Cultural Heritage	Convention Concerning the Protection of the World Cultural and Natural Heritage (1994)
	Convention on Biological Diversity (1994)
	Cartagena Protocol on Biosafety (2000)
	International Tropical Timber Agreement (1996)
	Ramsar Convention on Wetlands (2005)
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)(1997)
	Association of Southeast Asian Nations (ASEAN) Agreement on the Conservation of Nature and Natural Resources (1997)
	Establishment of Asean Regional Center for Biodiversity (2005)
Social, Labour and Health	Universal Declaration of Human Rights (UNDHR)
	Convention on the Rights of the Child (1991)
	Convention on Elimination of All Forms of Discrimination against Women (CEDAW) (1997)

(Source: Initial Environmental Examination Report – Micro Project for River Enhancement Works at Pakkouku and Nyaung U Waterway, 2016 Sep)

5.4 Authorized Institutions for the Project

In the Republic of the Union of Myanmar, Ministry of Natural Resources and Environmental Conservation (MONREC) was reformed from Ministry of Environmental Conservation and Forestry (MOECAF) in 30 March 2016. It was intended to be a focal point and coordinating agency for the effective environmental management in Myanmar. **Environmental Conservation Department (ECD)** was developed in October 2012, under the MOECAF and ECD persists under MONREC and becomes the most responsible department for EIA process at the national level. There are also district offices and township offices of ECD at the regional and local level. For this project, ECD is the main regulatory agency for reviewing the IEE report and approving the project proponent while **Directorate of Water Resources and Improvement of River Systems (DWIR)** under Ministry of Transports and Communications (MOTC) is mainly responsible for administration of the Channel 1 operation.

5.5 Environmental Policy of June Cement Industry Ltd.

In developing the Channel 1, June Cement Industry Ltd. has set up its own environmental and social policy in line with existing laws and regulations, to manage the potential environmental and social impacts of the project effectively. The policy of the company is comprised of the followings:

1. To follow the Land Laws such as Farm Land Law, and Vacant, Fallow and Virgin Lands Management Law of the country for the land lease.
2. To control the environmental pollution in the project area, according to the existing rules and regulations of the Republic of the Union of Myanmar.
3. To prevent fire hazard by providing modern fire extinguishers, water tank, fire hydrants, hose and reels, fire drill, and by fire safety and fighting plans.
4. To make the green environment around the project area by planting the trees in each season.
5. To set up employees' welfare plan including staff transportation, dormitory, canteen, health care, risk prevention and bonus.
6. To create job opportunity for local people in short-term and long-term.

6 . DESCRIPTION OF THE SURROUNDING ENVIRONMENT

6.1 Methodology of Study

The IEE study firstly establishes baseline environmental and social setting within 3 kilometers of the project area. The following are the methodologies used in studying the surrounding environment of the Channel 1 of June Cement Plant for the IEE report preparation:

1. On-site Measurements and Analysis – During the preparation phase, baseline parameters such as air quality, soil and water quality of the existing project site are measured and collected on site, while some water and soil samples were collected and tested in respective laboratories, and results are mentioned in this Chapter.
2. Secondary Data Collection and Analysis – Some data, such as socioeconomic condition, the physical/biological environment and weather data are collected from official township data received from the Township Administrative Office.

6.2 Physical Environment

6.2.1 Climate

The climate of the project area in Kyaikmaraw Township is tropical as it is located in the low latitude zone and near the sea, therefore it experiences the typical wet and dry seasons, and rain is especially heavy in July and August. In 2016, total precipitation days were 115 days with average annual rainfall of 3,739 mm and average minimum temperature of 17°C and average maximum temperature of 37.5°C were recorded in winter and summer respectively. In 2017, total precipitation days were 116 days with average annual rainfall of 3,680 mm and average minimum temperature in winter was 17°C and average maximum temperature in summer was 37.5°C respectively. [Source: General Administration Department of Kyaikmaraw Township data (2017)]

6.2.2 Topography and Watershed Area of Channel 1

The project site is situated in Kyaikmaraw township, Mon State and is about 40km South-East from Mawlamyine, 8 km South from Kyaikmaraw. It is also located adjacent to the Ataran River and can be considered as practically flat in the 3 km-radius except Pyar Taung Limestone Mountain. Pyar Taung is situated approximately 3 km South-East from the project site. In the vicinity of the project, Kawt Pa Naw, Kawt Dun and Mai Ka Yo Villages are located at the elevations of 19 m, 14 m and 10 m respectively in the flat area.

The Channel 1 is located in Ataran River Basin and the main inflow into it is runoff from Pyar Taung. The estimated watershed area of Channel 1 is about 1.35 km². The topography of the project surroundings and watershed area can be seen in below figure.

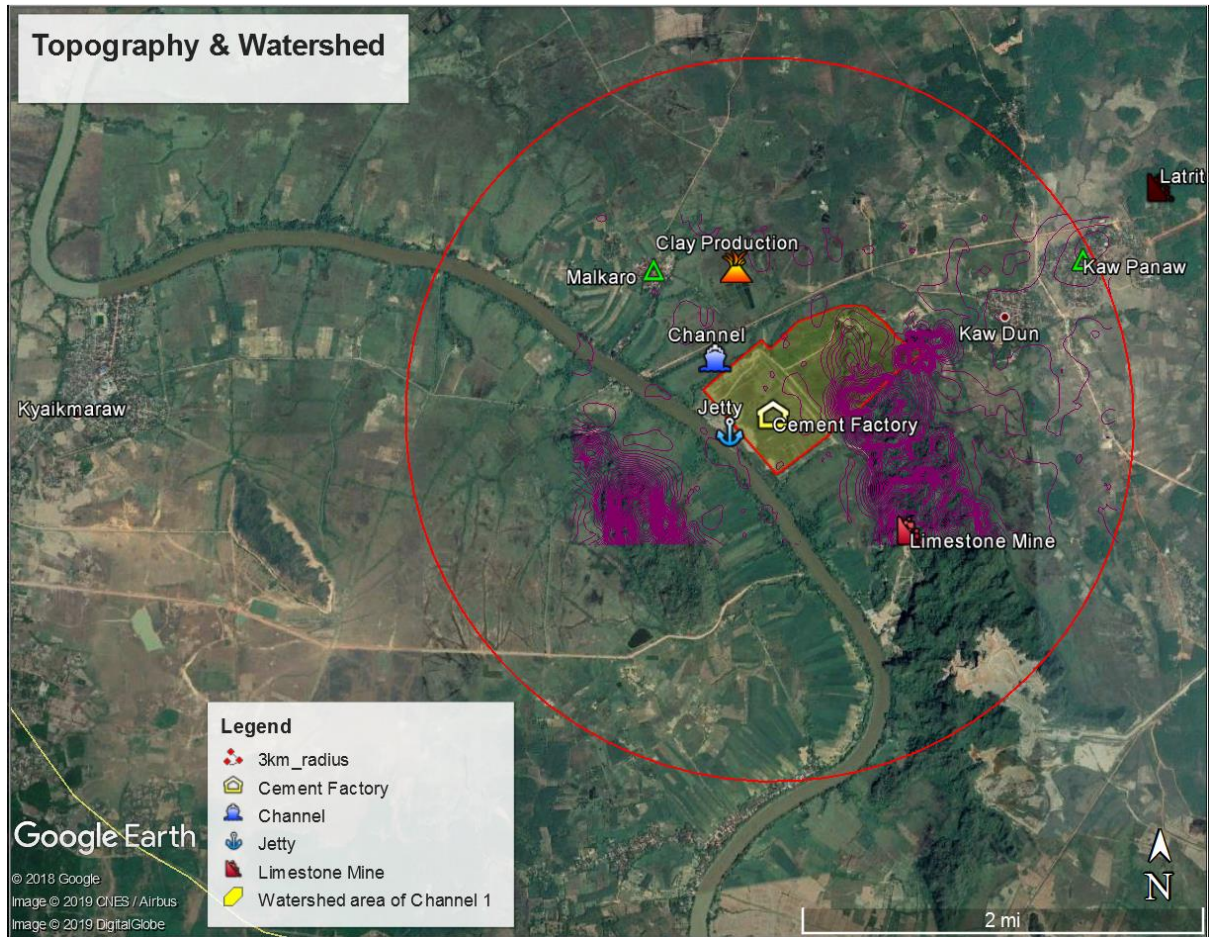


Figure 6.1 Topography and Watershed Area of Channel 1

6.2.3 Earthquake Intensity

The proposed project site in Kyaikmaraw Township is located in the 'Moderate' seismic zone (Zone II) with the probable range of ground acceleration - 0.1 ~ 1.5 g, and Modified Mercalli Scale class - 7. Historically, although Myanmar is exposed to earthquakes, the areas of Mon State have been free or out of the danger of it (Source: Table 9-Summary of historical and recent earthquakes in Myanmar, Hazard Profile of Myanmar, July 2009).

6.2.4 Flood

In rainy season from May to September, Kyaikmaraw Township usually faces the flood due to the continuous rainfall and high flow of Ataran River. The elevation and shape of the township serve the flooding as water basin and the flood water cannot flow back to the river in short period. Especially lowland areas in town and villages along the river bank suffer the flood. However no serious damage is encountered because the local people adapt the flood to evacuate their houses during the flood. Normally, flood inundation period is 3 to 5 days but in some areas, it takes as long as one month for flood waters to recede to Ataran River. In 2002, August 19, the flood was occurred in Kyaikmarwa Township and 829 households were affected. (Source: Hazard Profile of Myanmar, July 2009)

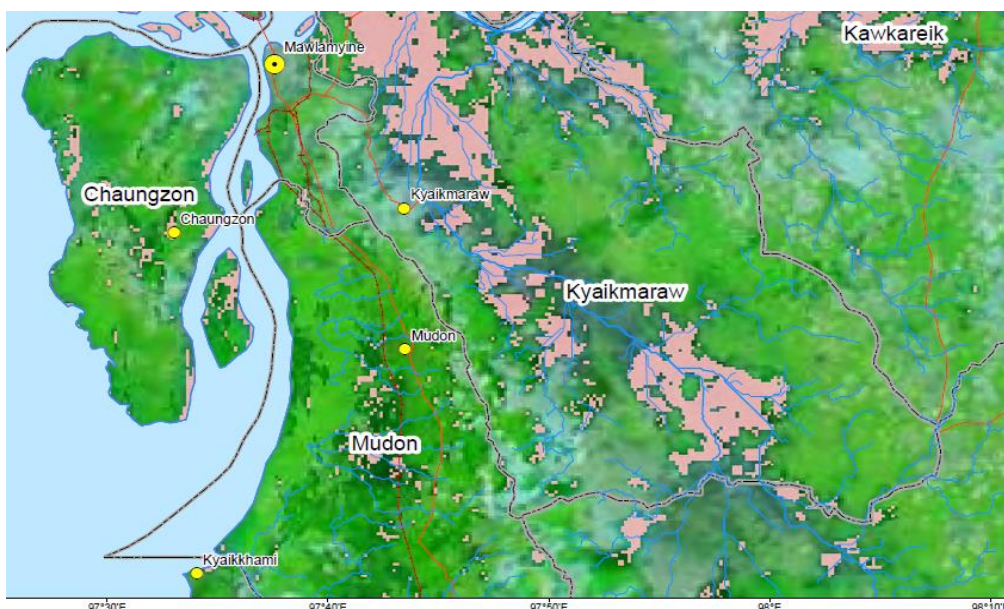


Figure 6.2 Inundated areas of Flood 2002 in Kyaikmaraw Township (Source: MIMU)

During August 2019, monsoon floods were occurred in many areas in Myanmar and Mon State including Kyaikmaraw Township was intensely affected with both flood by water level increase in major river, Than Lwin, and landslides by heavy rain. **Situation Report No(1) of National Disaster Management Committee** (as of 16 August 2019), stated "Out of 12 flood affected States and Regions, Mon State was the most devastated with 73 deaths, 48 injured and 42,354 people from 9,927 households were evacuated to 136 evacuation sites. Significantly, the massive landslide at the Ma Lat Mountain in Paung Townshi wase the worst in the recent memory of Mon State as it caused 69 deaths and 47 injured". According to International Federation of Red Cross and Red Crescent Societies (IFRC) Report: **Emergency Plan of Action Operation Update, Myanmar Monsoon Floods** (issued on 24 September 2019), the Inter-Cluster Coordination Group (ICCG) mission from 13 – 15 August 2019 indicated about Myanmar Kyats 1.2 billion value of losses and damaged estimated for Mon State alone.

Table 6.1 Flood Affected Areas in Myanmar (as of 16 August 2019)

No.	Affected State/ Region	Death	Injured	Evacuated		Evacuation Sites
				Household	Population	
1	Kachin	1		5,214	25,451	80
2	Magway	2		1,065	3,351	15
3	Bago		1	5,480	26,351	8
4	Mon	73		9,927	42,354	136
5	Sagaing		48	4,730	21,510	22
6	Chin			342	1,742	
7	Rakhine			1,529	9,632	59
8	Mandalay	1		5,759	24,438	20
9	Kayin			6,921	33,082	43
10	Ayeyarwady			236	1,050	5
11	Tanintharyi	5		2,359	11,341	11
12	Yangon			197	831	1
	Total	82	49	43,759	201,133	400

FLOOD ANALYSIS USING SATELLITE IMAGERY

BEFORE AND AFTER 5TH AUGUST 2019

DARK BLUE COLOR INSIDE THE CIRCLE IN AFTER IMAGE SHOWS THE MOST AFFECTED AREA

FLOODING IN MON STATE

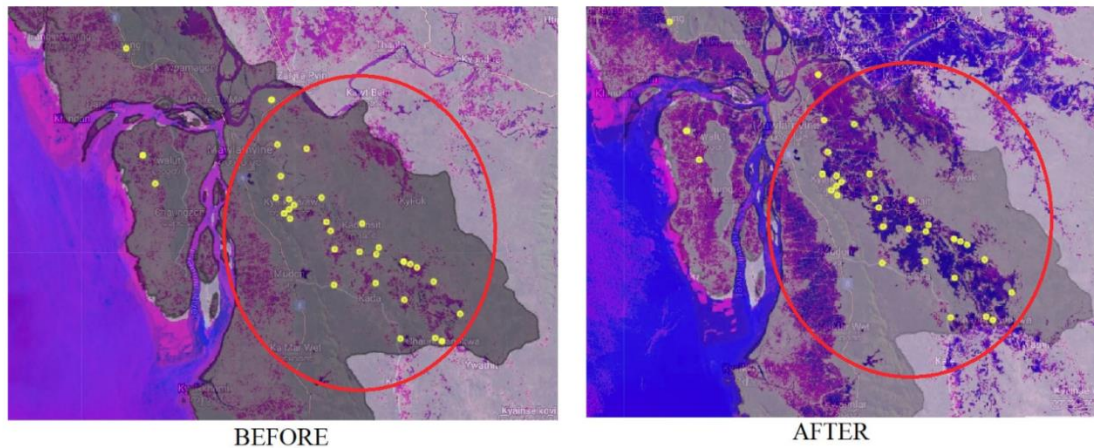


Figure 6.3 Flood Affected Areas in Mon State in August 2019



Flood water covered Mayinkone Village, Lamukho village tract, Kyaikmaraw Township (Photo-Bo Bo Myint)

<https://elevenmyanmar.com/news/flood-water-covers-villages-in-kyaikmaraw>

<https://elevenmyanmar.com/news/over-46000-flood-victims-in-kyaikmaraw-need-emergency-aid>



Flood water covered some areas of Kyaikmaraw (Photo-Aung Myo Thant)

Figure 6.4 Flooded Areas in Kyaikmaraw Township in August 2019



Figure 6.5 Landslide at Thae Phyu Kone on 9 August 2019

(Source: MIMU)

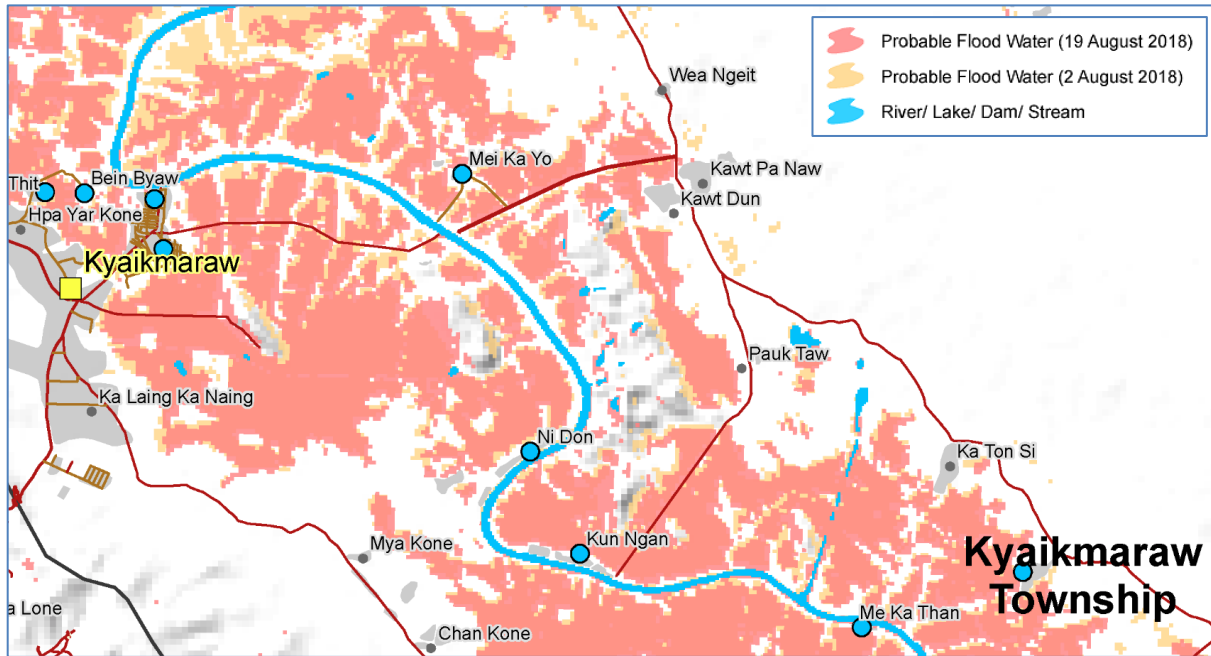


Figure 6.6 Flood Inundated Areas Around Channel 1 Project Site

6.2.5 Hydrology

The project site is located at the bank of Ataran River with an altitude of approximately 8 meters above the sea level. The main rivers in the project area are Ataran River, Gyaing River and Zami River. Ataran is one of the famous rivers in the region and is flowing from south to north across Kyaikmaraw Township. Ataran and Gyaing rivers are accessible by ships and boats. Most of the rivers and streams in Mon State provide freshwater and can therefore be used both for agriculture and domestic uses.



Figure 6.7 Main Rivers in Kyaikmaraw Township

6.2.6 Soil

According to the result of soil investigation and ground water analysis performed by Fukken Co., Ltd (Myanmar Branch) in Nov 2010, the ground at project site area is almost covered with thick sediment of Younger Alluvium, mostly flood plain deposit. The older deposits are underlain by Younger Alluvium and the deposits are mainly made up of residual clay, also called terra rossa soil. Depending on water content and composition of material, characteristic of clay is moderate to high plasticity and consistency is different. The bed rock of the project area is limestone with the shallowest depth of 19 meters from ground level.

6.2.7 Access and Transportation

The project site is always accessible by boat navigating the Ataran River from Kyaikmaraw, from which project site can be accessed by means of cars or motorcycles. It can also be accessed by car from Mawlamyine during the dry season by the car.

6.3 Sediment Characteristics

Sediment sampling was carried out in June 2019 at the point of $16^{\circ} 22' 35.34''$ N and $97^{\circ} 46' 46.36''$ E, which is the confluence of Ataran River and the creek on which Channel 1 would be excavated. The sediment sample was collected from disturbed sediment in the top 5 cm of river bed by using sediment grab instrument. Then the sample has been sent out to the laboratory to know the characteristics for composition analysis. The analysis is aimed to define the situation in which contaminants associated with sediments, are likely to be a threat of aquatic ecosystem, before the project.



Figure 6.8 Location of Sediment Sampling Point

The laboratory used for sediment analysis is described below and the lab report can be seen in annex.

✚ United Analyst and Engineering Consultant Co., Ltd., 3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Tel: 0 2763 2828, Fax: 0 2763 2800
www.uaeconsultant.com, email: uae@uaeconsultant.com

Sediment quality parameters considered for Channel 1 are:

1. Fat, Oil and Grease (mg/kg)
2. Arsenic (As) (mg/kg)
3. Mercury (Hg) (mg/kg)
4. Lead (Pb) (mg/kg)
5. Cadmium (Cd) (mg/kg)
6. Nitrogen (N) (% w/w N)
7. Phosphorus (P) (mg/kg)
8. Chromium (Cr) (mg/kg)
9. Nickel (Ni) (mg/kg)
10. Copper (Cu) (mg/kg)
11. Total Organic Carbon (% w/w dry weight)
12. Pesticide/ Polychlorinated biphenyls (PCB's) (mg/kg)

Sediment quality results are shown in Table 6.2 by comparing with the values of Australian and New Zealand Guidelines for Fresh and Marine Water Quality released in Year 2000 (ANZECC/ARMCANZ, 2000). Generally, most of the lab results of parameters analyzed is within the range of guideline values.

Table 6.2 Sediment Quality for Channel 1

Sediment Parameters	Unit	ANZECC/ARMCANZ, 2000		Observed Values
		ISQG-Low (Trigger value)	ISQG-High	
Fat, Oil and Grease	(mg/kg)			125
Arsenic (As)	(mg/kg)	20	70	51.4
Mercury (Hg)	(mg/kg)	0.15	1	ND
Lead (Pb)	(mg/kg)	50	220	47.7
Cadium (Cd)	(mg/kg)	1.5	10	ND
Nitrogen (N)	(% w/w N)			ND
Phosphorus (P)	(mg/kg)			459
Chromium (Cr)	(mg/kg)	80	370	25.4
Nickel (Ni)	(mg/kg)	21	52	56.6
Copper (Cu)	(mg/kg)	65	270	30.5
Total Organic Carbon	(% w/w dry weight)			12,514
Pesticide/ Polychlorinated biphenyls (PCB's)	(mg/kg)	23	-	ND

ND: Non-detectable

By comparing observed values with guidelines, it can be seen that Nickel concentration is slightly higher than ISQG value. It indicates that river sediment has Nickel contamination and the reason why it happens, might be natural Ni sources or/ and anthropogenic sources such as human settlement and agriculture activities. However, in order to determine whether this exceeding level might be a risk to aquatic ecosystem, seasonal quality measurement and specific studies for example toxicity testing, are required. Other quality parameters are within the guideline values.

6.4 Air Quality

Before the said project is implemented, baseline air quality should be measured at and in the vicinity of the site to assess background levels of key pollutants and to differentiate between existing ambient conditions and project-related impacts in future. Air quality is composed of dust and gas emissions to ambient air. The parameters are CO₂, CO, SO₂, NO₂ and O₃ for gas emission, and PM₁₀ and PM_{2.5} for dust emission.



Figure 6.9 Haz-Scanner (EPAS)

The emissions of dust particles and gases were measured for 24hrs continuously at the selected sites by using the Environmental Perimeter Air Station (EPAS), at the point of 16° 22' 37.55" N and 97° 46' 56.72"E in the channel area, from 15 to 16 March 2019. EPAS provides direct readings in real time with data-logging capabilities. The measurement results are compared with National Environmental Quality (Emission) Guideline (NEQG) and World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.



Figure 6.10 Location of Air Quality Measurement

Table 6.3 Ambient Air Quality of National Environmental Quality (Emission) Guidelines

Parameter	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate matter $\text{PM}_{10}^{\text{a}}$	1-year	20
	24-hour	50
Particulate matter $\text{PM}_{2.5}^{\text{b}}$	1-year	10
	24-hour	25
Sulfur dioxide	24-hour	20
	10-minute	500

^a Particulate matter 10 micrometers or less in diameter^b Particulate matter 2.5 micrometers or less in diameter

Table 6.4 Air Quality Measurement for Channel 1 in March 2019

Date	Time	Single Value	CO ₂ (ppm)	CO (ppb)	NO ₂ (ppb)	PM ₁₀ $\mu\text{g}/\text{m}^3$	PM _{2.5} $\mu\text{g}/\text{m}^3$	RH %	SO ₂ (ppb)
15.3.2019	17:00-17:59	Average	294.15	0.00	2.00	55.98	43.52	16.37	1.00
15.3.2019	18:00-18:59	Average	185.18	0.00	2.23	56.02	45.80	16.42	1.00
15.3.2019	19:00-19:59	Average	190.12	0.00	2.00	41.37	33.50	18.25	1.00
15.3.2019	20:00-20:59	Average	152.73	0.00	2.00	43.40	31.07	22.78	1.00
15.3.2019	21:00-21:59	Average	116.57	0.00	2.13	38.68	30.52	23.92	1.00
15.3.2019	22:00-22:59	Average	101.97	0.00	2.87	44.32	33.12	25.33	1.00
15.3.2019	23:00-23:59	Average	108.72	0.00	2.00	44.15	36.98	23.50	1.00
16.3.2019	0:00-0:59	Average	83.27	0.00	2.37	60.68	44.35	26.03	1.00
16.3.2019	1:00-1:59	Average	125.85	0.15	2.22	32.38	21.38	24.92	1.00
16.3.2019	2:00-2:59	Average	334.80	0.00	2.00	31.18	17.55	20.73	1.00
16.3.2019	3:00-3:59	Average	505.62	0.00	2.18	31.42	21.20	20.98	1.00
16.3.2019	4:00-4:59	Average	580.07	0.00	3.05	42.50	36.93	23.92	1.00
16.3.2019	5:00-5:59	Average	602.90	0.00	2.00	47.70	39.40	23.90	1.00
16.3.2019	6:00-6:59	Average	623.72	0.00	2.00	50.07	43.83	23.97	1.00
16.3.2019	7:00-7:59	Average	270.52	0.00	2.00	57.78	48.65	14.80	1.00
16.3.2019	8:00-8:59	Average	183.33	0.00	4.13	55.83	46.22	19.17	1.00
16.3.2019	9:00-9:59	Average	130.05	0.00	3.22	51.83	47.32	17.78	1.00
16.3.2019	10:00-10:59	Average	105.27	0.00	2.17	59.43	50.52	15.28	1.00
16.3.2019	11:00-11:59	Average	119.73	0.00	2.00	56.48	43.08	6.05	1.00
16.3.2019	12:00-12:59	Average	161.22	0.00	2.00	42.18	33.90	5.03	1.00
16.3.2019	13:00-13:59	Average	368.47	0.00	2.42	41.47	32.33	13.83	1.00
16.3.2019	14:00-14:59	Average	512.67	0.00	2.32	44.25	37.22	15.63	1.00
16.3.2019	15:00-15:59	Average	694.42	0.00	2.02	29.33	22.52	16.53	1.00
16.3.2019	16:00-16:59	Average	800.45	0.00	2.08	32.08	22.13	18.70	1.00
		Average	306.32	0.01	2.31	45.44	35.96	18.91	1.00
		1 hour Minimum	83.27	0.00	2.00	29.33	17.55	5.03	1.00
		1 hour Maximum	800.45	0.15	4.13	60.68	50.52	26.03	1.00

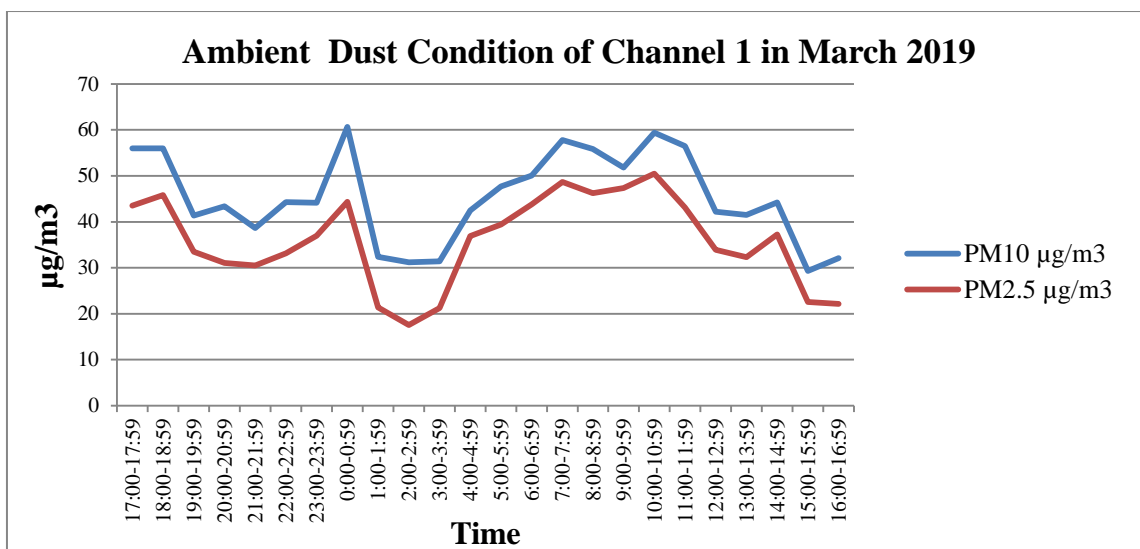


Figure 6.11 PM Results in Channel 1 Area in March 2019

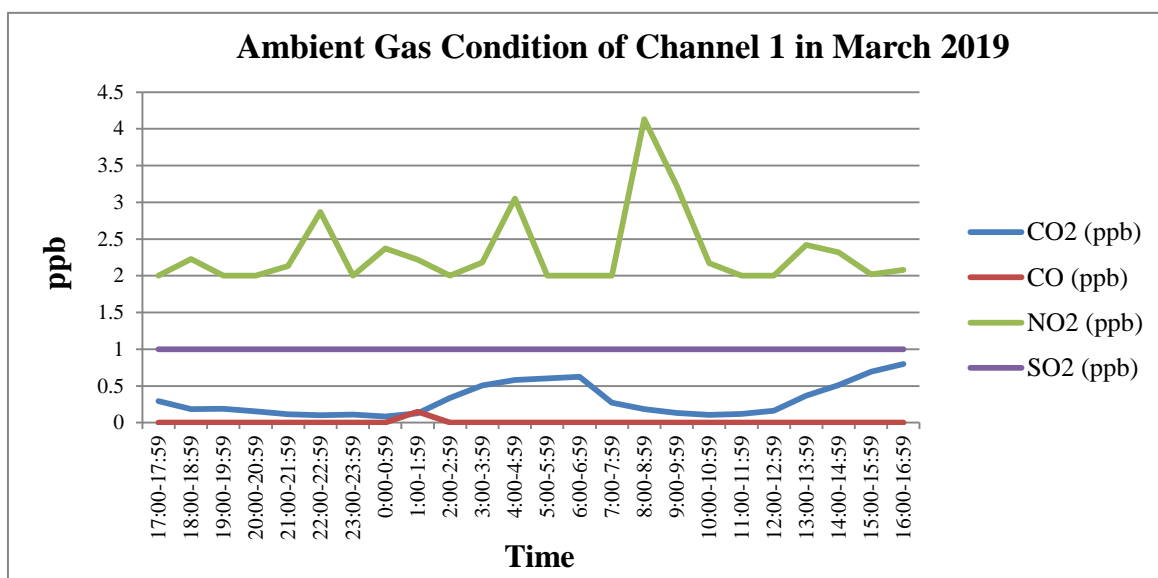


Figure 6.12 Fluctuation of Air Pollutants During Dial Cycle in Channel 1 Area

Table 6.5 Ozone Measurement

No.	Date	Time	Single Value	Observed Value (ppm)
1	15.3.2019	17:00:00-17:59:00	Average	0.0047
2	15.3.2019	18:00:00-18:59:00	Average	0.0000
3	15.3.2019	19:00:00-19:59:00	Average	0.0000
4	15.3.2019	20:00:00-20:59:00	Average	0.0008
5	15.3.2019	21:00:00-21:59:00	Average	0.0505
6	15.3.2019	22:00:00-22:59:00	Average	0.0659
7	15.3.2019	23:00:00-23:59:00	Average	0.0650
8	16.3.2019	00:00:00-00:59:00	Average	0.0720
9	16.3.2019	01:00:00-01:59:00	Average	0.0625
10	16.3.2019	02:00:00-02:59:00	Average	0.0268
11	16.3.2019	03:00:00-03:59:00	Average	0.0238
12	16.3.2019	04:00:00-04:59:00	Average	0.0159

No.	Date	Time	Single Value	Observed Value (ppm)
13	16.3.2019	05:00:00-05:59:00	Average	0.0541
14	16.3.2019	06:00:00-06:59:00	Average	0.0659
15	16.3.2019	07:00:00-07:59:00	Average	0.0650
16	16.3.2019	08:00:00-08:59:00	Average	0.0720
17	16.3.2019	9:00:00-9:59:00	Average	0.0625
18	16.3.2019	10:00:00-10:59:00	Average	0.0268
19	16.3.2019	11:00:00-11:59:00	Average	0.0238
20	16.3.2019	12:00:00-12:59:00	Average	0.0159
21	16.3.2019	13:00:00-13:59:00	Average	0.0217
22	16.3.2019	14:00:00-14:59:00	Average	0.0142
23	16.3.2019	15:00:00-15:59:00	Average	0.0483
24	16.3.2019	16:00:00-16:59:00	Average	0.0485
Average				0.0378
Maximum				0.0720
Minimum				0.0000

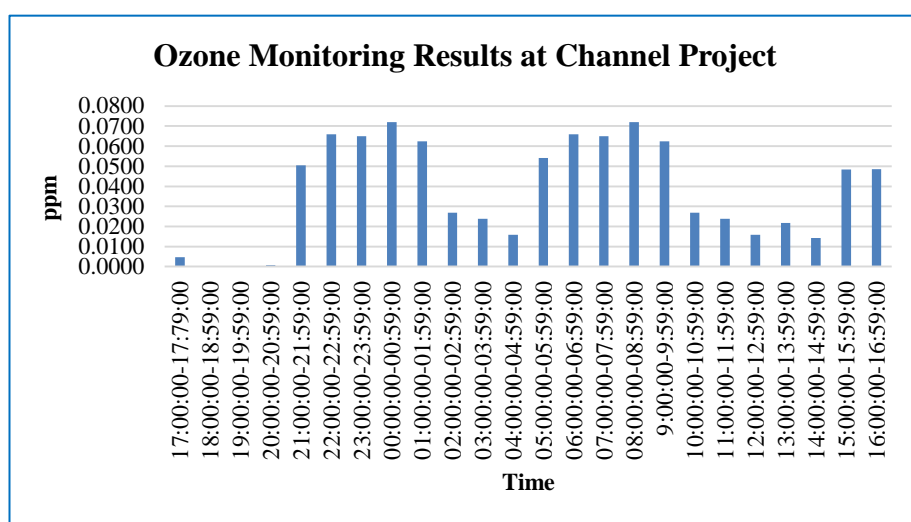


Figure 6.13 Ozone Measurement in Channel Area in March 2019

As per the comparison between guideline values and observed values with equivalent unit, it can be seen that PM_{2.5} is higher than NEQG value and the reason is dry season in which PM concentration is usually high. CO₂, CO, NO₂, SO₂ and Ozone are within the NEQG values.

Table 6.6 Observed Ambient Air Quality Results for Selected Point

Parameters	Observed Value for Channel 1	Guideline Values	Unit	Averaging Period
CO ₂	403.35	5000 (ACGIH)	ppm	8hrs
CO	0.00001	9 (WHO)	ppm	8hrs
PM ₁₀	45.44	50 (NEQG)	µg/m ³	24hrs
PM _{2.5}	35.96	25 (NEQG)	µg/m ³	24hrs
SO ₂	2.62	20 (NEQG)	µg/m ³	24hrs
NO ₂	7.77	200 (NEQG)	µg/m ³	1hrs
O ₃	74.16	100 (NEQG)	µg/m ³	8hrs

6.5 Water Quality

The project proponent is responsible for ensuring the drainage or runoff from the project or its related activities do not deteriorate the existing water quality. Water Samples were collected on site at a point with appropriate sampling equipment and procedures. Objectives of the sampling and analysis of water quality is to understand the existing water quality at the selected locations and to monitor the impacts before the operation.

The field surveys of **surface water** and **ground water** quality monitoring and sampling are done on 17 March 2019 at a point $16^{\circ} 22' 39.714''$ N and $97^{\circ} 46' 56.223''$ E (the Channel 1 point) and $16^{\circ} 23' 17.619''$ N and $97^{\circ} 48' 57.448''$ E (a tube well in Kawt Pa Naw Village).



Figure 6.14 Location of Surface Water Quality Measurement

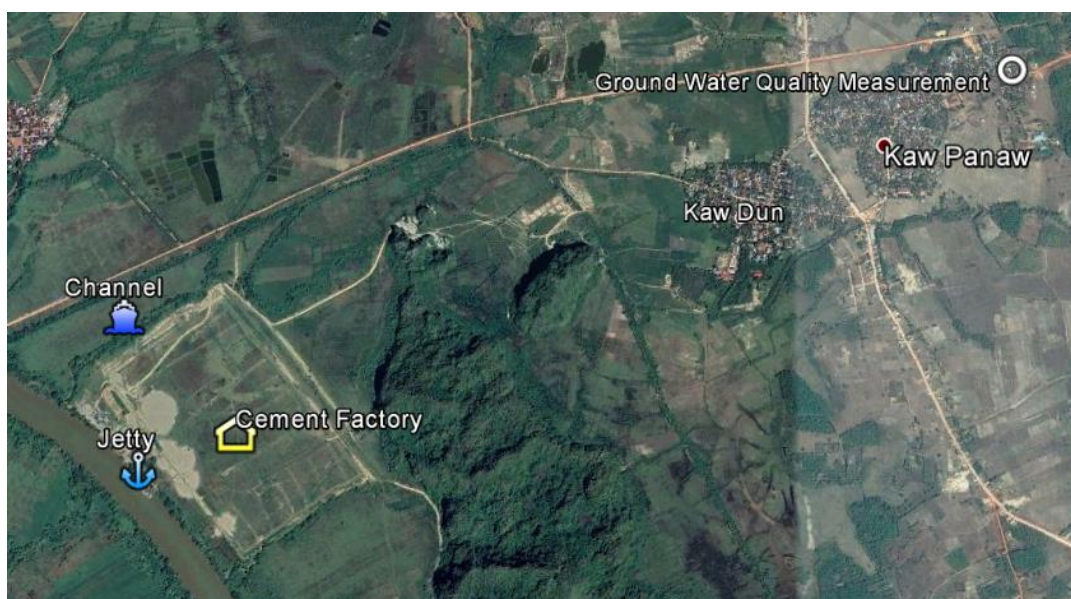


Figure 6.15 Location of Ground Water Quality Measurement

Baseline quality of surface water and ground water are recorded by laboratory analysis systematically. Physical parameters such as pH, electrical conductivity, turbidity, salinity, DO, Temperature of surface and ground water were measured on site by portable multi parameter water quality meter. The sampling team has pre-arranged with the labs in Yangon for analysis and logistic arrangement made to reach the preserved samples with unique Identity Numbers to the designated labs within 48 hours.



Figure 6.16 Water Sampling Bottle

The sampling and survey team has a list of local laboratories providing analytical services for water quality analysis. Up to this date, there is no laboratory having accredited certification for water quality testing (environmental analysis) in Myanmar. The following laboratories were used for analysis of water and parameters are shown in Table 6.7.

1. ISO Lab, No-18, Lanthit Road, Insein Township, Yangon. Tel; 01 540 955, 732251575
2. SGS Minerals and Environmental Services, No. 79D, Bo Chain Street, 6-1/2Miles, Hlaing Township, Yangon. Tel; 01 654 795, 654 796

Table 6.7 Water Quality Parameters for both Surface Water and Ground Water of Channel

Water Quality Parameter		
	Surface Water	Ground Water
Chemical Parameter	BOD, COD	BOD, COD
Physical Parameter	pH, Total Suspended Solid	pH, Total Suspended Solid, Turbidity, Colour (True)
Nutrients	Total Nitrogen, Total Phosphorous	Total Nitrogen, Total Phosphorous
Compounds	Oils & grease	Oils & grease
Biological	Total Coliform Bacteria	Total Coliform Bacteria

Surface water quality sampling results are compared with (1) National Environmental Quality (Emission) Guidelines: Effluent levels for ports, harbours and terminals shown in Table 6.8 and (2) Ambient water quality standards for the protection of aquatic life.

Table 6.8 Effluent Levels for Ports, Harbours and Terminals of NEQG

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

^a Standard unit

Analyzed surface water quality results are shown in Table 6.9, by comparing with NEQG and the ambient water quality standards. Generally, most of the lab results of parameters analyzed, except Total Suspended Solids, are within the national water quality standard.

Table 6.9 Surface Water Quality for Channel 1

Parameters	NEQG for Ports, Harbours & Terminals	Ambient water quality standards for the protection of aquatic life	Surface Water Quality Result for Channel
Biochemical Oxygen Demand (BOD) (5 days at 20 .C)	30 mg/l		20 mg/l
Chemical Oxygen Demand (COD)	250 mg/l		64 mg/l
Oil & Grease	10 mg/l	Substantially absent, no iridescent sheen	<5 mg/l
pH (Lab Results)	6-9	6.5-9	7.6
Free Chlorine			Nil
Total Chlorine			Nil
Total Suspended Solids	50 mg/l	10 mg/l	214 mg/l
Total Nitrogen	10 mg/l		<1 mg/l
Total Phosphorus	2 mg/l		0.020 mg/l
Thermotolerant (fecal) Coliform Count			2 CFU/100ml
Total Coliform Bacteria	400 CFU/100ml		10 CFU/100ml

In general, Total suspended solids (TSS) are particles that are larger than 2 microns found in the water column. Most suspended solids are made up of inorganic materials and will not settle out by gravity. These solids include anything drifting or floating in the water, from sediment, silt, and sand to plankton and algae. Organic particles from decomposing materials can also contribute to the TSS concentration. These suspended particles can come from soil erosion, runoff, discharges, stirred bottom sediments or algal blooms. However, TSS is not necessarily a threat to health and is an important indicator of the possible presence of contaminants. **It can be treated by coagulation, sedimentation, and filtration, disinfection using chlorine, ozone and ultraviolet irradiation.**

Ground water quality results are shown in Table 6.9 and compared with WHO guidelines. Most of the lab results of parameters analyzed are within the range of WHO guidelines except turbidity. Turbidity in water is caused by suspended particles or colloidal matter that obstructs light transmission through the water. Turbidity in some groundwater sources is a consequence of inert clay or chalk particles or the precipitation of insoluble reduced iron and other oxides when water is pumped from anaerobic waters. However, it is not necessarily a threat to health and is an important indicator of the possible presence of contaminants. **It can be treated by coagulation, sedimentation, and filtration, disinfection using chlorine, ozone and ultraviolet irradiation.**

Table 6.10 Ground Water Quality for Channel 1

Parameters	WHO Health based guideline	Ground Water Quality Result for Chancel
Biochemical Oxygen Demand (BOD) (5 days at 20 .C)	≤ 3.0 mg/l	2 mg/l
Chemical Oxygen Demand (COD)		32 mg/l
Oil & Grease		<5 mg/l
pH (Lab Results)	6.5 - 8.5	6.8
Total Suspended Solids	1500 mg/l	<20 mg/l
Total Nitrogen		<1 mg/l
Total Phosphorus		<0.01 mg/l
Total Coliform Bacteria		2 CFU/100ml
Turbidity	2 NTU	5 NTU
Colour	Nil TCU	15 TCU

6.6 Noise Level

The noise levels in the project area are measured by Digital Sound Level Meter at the same point of air quality measurement on 11 to 12 March 2019. Observed values are mentioned in Table 5.10 and they are compared with the National Environmental Quality (Emission) Guidelines (NEQG) as shown in Figure 4.8, giving the separate level for residential and industrial points. The proposed project is the industrial building and so 70 dB (A) is defined for noise level of both day and night of the said project. According to this range, it can be concluded that the noise levels measured: 43.47 dB for day and 36.70 dB for night are within NEQG limits.



Figure 6.17 Digital Sound Level Meter

Table 6.11 Noise level of National Environmental Quality (Emission) Guidelines

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

^a Equivalent continuous sound level in decibels

Table 6.12 Observed Values of Noise Level Measurement at Channel

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	16.3.2019	7:00:13-7:59:13	40.77	A	Day	43.47
2	16.3.2019	8:00:13-8:59:13	51.50	A	Day	
3	15.3.2019	9:00:13-9:59:13	36.33	A	Day	
4	15.3.2019	10:00:13-10:59:13	37.33	A	Day	
5	15.3.2019	11:00:13-11:59:13	37.02	A	Day	
6	15.3.2019	12:00:13-12:59:13	34.85	A	Day	
7	15.3.2019	13:00:13-13:59:13	38.53	A	Day	
8	15.3.2019	14:00:13-14:59:13	43.85	A	Day	
9	15.3.2019	15:00:13-15:59:13	42.43	A	Day	
10	15.3.2019	16:00:13-16:59:13	45.17	A	Day	
11	15.3.2019	17:00:13-17:59:13	51.92	A	Day	
12	15.3.2019	18:00:13-18:59:13	52.69	A	Day	
13	15.3.2019	19:00:13-19:59:13	49.27	A	Day	
14	15.3.2019	20:00:13-20:59:13	49.32	A	Day	
15	15.3.2019	21:00:13-21:59:13	41.07	A	Day	
16	15.3.2019	22:00:13-22:59:13	37.84	A	Night	36.70
17	15.3.2019	23:00:13-23:59:13	35.83	A	Night	
18	16.3.2019	0:00:13-0:59:13	36.36	A	Night	
19	16.3.2019	1:00:13-1:59:13	38.10	A	Night	
20	16.3.2019	2:00:13-2:59:13	36.41	A	Night	
21	16.3.2019	3:00:13-3:59:13	36.20	A	Night	
22	16.3.2019	4:00:13-4:59:13	37.36	A	Night	
23	16.3.2019	5:00:13-5:59:13	37.04	A	Night	
24	16.3.2019	6:00:13-6:59:13	35.20	A	Night	
Average			40.93			

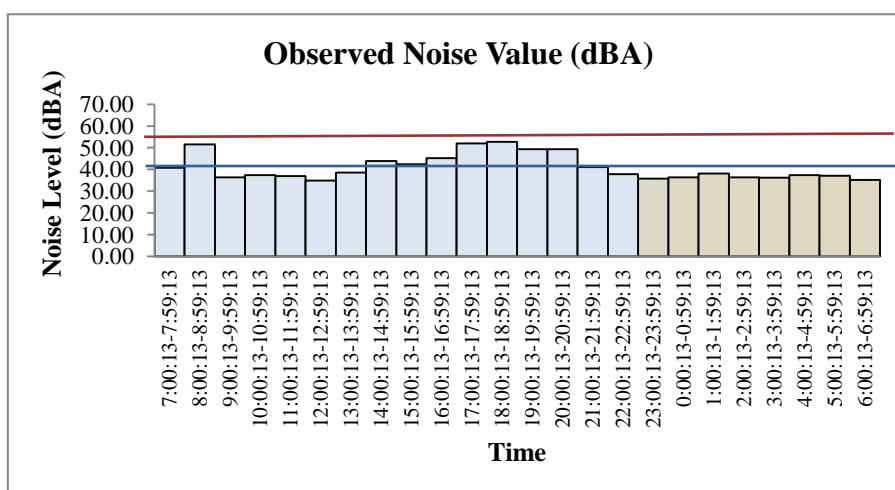


Figure 6.18 Noise Level at Channel

6.7 Wind Speed and Direction

Wind speed and wind direction are recorded at the same point of air quality measurement in the project area from 15 March to 16 March 2019, with the use of Davis Vantage Pro2 Wireless Weather Station. Vantage Pro2 provides detailed current weather conditions and expanded forecasts - all at a glance. The observed data of wind speed and direction are described in Figure 6.16.



Figure 6.19 Davis Vantage Pro2 Wireless Weather Station

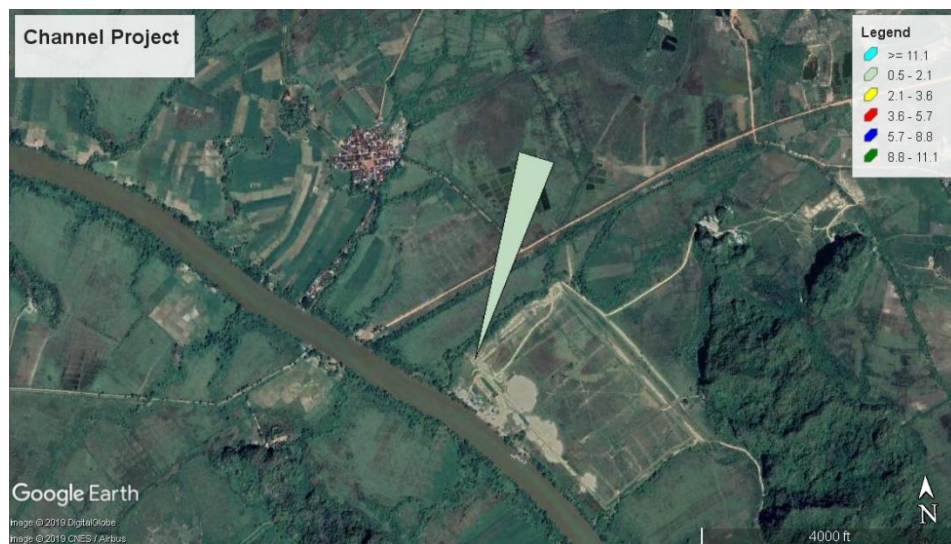


Figure 6.20 Wind Speed and Wind Direction (Blowing From) at Channel 1

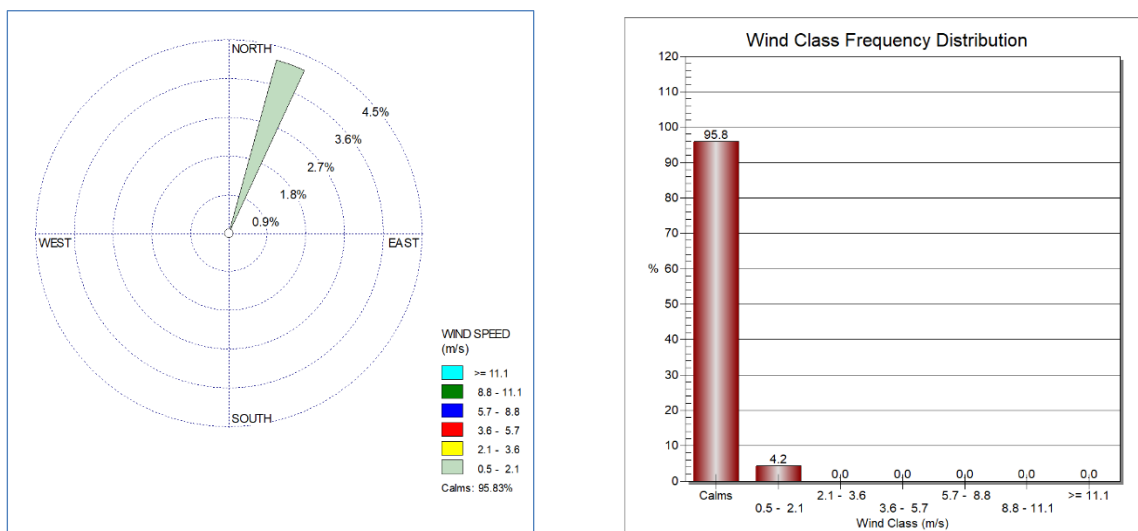


Figure 6.21 Wind Class Frequency Distribution at Channel 1

6.8 Ecosystem

Flora: Flora species usually found in Kyaikmaraw Township are Pyinkadoe, Padauk, Inn, Htaukkyunt, Pyinma, Thityinn, Lamu, Thinkhan, Thityar, Kokko, Latpan and Pauk.

Fauna: Wild boar, barking deer and monkeys are found in Kyaikmaraw Township.

Cultural Heritages: There is no cultural heritage site in the project area.

Forest: Kyaikmaraw Township has 22.04% of total forest coverage and all of them are reserved forest area. There is no protected public forest in the township.

Environmental Conservation Works: For environmental conservation, total area of 72804.88 acres has been established as the reserved forest area. Currently, there is no protected public forest and total forest plantation area for hard wood is 11 acres.

Natural Disasters: Kyaikmaraw township usually encountered flood in rainy season, especially in heavy raining condition. As a record, no natural disasters such as storm, tsunami, earthquake, fire, has been recorded in Kyaikmaraw township up to September, 2017.

Source: General Administration Department of Kyaikmaraw township data (2017)

6.9 Socio-economic Environment

6.9.1 Demographic Profile

Ethnic Groups: The followings are the record of ethnic groups living in Kyaikmaraw Township.

No.	Races	Population	Township Population	Percent of Total Township Population
1	Kachin	-	-	-
2	Kayar	-	-	-
3	Kayin	45558	45558	20%
4	Chin	5	5	0.01%
5	Mon	106978	106978	48.18%
6	Myanmar	28377	28377	13.23%
7	Rakhine	35	35	0.02%
8	Shan	1120	1120	0.47%
9	PaOo	-	-	-
10	Others	39970	39970	19.01%
11	Pakistan	2	2	0.01%
Total		222091	222091	101%

Source: General Administration Department of Kyaikmaraw Township data (2017)

Households, Families and Populations: Total populations of Kyaikmaraw Township up to September, 2017 are shown in the following tables.

Households/ Families

No.	Description	Households	Families	Ward	Village Groups	Village
1	Urban	2102	2120	2	43	164
2	Rural	33515	35717	2	43	164
Total		35617	37837	2	43	164

Source: General Administration Department of Kyaikmaraw Township data (2017)

Populations

No.	Description	Over 18 years old			Under 18 years old			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Urban	4308	4628	8936	1967	1952	3919	6275	6580	12855
2	Rural	62814	66685	129499	39581	40156	79737	102395	106841	209236
Total		67122	70313	138435	41548	42108	83656	108670	113421	222091

Source: General Administration Department of Kyaikmaraw Township data (2017)

6.9.2 Economic Profile

Economic Overview: Kyaikmaraw township is located in Mon State, Thanintharyi Division and is one of the little undeveloped townships. Agriculture is the main business in the township. From Kyaikmaraw, Mawlamyine, Mudon, Kawkareik and Kyainseikgyi regions are accessible by land and sea routes and therefore has the good communication network. Rubber is the main product of the region and is mainly exported to Mawlamyine and Mudon.

Forest:

No	Description	Area (acres)	Plants
1	Reserved Forest	72623.30	Pyinkadoe, Inn, Yaymein, Myayar, Didu, Zinpyon, Nabae, Sits
2	Protected Public Forest	-	-
Total		72623.30	-

Source: General Administration Department of Kyaikmaraw Township data (2017)

Forest Products:

No	Type	Unit	Production
1	Firewood	Cubic Tons	430
2	Bamboo	Unit	34000

Source: General Administration Department of Kyaikmaraw Township data (2017)

Mineral Production: Information about mineral production in Kyaikmaraw Township are shown as below.

No	Mineral Type	Location	Amount (Sud)	Cost (in millions)
1	Cobble-stone	Kun Ngan village	4400	11000
2	Cobble-stone	NgaPu Inn village	1600	4000
3	Cobble-stone	Kaw Pa Naw village	1100	2750
4	Cobble-stone	HparThein village	700	1750
Total			7800	19500

Source: General Administration Department of Kyaikmaraw Township data (2017)

Land Use: Different types of land use in Kyaikmaraw Township can be submitted as follows;

No.	Types of Land	Area (acre)
1.	Net Area for plantation	144589
	(i) Farmland	52853
	(ii) Orchard	91736
2.	Vacant Land Area	51708
	(i) Farmland	51708
3.	Pasture Land	8005
4.	Land for industrial zone	1492
5.	Urban Lands	2912
6.	Village Lands	9076
7.	Other Lands	3071
8.	Reserved forest and protected forest area	72602
9.	Wild forest	6569
10.	Wild land	11544
11.	Area not to be cultivated	40482
Total		327494

Source: General Administration Department of Kyaikmaraw Township data (2017)

6.9.3 Socia-economic Survey

E Guard's IEE study team carried out key informant interview with some village leaders in three villages (Mai Ka Yo, Kawt Pa Naw and Kawt Dun) located near the proposed project.

Kawt Don village is governed by Kawt Pa Naw village administrator and most of the local people are migrated workers for their livelihood. In Kawt Pa Naw and Kaw Don villages, the local people commonly use purified water and tube well water for drinking and domestic use. The villager leaders said that transportation was good. In Mai Ka Yo village, tube well water is used for both drinking and domestic use. It is known from village leaders that the transportation is very difficult during rainy season. The leaders of these three villages expect that transportation, education, economic and health conditions, and job opportunity may develop due to the proposed project. They have a concern if the proposed project uses the coal for the power source, it might occur the conflict between local people and factory workers, which might not support for local development.



Figure 6.22 Key Informant Interview for Socio-economic Survey

7 . IDENTIFICATION AND ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

7.1 Objectives of the Study

The objectives of this study are to identify the potential impacts due to the project activities on the natural environment and human beings, to highlight the significance of impacts with assessment parameters and its scales and to formulate mitigation measures, which are to eliminate or to reduce adverse potential impacts on the surrounding environment.

7.2 Phases of the Project

Potential impacts for the proposed projects are normally considered for three phases of the project i.e. Construction phase, Operation phase and Decommissioning phase. **Construction phase** includes topographic and geometric surveying, access road laying, site-cleaning, dyke or coffer dam construction, canal construction, transportation and storage of construction materials, and embankment construction. Construction period is a year. **Operation phase** consists of navigation of barges, loading and unloading the sling cement bags by the loader and maintenance works. **Decommissioning phase** will contain the demolition all channel facilities. Any waste generated from decommissioning process would be properly handled and disposed of in accordance with governing authority requirements.

7.3 Assessment Methodology

The assessment of each impact is based on consideration of the magnitude, duration, spatial and frequency of activities which are going to be carried out during phases, and characteristics of the project site. The significance (quantification) of potential environmental impacts has been determined by using a ranking scale. The assessment is qualitative and the significance of each impact is classified into five categories.

The following methodology has been applied to assess the environmental impacts of the project mainly on air, water, land, biodiversity including human beings. Each source of impact has been assessed by four parameters, magnitude, duration, extent and probability and each assess have five scales as mentioned below:

Table 7.1 Impact Assessment Parameters and Its Scale

Assessment Parameter	Scale				
	1	2	3	4	5
Magnitude (M)	Insignificant	Small and will have no effect on working environment	Moderate and will result in minor changes on working environment	High and will result in significant changes on working environment	Very High and will result in permanent changes on working environment
Duration (D)	0-1 year	2-5 year	6-15 year	Life of operation	Post Closure

Assessment Parameter	Scale				
	1	2	3	4	5
Extent (E)	Limited to the site	Limited to the local area	Limited to the region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probably	Definite

Then, the Significant Point (SP) is calculated by following formula.

$$\text{Significant Point (SP)} = (\text{Magnitude} + \text{Duration} + \text{Extent}) * \text{Probability}$$

Based on calculated significant point, impact significance can be categorized as follows:

Table 7.2 Impact of Significance

Significant Point (SP)	Impact's Significance	Significance Description
<15	Very Low	No significant impact
15-29	Low	Insignificant impact
30-44	Moderate	Low impact, try to improve
45-59	High	Significant impact, real necessity to improve
>60	Very High	Unsustainable situations

7.4 Potential Impacts of Proposed Project

The environmental impacts can be defined as possible adverse effects caused by a development, industrial, or infrastructural project. The Channel 1 will be excavated on the existing seasonal creek and designated as a canalized stream. The irrigation canal is built parallel to the Channel 1 by the local people and thus the original creek has never used for any purpose. However, the development of this project will bring changes in the local environment in terms of physical, biological and socio-economic aspects. The impacts generated might be both positive and negative.

Based on the analysis of environmental baseline information and activities that are to be performed by the project, the possible environmental impacts are identified. Each of the environmental issues has been examined in terms of likely impacts during construction, operation and decommissioning of the project. The impacts on the environment from various activities of the project can be categorized as follows:

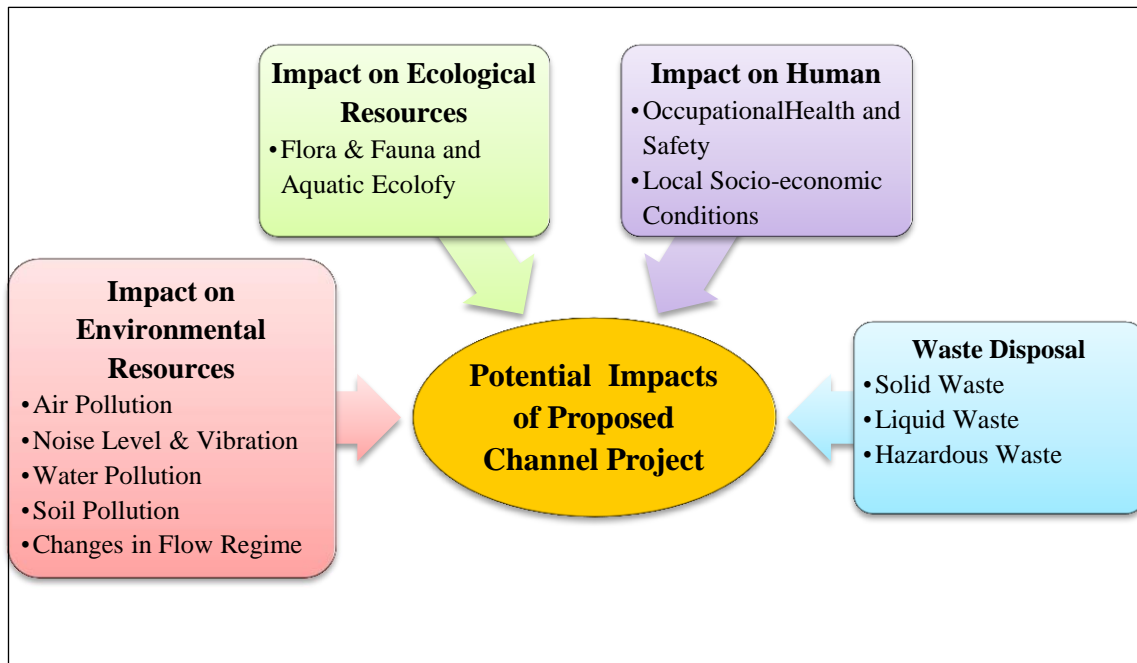


Figure 7.1 Potential of Impact of Channel 1

7.5 Potential Impacts and Their Significance

The project activities, their impacts and significance of impact are provided in Table 7.3. According to the results of analysis, it can be concluded that most of the project activities have the low significance on environment while some show moderate significance which needs to improve for environmental performance.

Table 7.3 Potential Environmental Impacts, Project Activities, and Impact's Significance

Potential Environmental Impacts		Project Activities	M	D	E	P	SP	Impact's Significance
Construction Phase								
Impact on Environmental Resources	1. Loss of Aesthetic Feature of Land	<ul style="list-style-type: none"> Vegetation and topsoil removal Site clearance & earthwork excavation 	3	2	2	3	21	Low
	2. Air Pollution	<ul style="list-style-type: none"> Dust emission from vegetation and topsoil removal Dust emission from site clearance, earthwork excavation and back filling Dust emission from construction of access roads and canal infrastructures Dust and gas emission from vehicle and equipment movement for transport of construction materials and construction activities Gas emission from operation of diesel generator Wind erosion from open areas or stockpile areas of construction materials and waste Burning of waste materials 	3	2	2	5	35	Moderate
	3. Noise Level and Vibration	<ul style="list-style-type: none"> Operation of construction equipment & machineries and working activities Operation of diesel generator for construction power Bore pile driving activities Vehicular movement for transport of construction materials 	4	2	1	5	35	Moderate

Potential Environmental Impacts		Project Activities	M	D	E	P	SP	Impact's Significance
Impact on Ecological Resources	4. Water Pollution	<ul style="list-style-type: none"> • Runoff including sediment, litter, heavy metals and hydrocarbons from site clearing and earth work excavation during wet season • Non-hazardous solid waste generated from site preparation and construction activities • Diversion of the existing creek during canal construction • Discharged water from open areas or stockpile areas of construction materials 	3	2	3	5	40	Moderate
	5. Soil Contamination	<ul style="list-style-type: none"> • Removal and compaction of soil, leading to loss of topsoil • Site clearing including trees cutting • Working activities, exposed roads and open areas • Accidental spills or releases and leakage of chemicals, grease and oils. 	2	2	1	3	15	Low
	6. Changes in Flow Regimes	<ul style="list-style-type: none"> • Stream diversion by the coffer dam for construction of channel • Effluent from construction area • Muck disposal 	3	2	2	3	21	Low
	7. Flora & Fauna and Aquatic Ecology	<ul style="list-style-type: none"> • Encroachment into farmland and ecological areas • Construction of canal, coffer dam and appurtenance structures • Vehicle strike due to construction vehicles • Noise and vibration from construction activities and vehicular movement 	3	2	2	3	21	Low

Potential Environmental Impacts		Project Activities	M	D	E	P	SP	Impact's Significance
Impact on Human	8. Local socio-economic conditions	<ul style="list-style-type: none"> • Temporary employment creation (masonry, electrician, carpentry and etc.) • Increase infrastructures such as roads and schools 	-	-	-	-	-	Positive Impact
	9. Occupational Health and Safety	<ul style="list-style-type: none"> • Physical hazards such as exposure to dust, noise and spills of oil • Risk of accidents, electric shock and fires due to construction activities, vehicular movement, handling electrical equipment and emergency diesel generators • Population influx during construction can cause communicable disease, sexually transmitted infections and pressure on local health services infrastructures. 	4	2	2	4	32	Moderate
	10. Solid Waste	<ul style="list-style-type: none"> • Domestic and industrial waste generated from construction • Muck disposal 	2	2	1	5	25	Low
	11. Liquid Waste	<ul style="list-style-type: none"> • Sewage from workers • Effluent from construction area 	2	2	2	4	24	Low
Waste Disposal	12. Hazardous Waste	<ul style="list-style-type: none"> • Engine oil leaks, spills at diesel storage and during diesel refueling. • Used oil and lubricant discharged from the maintenance of vehicles and machines. 	2	2	1	3	15	Low
Operation Phase								
Impact on Environmental Resources	1. Air Pollution	<ul style="list-style-type: none"> • Emission from vessels, barges and ships for transportation • Emission of HCFC from air conditioning in office 	2	4	1	3	21	Low

Potential Environmental Impacts		Project Activities		M	D	E	P	SP	Impact's Significance
Impact on Ecological Resources	2. Noise Level and Vibration	<ul style="list-style-type: none"> • Operation of ship loaders, ships and diesel generator for canal operation • Vehicular movement for transport of cement sling bags 	<ul style="list-style-type: none"> • Leakage of oil and lubricants from vehicles • Accidental oil spills from barges and ships 	2	4	2	4	32	Moderate
	3. Water Pollution		<ul style="list-style-type: none"> • Navigation of ship • Operation of canal with the fluctuation of water level 	3	4	2	3	27	Low
	4. Changes in Flow Regimes		<ul style="list-style-type: none"> • Noise and vibration from ships and barges movement • Water level fluctuation of canal operation 	3	4	2	3	27	Low
	5. Aquatic Ecology		<ul style="list-style-type: none"> • Employment opportunities for local people during investment period (engineers, economists, accountants, technical specialists) • Skill development • Economic Opportunities in Township • Increase roads and schools' facilities by CSR of project • Navigation of ships affecting the seasonal fishing of local people 	2	4	2	3	24	Low + Positive Impact
Waste Disposal	6. Local socio-economic conditions								
	7. Occupational Health and Safety	<ul style="list-style-type: none"> • Risk of accidents, electric shock and fires vehicular movement, handling electrical equipment and emergency diesel generators. 	<ul style="list-style-type: none"> • Domestic solid waste generated from office staff and employees of canal operation • Domestic sewage and greywater from staff of canal operation 	4	2	2	4	32	Moderate
	8. Solid Waste			1	4	1	3	15	Low
	9. Liquid Waste			1	4	1	3	15	Low

Potential Environmental Impacts		Project Activities	M	D	E	P	SP	Impact's Significance
	10. Hazardous Waste	<ul style="list-style-type: none"> Engine oil leaks, spills at diesel storage and during diesel refueling. Used oil and lubricant discharged from the maintenance of vehicles and machines. Electronic waste 	2	4	3	3	27	Low
Decommissioning Phase								
Impact on Environmental Resources	1. Air Pollution	<ul style="list-style-type: none"> Gaseous and dust emission from the activities of decommissioning of canal infrastructures 	3	1	2	5	30	Moderate
	2. Noise Level and Vibration	<ul style="list-style-type: none"> Operation of heavy vehicles and equipment from decommissioning activities. Vehicular movement for transport of demolished materials 	3	1	2	5	30	Moderate
	3. Water Pollution	<ul style="list-style-type: none"> Activities related with decommissioning works and waste disposed by decommissioning workers. Oil spillage from demolition machinery equipment. 	2	1	2	4	20	Low
	4. Soil Contamination	<ul style="list-style-type: none"> Accidental spills or releases and leakage of grease and oils from machinery and equipment of demolition 	2	1	2	3	15	Low
	5. Changes in Flow Regimes	<ul style="list-style-type: none"> Remains the canal as a natural creek 	-	-	-	-	-	-
	6. Flora & Fauna and Aquatic Ecology	<ul style="list-style-type: none"> Remains the canal as a natural creek 	-	-	-	-	-	-
	7. Local socio-economic conditions	<ul style="list-style-type: none"> Temporary employment creation from demolition of canal infrastructures 	-	-	-	-	-	Positive Impact
Impact on Ecological Resources								
Impact on Human								

Potential Environmental Impacts		Project Activities	M	D	E	P	SP	Impact's Significance
	8. Occupational Health and Safety	<ul style="list-style-type: none"> Physical hazards such as exposure to dust and noise Risk of accidents, electric shock and fires due to decommission activities and vehicular movement Population influx during decommissioning can cause communicable disease, sexually transmitted infections and pressure on local health services infrastructures. 	4	1	2	4	28	Low
Waste Disposal	9. Solid Waste	<ul style="list-style-type: none"> Demolished wastes such as bricks, concrete materials, glass, iron, wood materials Domestic wastes from workers 	2	1	2	5	25	Low
	10. Liquid Waste	<ul style="list-style-type: none"> Sewage from workers and effluent from site area 	2	1	1	4	16	Very low
	11. Hazardous Waste	<ul style="list-style-type: none"> Engine oil leaks, spills of vehicles and machines used in decommissioning 	2	1	1	4	16	Very low

According to the results of analysis, it can be concluded that most of the project activities have the low significance on environment while some show moderate significance which needs to improve for environmental performance. The potential impacts of project activities in the phase of construction, operation and Decommissioning, and their significance are provided in Table 7.4 and Figure 7.2 in details.

Table 7.4 Significance of Potential Impacts

Potential Impacts of Channel 1 Project	Construction	Operation	Decommissioning
Loss of Aesthetic Feature of Land	Low		
Air Pollution	Moderate	Low	Moderate
Noise Level and Vibration	Moderate	Moderate	Moderate
Water Pollution	Moderate	Low	Low
Soil Contamination	Low		Low
Changes in Flow Regimes	Low	Low	
Flora & Fauna and Aquatic Ecology	Low	Low	
Local socio-economic conditions		Low	
Occupational Health and Safety	Moderate	Moderate	Low
Solid Waste	Low	Low	Low
Liquid Waste	Low	Low	Very low
Hazardous Waste	Low	Low	Very low
Total Impacts	11	10	8

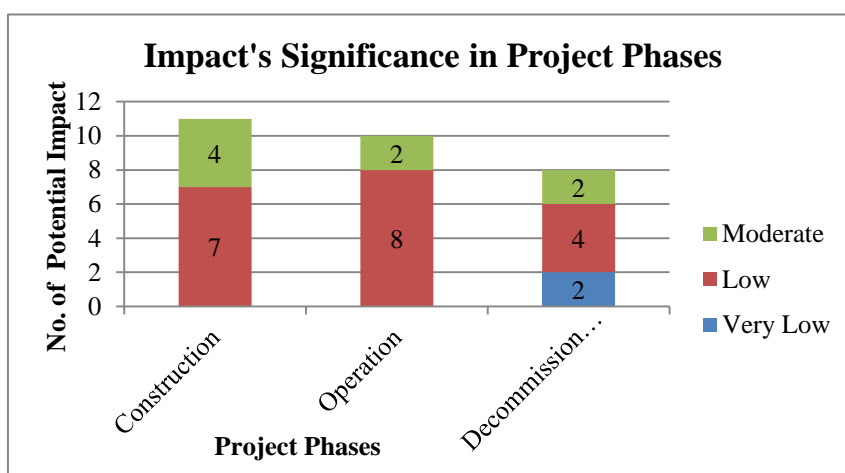


Figure 7.2 Impact's Significance in Project Phases

7.6 Mitigation Measures of Potential Impacts for Project Phases

7.6.1 Mitigation for Aesthetic Feature of Land

Loss of aesthetic feature of land might occur **only in construction phase** due to vegetation and topsoil removal, and site clearance and earthwork excavation and it is short-term impact. In order to control this impact, June Cement Industry Ltd. will develop the green belt plantation in the area of June Cement Plant, including the Channel 1 area during construction of the proposed project. The plantation is also aimed to reduce the noise and air pollution

caused by project activities, to enhance soil condition. The project proponent has already developed a full grown nursery for growing tree saplings.

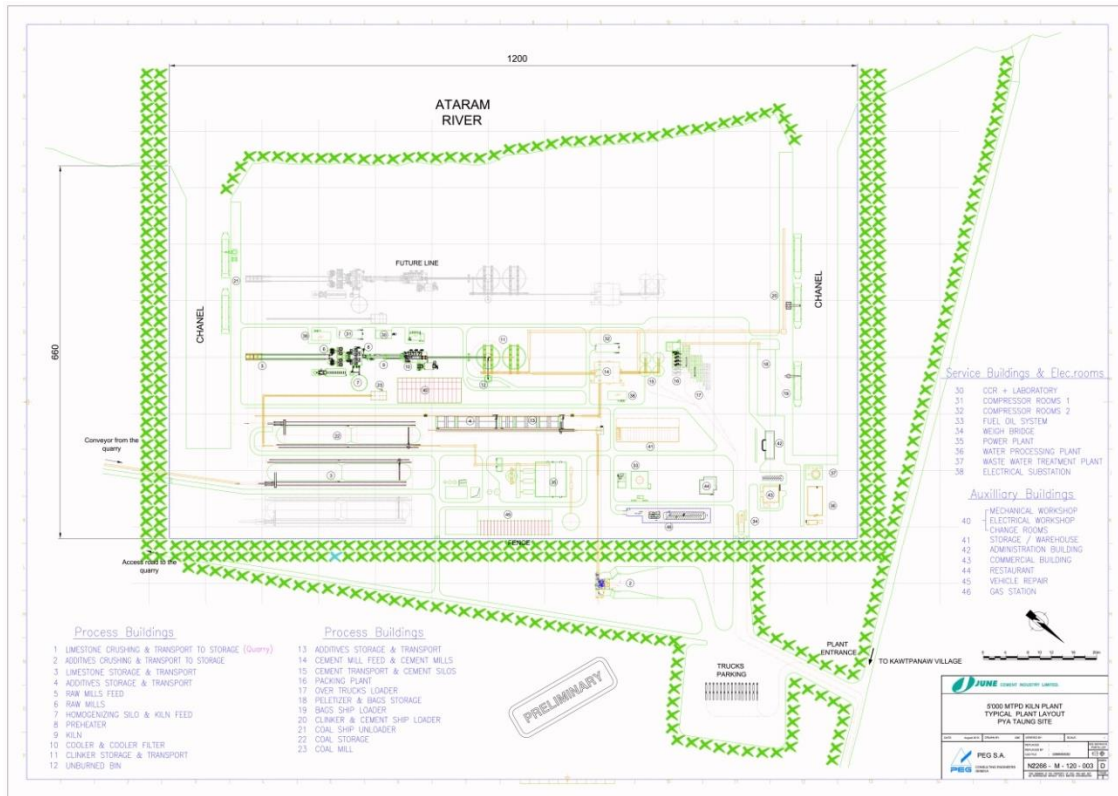


Figure 7.3 Green Belt Plantation of June Cement Industry Ltd.



Figure 7.4 Nursery Plants (Kantkaw and Khayay) for Green Belt Development

7.6.2 Mitigation for Air Pollution

During **construction** of Channel 1, the major air pollutant of prime concern is emission of dust particles from working activities and emission from machines and equipment, and emission from vehicles transporting construction materials will occur and they will affect ambient air quality. Gas emission from operation of diesel generator, wind erosion from open areas or stockpile areas of construction materials and waste, and burning of waste materials, and cause the air pollution. In order to control the air pollution, the water will be sprayed over

and temporary cover will be installed around the area in which scattering and propagation of dust occurred i.e. roads and stockpiles of materials. All vehicles transporting construction materials will be covered properly during transportation and dumping, and will be driven at controlled speed so that dust cannot spread out. All machineries and equipment will have engines and exhaust systems maintaining exhaust emission within permissible limit. Burning of waste materials will not be allowed; the best construction practices will be applied and the working hours will be restricted.

During **operational stage**, emission from vessels, barges and ships for transportation, emission of HCFC from air conditioning in office, and generation operation for emergency case, can impair air quality. Some mitigation measures such as the use of masking agents, efficient ventilation system and air-conditioning system with refrigerant HFC (R410A) instead of HCFC (R22) will be adopted. According to the typical operation process, the proposed project canal has low impact on air quality. Moreover, gas emissions from ships and barges will require mitigation by using the ones of which types are approved by DWIR and adopting good navigation management measures.

In **decommissioning** phases, negative impacts on ambient air quality such as Gaseous and dust emission from the activities of decommissioning of canal infrastructures would be expected after its lifespan. The impacts will be mitigated by using covers or control equipment and well-maintained machineries and equipment for decommissioning.

7.6.3 Mitigation for Noise Level and Vibration

In **construction** phases, the sources of noise pollution are heavy duty construction equipment and working activities including bore pile driving. They affect adverse impact on the surrounding habitations and health of the workers. Properly designed control system of equipment, occupational preventive measures and temporary noise barriers for noise attenuation shall be applied. For diesel generators, noise enclosure should be built. Workers employing in high noise areas should be worked on shifts and hearing protective wear such as earplugs, earmuffs, etc. should be provided.

During the **operational period**, the major noise pollution source will be operation of ship loaders, ships and diesel generator for canal operation, and vehicular movement for transport of cement sling bags. In order to prevent adverse noise exposure to the employees, mitigation measures such as earplugs and other hearing protective wear should be given. For people in the vicinity of the proposed factory, noise barriers and buffer areas should be organized by tree planting.

Decommissioning the canal infrastructures after expiry of the life can affect noise level. The measures can be taken as the same in construction process.

7.6.4 Mitigation for Water Pollution

The water pollution can be noticed through the parameters such as alteration and depletion in ground water recharge; decrease in dilution capacity of channel; trapped nutrients and sediments;

eutrophication; and changed water temperature.

In the phases of **construction**, surface and ground water may be contaminated by excavation or earth work during monsoon season or rainy periods because runoff might include sediment, litter, heavy metals and hydrocarbons from site areas. Moreover, wastewater generated from workers and staff, leakage of oil and grease from vehicles and machines, and discharged water from open areas or stockpile areas of construction materials. Such contaminated surface water can percolate through the soil and eventually ground water pollution. These pollutions will be reduced by avoiding earth work in rainy season, by construction embankment to prevent the polluted water flowing into Ataran River, discharging wastewater into existing sewer line, provision of temporary toilets for labour, using leak proof containers for storage and transportation of oil and grease, and keeping the impervious floors of oil and grease handling areas. June Cement Industry Ltd. will carry out the drainage system with embankment, earth drain, a culvert and two sluices with flap gates for the whole cement plant. All the surface water in the cement plant area will pass through the earth drain and finally flow into the irrigation canal parallel to the Channel 1. Layout of the drainage system is described in Annex 9.

During **operation**, surface and ground water may be contaminated by leakage of oil and lubricants from vehicles and accidental oil spills from barges and ships. To control this pollution, the company will use the well-maintained ships approved by DWIR and adopt the oil spill remediation plan covering physical, chemical, thermal and biological remediation methods. However at this stage of the project, the said remediation plan has not yet been available. Material Safety Data Sheets (MSDS) of the said fuel and oils will also be obtained by the project proponent. Moreover, the water quality of the Channel 1 will be maintained according to National Environmental Quality (Emission) Guidelines.

In **decommissioning** phase, the water can be polluted due to the activities related with decommissioning works, waste disposed by decommissioning workers, and fuel and oil spillage from demolition machinery equipment. The measures can be taken as the same in construction process.

7.6.5 Mitigation for Soil Contamination

During **construction and decommissioning**, erosion, degradation and loss of topsoil can be occurred due to removal and compaction of soil, working activities, exposed roads and open areas. Site clearing such as trees cutting can cause the erosion of soil. The mitigation measures that will be taken by the project proponent are to avoid earthwork excavation and to regularly assess the stability of disrupted slopes especially in monsoon season. Accidental spills or releases and leakage of grease and oils from machinery and equipment will cause the soil contamination and it will be mitigated by using oil spill equipment and adequate secondary containment.

It is not expected that the distinct impacts on soil will occur during the **operation** of Channel 1.

7.6.6 Mitigation for Changes in Flow Regimes

Changes in flow regimes of Channel 1 refers to change in flow pattern of Channel 1 and Ataran

River, sedimentation, downstream hydrological changes such as water pollution and river-edge erosion, changes to local hydrodynamic processes, water quality and sediment quality.

The sources of the changes during **construction** are stream diversion by the coffer dam for construction of channel, effluent from construction area and muck disposal. The changes will be controlled by ensuring the diversion scheme to reproduce the flow and the water level of the stream and to control the sediment during the coffer dam construction. What is more, by avoiding earth work in rainy season, by construction embankment to prevent the polluted water flowing into Ataran River, and by discharging wastewater into existing sewer line will reduce the changes.

During **operation** of the canal, the flow regimes can be changed by navigation of ship, operation of canal with the fluctuation of water level. Mitigation measures will be taken by setting minimum flow requirements for the depleted stretch of the channel, by releasing the environmental water that would closely replicate the natural flooding regime for the proposed project, and by removing the sediment deposited to maintain the required water level.

The Channel 1 will remain as a natural creek in the **decommissioning** phase and so no notable changes in flow regimes will occur.

7.6.7 Mitigation for Flora & Fauna and Aquatic Ecology

In general, the probable ecological impact on flora and fauna and aquatic ecology can be happened in **construction phase** of the project due to encroachment into farmland and ecological areas; construction of canal, coffer dam and appurtenance structures; vehicle strike due to construction vehicles; and noise and vibration from construction activities and vehicular movement. The potential impacts might be loss of floristic biodiversity and fauna habitat and changes to fisheries resources. Although June Cement Industry has selected the project site where there is no national protected area, coastal resources and mangrove area nearby and so the significant impact will not occur in the project area, the mitigation measure such as careful selection of disposal site of sediments and disposal method.

In the **operation phase**, noise and vibration from ships and barges movement, and water level fluctuation of canal operation, can impact the flora and fauna and aquatic ecology in the Channel 1 area. To control these causes, it is necessary to operate the well-maintained ships, as the rules of DWIR, to set minimum flow requirements for the depleted stretch; to maintain the effluent level according to National Environmental Quality (Emission) Guidelines; and to carefully dispose the waste generated from the employee as per waste management plan.

The Channel 1 will remain as a natural creek in the **decommissioning** phase and so no notable changes in flow regimes will occur.

7.6.8 Local Socio-Economic Conditions

The proposed project is the long-term investment in industrial sector and it has significant impact on socio-economic and cultural life of the people in the study area. Most of the

impacts on socio-economic environment may be positive associated with some adverse effects. Implementation of proposed project may create temporary employment (masonry, electrician, carpentry and etc.) during **construction and decommissioning phases**. In addition, local people may have benefits from increased business opportunities such as market, trade and commerce, as well as basic infrastructures such as roads and schools to be developed by June Cement Industry Ltd. as CSR.

The Channel 1 project is the part of June Cement Plant Project and the management of the Channel 1 will be the same as the whole cement project. Thus in **operational phase**, the project attached the main cement project, will create employment opportunities for local people during investment period (engineers, economists, accountants, technical specialists) and skill development. Consequently, socio-economic standards of local people will be increased and eventually it may lead to the economic growth at local and regional level. However, according to the Public Consultation held on 15 June 2019 at Monastery in Kawpanaw Village, Kyaikmaraw Township, the local fishermen have concern on their livelihood i.e. seasonal fishing due to the navigation of ships and barges. Thus June Cement has committed to solve this concern by informing the fishermen about the schedule of ships via the signboards and Grievance Redress Committee in advance, by reducing the number of shipping time to the lowest during the fishing season and even in the shipping event, by pointing out the fishing nets with the small boat in front of the barges. We will give the contact number of responsible person or set up 24-hour hot line number to inform their grievance or complaint.

7.6.9 Occupational Health and Safety

The Channel 1 project will be constructed by the EPC Contractor sub-contracted by June Cement Industry Ltd. During the **construction and decommissioning phases**, health and safety impacts will be in terms of Physical hazards such as exposure to dust, noise and spills of chemicals; and risk of accidents, probable electric shock hazard and fires due to working activities, vehicular movement, electrical equipment and emergency diesel generators. Site fencing and safety signage will be done in these phases. Personal protective equipment (PPE) such as safety gloves, helmet, goggles, earmuffs etc., will be provided by EPC contractor with the management the project proponent. For the safety of construction staff, adequate safety measures including first aid facilities will be made available on the project site. Population influx during construction and decommissioning can cause communicable disease, sexually transmitted infections and pressure on local health services infrastructures. To prevent this, the EPC contractor will carry out preventative action with adequate health facilities and will facilitate education and awareness programs for such diseases.

In the **operational phase**, employees and staff may encounter the safety hazards such as Risk of accidents, electric shock and fires vehicular movement, handling electrical equipment and emergency diesel generators. Personal protective equipment (PPE) including mask, safety gloves, ear plugs, helmets and safety boots, and first aid facilities will be provided to the employees and staff. Training for using PPE at work place and first aid will be given. Besides, canteen, toilets, hostels, football field and park, nursery school and clinic will be

supplied to the employees by June Cement Industry Ltd. for satisfactory working environment.

7.6.10 Waste Disposal

During **construction and decommissioning**, *solid waste* are domestic waste and industrial waste including muck, un-used concrete and masonry materials, mixed debris with high gypsum, plaster, metal scrap, plastics, glass and wood scrap. As *liquid waste*, sewage from workers and effluent from site area are considered. Engine oil leaks, spills at diesel storage and during diesel refueling; and used oil and lubricant discharged from the maintenance of vehicles and machines; are *hazardous waste*. To control and reduce the waste disposal, the EPC contractor will adopt the appropriate waste management system, with the management of June Cement Industry Ltd.

In the **operation stage** of project, *solid wastes* generated from the Channel 1 are domestic wastes of office staff and employees (total about 43) and they include food residues, paper, plastics, glass bottles, cans etc. Rubbish bins will be provided in office and at suitable points in the operation area and then solid wastes will be collected, well packed and stores at a designated area before the final disposal point. The waste storage area will be daily cleaned to avoid any undesirable working condition and environmental impacts. Likewise, *liquid waste* generated from staff and employees is black water from toilets and gray water from basins and showers. The waste water will be managed with sanitary system composed of separate septic tanks and waste water treatment plant seen in yellow in Figure 6.5. Storm water and surface water will be collected by the open earth drains of drainage system and discharged into the irrigation canal outside the Channel 1 area. At this stage of project, amount of solid waste and liquid waste in details are not available.

Hazardous wastes of operation phase are fuel and engine oil leaked and accidentally spilled while refueling; and electronic waste such as used batteries, used fluorescent/ high-intensity discharge lamps, used electrical equipment. Isolated storage for hazardous wastes released from the site will be provided and installation of fire extinguisher will be done near storage of hazardous wastes. All hazardous wastes will be kept in good primary containers with covers and secondary containment to avoid the leakage from the primary container. All hazardous wastes will be disposed by delivering back to the suppliers and wholesaler or licensed waste collectors.

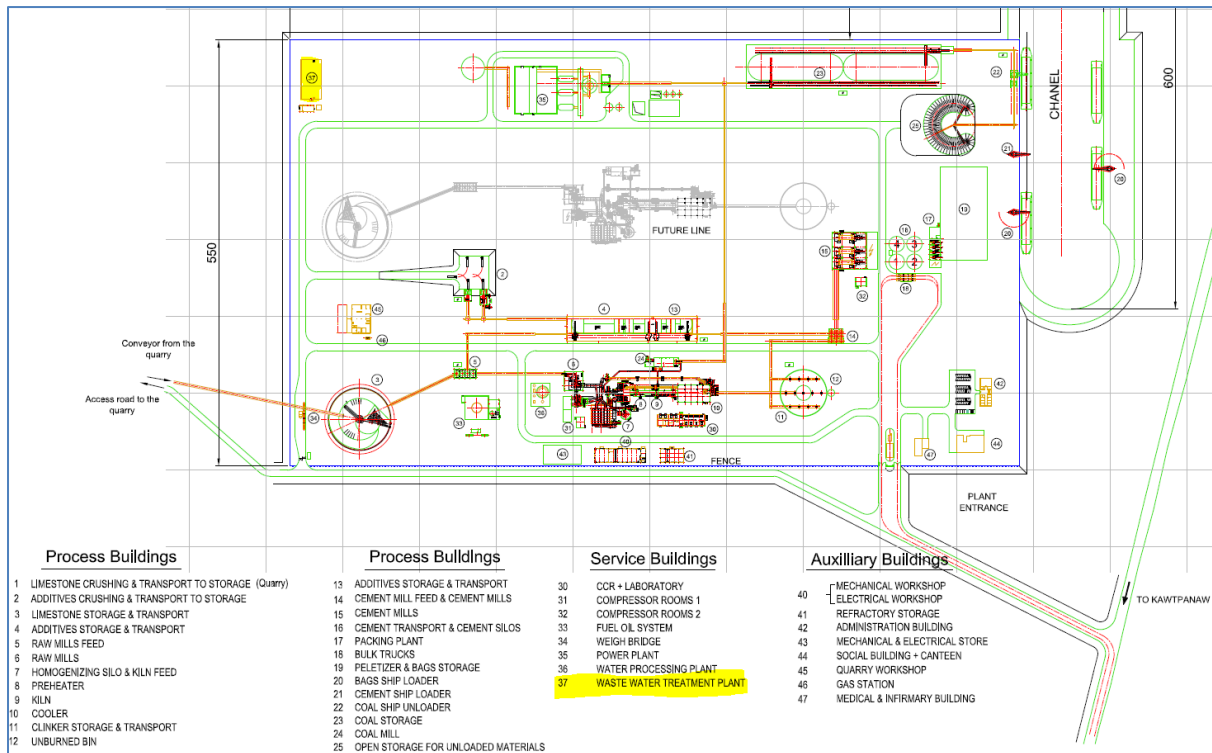


Figure 7.5 Location of Waste Water Treatment Plant (yellow highlighted)

8 . RESULTS OF THE PUBLIC CONSULTATION

8.1 Public Participation Processes

Public participation/ consultation aims to get the opinions of local people, social organizations and stakeholders affected by the development of the proposed project and to resolve conflicts in public environmental affairs due to the project implementation. In general, consultation meeting is held with people affected by the project, administrative parties, community based and social organizations. Results of consultations and negotiations with environmentally and socially affected people are considered in evaluation of impacts, design of mitigation measures and monitoring plans. Sometimes negotiation with related governmental organizations is required.

Public Consultation for Initial Environmental Examinations of related projects of June Cement Plant has been conducted by June Cement Industry Ltd. on 15 June, 2019 at Mei Ka Yo Monastery in Mei Ka Yo Village, Kyaikmaraw Township, Mawlamyine District, Mon State. The objective of the consultation is to disclose the findings including the baseline environmental data of project site and existing socio-economic condition of local people, and potential impacts of project activities and mitigation measures and, to receive public recommendations and feedbacks on the proposed project. The proponent invited the stakeholders via invitation cards. The invitation list and the participants list are seen in Annex 10(b). The number of participants attending the meeting is briefly shown in table below.

Table 8.1 Participants List of Public Consultation

No.	Category	Number of Participant
1	Local People	106
2	Parliament Member	9
3	Government Officials	22
4	Media	4
5	Non-government Organization	2
6	Private Company	9
Total		152

The meeting was held according to the following agenda.

1. Opening Ceremony
2. Opening speech by U Saw Aung Myint Khine (Minister of Kayin Ethnic Affairs, Mon State)
3. Speech by U Khin Zaw Oo (Amyotha Hluttaw Representative, Mon State)
4. Presentation of project descriptions about related projects of June Cement Industry Ltd. by U Tin Oo (Director, June Cement Industry Ltd.)
5. Presentation about the Initial Environmental Examination and Procedure of IEE by U Tin Aung Moe (Director, E Guard Environmental Services)
6. Questions and Suggestions by Attendees
7. Closing Remarks by U Saw Kyaw Win Maung (Pyithu Hluttaw Representative, Mon State)

8.2 Comments of the Public and Project Proponent's Responses

The recommendations and comments have been received from the local people and other participants of the consultations. They mainly want to know about the safety plan for fishing community, CSR plan for Kyaikmaraw Township, power plant for cement plant, the authorities to monitor the damages caused by the project, information disclosure, mining method for limestone, and compensation for the damage farms. Among the comments, only the ones which concerned with the construction of Channel 1 and the action to be taken by June Cement Industry Ltd. are extracted as below Table 8.2. The meeting minutes and photo records can be seen in Annex 13.

Table 8.2 Comments of the Public and Project Proponent's Responses

Item	Comments of Participants	Response from June Industry Ltd.
1	Safety plan for fishing community	June Cement has committed to solve this concern by informing the fishermen about the schedule of ships via the signboards and Grievance Redress Committee in advance, by reducing the number of shipping time to the lowest during the fishing season and even in the shipping event, by pointing out the fishing nets with the small boat in front of the barges. We will give the contact number of responsible person or set up 24 hour hot line number to inform their grievance or complaint.
2	CSR plan for Kyaikmaraw Township	Although CSR plan has not yet been set up systematically, June Cement has already made contribution for education, healthcare, religious and social affairs of Mei Ka Yo Village (5 million Kyats donated) and Kawt Pa Naw Village (10 million Kyats donated) in Kyaikmaraw Township since last two years. At present, crematory machine is being built in Mei Ka Yo Village.
3	Authorities to monitor the damages caused by the project	For deciding whether the project damages the environment or not, Environmental Conservation Department will monitor in the future. Nowadays, ECD has many modern instruments for environmental monitoring and the public can see the monitoring results on the website.
4	Information disclosure	June Cement Industry Ltd. will manage the project not to impact the others as much as the company can. For announcing the results of air and water monitoring results, they will be displayed in Myanmar Language by using LED board. Subsequently, the company will organize the Grievance Redress Mechanism with public, stakeholders, responsible persons from government departments, mayors and philanthropic people.

Item	Comments of Participants	Response from June Industry Ltd.
5	Compensation for the damage farms	Even if there was damage to the farms, the company would buy the farms with reasonable price or give compensation.

9 . ENVIRONMENTAL MANAGEMENT PLAN

9.1 Institutional Requirements

The development of the proposed Channel 1 project is managed by June Cement Industry Ltd. and the project proponent will organize Health, Safety and Environment (HSE) Team to undertake the HSE affairs covering implementation of Environmental Management and Monitoring Plans, throughout the lifespan of the project. The HSE Team's structure is described as below table. At this stage, names of the assigned persons are not available. Team Leaders are also responsible for coordination with Construction Company, local authorities and the nearby communities.

Table 9.1 HSE Team Structure of June Cement Industry for Channel 1

No.	Title in Company Organization	Title in HSE Team
1	Project Manager	Head of Team
2	Safety Manager	Team Leader (Health & Safety)
3	Environmental Manager	Team Leader (Environment)
4	Operation Manager	Member
5	Construction Manager	Member
6	Administration Manager	Member

The responsibilities of HSE Team Leaders are as follows:

- To perform regular check and report that during construction, operation and decommissioning, working activities meet with objectives of EMP.
- To keep full records of environmental management activities and present to annual independent third party environment audit.
- To assess the risk in performing various steps of all operation processes and appropriate safety measures.
- To provide necessary information and instructions, as well as providing and arranging training to the workers and supervising them to follow safety rules and safe working procedures strictly.
- To undertake regular safety and health inspections and audits onsite.
- To provide Material Safety Data Sheet (MSDS) for any hazardous substance.
- To provide and enforce wearing of Personal Protective Equipment (PPE) for all employees.
- To provide the emergency telephones, suitable accommodation, transport and first aid equipment at designated stations within the project.
- To manage the water usage in every workplace at suitable and easily accessible place for the whole construction and decommission phase.

Besides the EMP, according to the existing laws and procedures, June Cement Industry Ltd. will implement the following plans.

- Environmental Monitoring Plan
- Firefighting Plan

- Emergency Preparedness and Response Plan
- Corporate Social Responsible Plan
- Community Grievance Redress Mechanism

9.2 Environmental Management Plan

The objectives of the Environmental Management Plan (EMP) prepared for the proposed project are as follows:

- Identify the possible environmental impacts of the proposed activities;
- Develop measures to minimize, mitigate and manage these impacts and
- Estimate the budget of EMP for each phase.

The EMP covers the anticipated impacts of the said project, mitigation measures, estimated cost, management and monitoring plans during each of the phases of construction, operation and decommissioning. The detailed EMP based on the project activities is seen in Table 9.2 and estimated costs for mitigation measures are described in Table 9.3.

Table 9.2 Environmental Management Plan of Channel 1 of June Cement Plant

Potential Environmental Impacts	Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Construction Phase					
Impact on Environmental Resources	1. Loss of Aesthetic Feature of Land	<ul style="list-style-type: none"> Vegetation and topsoil removal Site clearance & earthwork excavation 	Low	<ul style="list-style-type: none"> Develop the green belt plantation in the area of June Cement Plant, including the Channel 1 area. 	Very Low
	2. Air Pollution	<ul style="list-style-type: none"> Dust emission from vegetation and topsoil removal Dust emission from site clearance, earthwork excavation and back filling Dust emission from construction of access roads and canal infrastructures Dust and gas emission from vehicle and equipment movement for transport of construction materials and construction activities Gas emission from operation of diesel generator Wind erosion from open areas or stockpile areas of construction materials and waste Burning of waste materials 	Moderate	<ul style="list-style-type: none"> Spray water and install temporary cover over dust propagation area. Properly cover the vehicles transporting construction materials. Control the speed of the vehicles not to spread out the dust. Use the machineries and equipment with efficient exhaust system to maintain exhaust emission. Restrict the burning of waste materials. Apply the best construction practices with normal working hours. <p>EPC contractor under the management of HSE Team of June Cement Industry Ltd.</p>	Low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
3. Noise Level and Vibration		<ul style="list-style-type: none"> • Operation of construction equipment & machineries and working activities • Operation of diesel generator for construction power • Bore pile driving activities • Vehicular movement for transport of construction materials 	Moderate	<ul style="list-style-type: none"> • Apply properly designed control system of equipment, occupational preventive measures and temporary noise barriers for noise attenuation. • Build noise closure for diesel generator. • Allow workers employing in high noise areas on shifts. • Provide hearing protective wear such as earplugs, earmuffs, etc. to these workers. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Low

Potential Environmental Impacts	Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
4. Water Pollution	<ul style="list-style-type: none"> Runoff including sediment, litter, heavy metals and hydrocarbons from site clearing and earth work excavation during wet season Non-hazardous solid waste generated from site preparation and construction activities Diversion of the existing creek during canal construction Discharged water from open areas or stockpile areas of construction materials 	Moderate	<ul style="list-style-type: none"> Avoiding earth work in rainy season. Construct embankment to prevent the polluted water flowing into Ataran River. Discharge wastewater into existing sewer line. Provide temporary toilets for labour. Use leak proof containers for storage and transportation of oil and grease. Keep the impervious floors of oil and grease handling areas. Build the drainage system with embankment, earth drain, a culvert and two sluices with flap gates for the whole cement plant. Manage all the surface water in the cement plant area to pass through the earth drain and finally flow into the irrigation canal parallel to the Channel 1. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Low
5. Soil Contamination	<ul style="list-style-type: none"> Removal and compaction of soil, leading to loss of topsoil Site clearing including trees cutting Working activities, exposed roads and open areas Accidental spills or releases and leakage of chemicals, grease and oils. 	Low	<ul style="list-style-type: none"> Avoid earthwork excavation and to regularly assess the stability of disrupted slopes especially in monsoon season. Use oil spill equipment and adequate secondary containment. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very Low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Impact on Ecological Resources	6. Changes in Flow Regimes	<ul style="list-style-type: none"> Stream diversion by the coffer dam for construction of channel Effluent from construction area Muck disposal 	Low	<ul style="list-style-type: none"> Ensure the diversion scheme to reproduce the flow and the water level of the stream and to control the sediment during the coffer dam construction. Construct embankment to prevent the polluted water flowing into Ataran River. Discharge wastewater into existing sewer line. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very Low
	7. Flora & Fauna and Aquatic Ecology	<ul style="list-style-type: none"> Encroachment into farmland and ecological areas Construction of canal, coffer dam and appurtenance structures Vehicle strike due to construction vehicles Noise and vibration from construction activities and vehicular movement 	Low	<ul style="list-style-type: none"> Careful selection of disposal site of sediments and disposal method. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very low
Impact on Human	8. Local socio-economic conditions	<ul style="list-style-type: none"> Temporary employment creation (masonry, electrician, carpentry and etc.) Increase infrastructures such as roads and schools 	Positive Impact	<ul style="list-style-type: none"> No mitigation measure is required. 		

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Waste Disposal	9. Occupational Health and Safety	<ul style="list-style-type: none"> Physical hazards such as exposure to dust, noise and spills of oil Risk of accidents, electric shock and fires due to construction activities, vehicular movement, handling electrical equipment and emergency diesel generators Population influx during construction can cause communicable disease, sexually transmitted infections and pressure on local health services infrastructures. 	Moderate	<ul style="list-style-type: none"> Install site fencing and safety signage Provide personal protective equipment (PPE) such as safety gloves, helmet, goggles, earmuffs etc., Ensure that adequate safety measures including first aid facilities are available on the project site. Carry out preventative action with adequate health facilities. Facilitate education and awareness programs for communicable diseases. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Low
	10. Solid Waste	<ul style="list-style-type: none"> Domestic and industrial waste generated from construction Muck disposal 	Low	<ul style="list-style-type: none"> Provide rubbish bins in temporary office and at suitable points in the operation area Properly collect solid wastes, well packed and stores at a designated area before the final disposal point. Clean the waste storage area daily to avoid any undesirable working condition and environmental impacts. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very low
	11. Liquid Waste	<ul style="list-style-type: none"> Sewage from workers Effluent from construction area 	Low	<ul style="list-style-type: none"> Adopt the appropriate waste management system. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
	12. Hazardous Waste	<ul style="list-style-type: none"> Engine oil leaks, spills at diesel storage and during diesel refueling. Used oil and lubricant discharged from the maintenance of vehicles and machines. 	Low	<ul style="list-style-type: none"> Designate isolated storage for hazardous wastes released from the site Install fire extinguishers near storage of hazardous wastes. Keep all hazardous wastes in good primary containers with covers and secondary containment to avoid the leakage from the primary container. 	EPC contractor under the management of HSE Team of June Cement Industry Ltd.	Very low
Operation Phase						
Impact on Environmental Resources	1. Air Pollution	<ul style="list-style-type: none"> Emission from vessels, barges and ships for transportation Emission of HCFC from air conditioning in office 	Low	<ul style="list-style-type: none"> Provide masking agents and adopt efficient ventilation and air-conditioning systems. Use the ships of which types are approved by DWIR. 	HSE Team of June Cement Industry Ltd.	Very low
	2. Noise Level and Vibration	<ul style="list-style-type: none"> Operation of ship loaders, ships and diesel generator for canal operation Vehicular movement for transport of cement sling bags 	Moderate	<ul style="list-style-type: none"> Provide earplugs and other hearing protective wears to the worker. Organize noise barriers and buffer areas by tree planting. 	HSE Team of June Cement Industry Ltd.	Low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Impact on Ecological Resources	3. Water Pollution	<ul style="list-style-type: none"> Leakage of oil and lubricants from vehicles Accidental oil spills from barges and ships 	Low	<ul style="list-style-type: none"> Use the well-maintained ships approved by DWIR. Adopt the oil spill remediation plan covering physical, chemical, thermal and biological remediation methods. Obtain material Safety Data Sheets (MSDS) of the fuel and oils. Maintain the water quality of the Channel 1 according to National Environmental Quality (Emission) Guidelines. 	HSE Team of June Cement Industry Ltd.	Very low
	4. Changes in Flow Regimes	<ul style="list-style-type: none"> Navigation of ship Operation of canal with the fluctuation of water level 	Low	<ul style="list-style-type: none"> Set minimum flow requirements for the depleted stretch of the channel. Release the environmental water that would closely replicate the natural flooding regime for the proposed project, Remove the sediment deposited to maintain the required water level. 	HSE Team of June Cement Industry Ltd.	Very low
	5. Aquatic Ecology	<ul style="list-style-type: none"> Noise and vibration from ships and barges movement Water level fluctuation of canal operation 	Low	<ul style="list-style-type: none"> Operate the well-maintained ships, as the rules of DWIR, to Set minimum flow requirements for the depleted stretch. Maintain the effluent level according to National Environmental Quality (Emission) Guidelines. Carefully dispose the waste generated from the employee as per waste management plan. 	HSE Team of June Cement Industry Ltd.	Very low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Impact on Human	6. Local socio-economic conditions	<ul style="list-style-type: none"> • Employment opportunities for local people during investment period (engineers, economists, accountants, technical specialists) • Skill development • Economic Opportunities in Township • Increase roads and schools' facilities by CSR of project • Navigation of ships affecting the seasonal fishing of local people 	Low + Positive Impact	<ul style="list-style-type: none"> • Inform the fishermen about the schedule of ships via the signboards and Grievance Redress Committee in advance, • Reduce the number of shipping time to the lowest during the fishing season. • Point out the fishing nets with the small boat in front of the barges, even in the shipping event, • Make the contact number of responsible person available or set up 24 hour hot line number to inform the grievance or complaint of the local people. 	HSE Team of June Cement Industry Ltd.	Very low
	7. Occupational Health and Safety	<ul style="list-style-type: none"> • Risk of accidents, electric shock and fires vehicular movement, handling electrical equipment and emergency diesel generators. 	Moderate	<ul style="list-style-type: none"> • Provide personal protective equipment (PPE) including mask, safety gloves, ear plugs, helmets and safety boots, and first aid facilities to the employees and staff. • Conduct training for using PPE at work place and first aid. • Supply canteen, toilets, hostels, football field and park, nursery school and clinic to the employees for satisfactory working environment. 	HSE Team of June Cement Industry Ltd.	Low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Waste Disposal	8. Solid Waste	<ul style="list-style-type: none"> Domestic solid waste generated from office staff and employees of canal operation 	Low	<ul style="list-style-type: none"> Provide rubbish bins in office and at suitable points in the operation area Properly collect solid wastes, well packed and stores at a designated area before the final disposal point. Clean the waste storage area daily to avoid any undesirable working condition and environmental impacts. 	HSE Team of June Cement Industry Ltd.	Very Low
	9. Liquid Waste	<ul style="list-style-type: none"> Domestic sewage and greywater from staff of canal operation 	Low	<ul style="list-style-type: none"> Manage the waste water with sanitary system composed of three separate septic tanks and waste water treatment plant. Collect storm water and surface water by the open earth drains of drainage system and discharge into the irrigation canal outside the Channel 1 area. 	HSE Team of June Cement Industry Ltd.	Very Low
	10. Hazardous Waste	<ul style="list-style-type: none"> Engine oil leaks, spills at diesel storage and during diesel refueling. Used oil and lubricant discharged from the maintenance of vehicles and machines. Electronic waste 	Low	<ul style="list-style-type: none"> Designate isolated storage for hazardous wastes released from the site Install fire extinguishers near storage of hazardous wastes. Keep all hazardous wastes in good primary containers with covers and secondary containment to avoid the leakage from the primary container. Dispose all hazardous wastes by delivering back to the suppliers and wholesaler or licensed waste collectors. 	HSE Team of June Cement Industry Ltd.	Very Low

Potential Environmental Impacts	Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Decommissioning Phase					
Impact on Environmental Resources	1. Air Pollution	<ul style="list-style-type: none"> Gaseous and dust emission from the activities of decommissioning of canal infrastructures 	Moderate	<ul style="list-style-type: none"> Use covers or control equipment and well-maintained machineries and equipment. 	Low
	2.Noise Level and Vibration	<ul style="list-style-type: none"> Operation of heavy vehicles and equipment from decommissioning activities. Vehicular movement for transport of demolished materials 	Moderate	<ul style="list-style-type: none"> Apply properly designed control system of equipment, occupational preventive measures and temporary noise barriers for noise attenuation. Build noise closure for diesel generator. Allow workers employing in high noise areas on shifts. Provide hearing protective wear such as earplugs, earmuffs, etc. to these workers. 	Low
	3.Water Pollution	<ul style="list-style-type: none"> Activities related with decommissioning works and waste disposed by decommissioning workers. Oil spillage from demolition machinery equipment. 	Low	<ul style="list-style-type: none"> Avoiding earth work in rainy season. Construct embankment to prevent the polluted water flowing into Ataran River. Discharge wastewater into existing sewer line. Provide temporary toilets for labour. Use leak proof containers for storage and transportation of oil and grease. Keep the impervious floors in oil and grease handling areas. 	Very low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Impact on Ecological Resources	4. Soil Contamination	<ul style="list-style-type: none"> Accidental spills or releases and leakage of grease and oils from machinery and equipment of demolition 	Low	<ul style="list-style-type: none"> Avoid earthwork excavation and to regularly assess the stability of disrupted slopes especially in monsoon season. Use oil spill equipment and adequate secondary containment. 	Demolition Company with the management of HSE Team of June Cement Industry Ltd.	Very low
	5. Changes in Flow Regimes	<ul style="list-style-type: none"> Remains the canal as a natural creek 	-	<ul style="list-style-type: none"> No mitigation measured is required. 		
	6. Flora & Fauna and Aquatic Ecology	<ul style="list-style-type: none"> Remains the canal as a natural creek 	-	<ul style="list-style-type: none"> No mitigation measured is required. 		
Impact on Human	7. Local socio-economic conditions	<ul style="list-style-type: none"> Temporary employment creation from demolition of canal infrastructures 	Positive Impact			
	8. Occupational Health and Safety	<ul style="list-style-type: none"> Physical hazards such as exposure to dust and noise Risk of accidents, electric shock and fires due to decommission activities and vehicular movement Population influx during decommissioning can cause communicable disease, sexually transmitted infections and pressure on local health services infrastructures. 	Low	<ul style="list-style-type: none"> Install site fencing and safety signage Provide personal protective equipment (PPE) such as safety gloves, helmet, goggles, earmuffs etc., Ensure that adequate safety measures including first aid facilities are available on the project site. Carry out preventative action with adequate health facilities. Facilitate education and awareness programs for communicable diseases. 	Demolition Company under the management of HSE Team of June Cement Industry Ltd.	Very low

Potential Environmental Impacts		Project Activities	Impact's Significance before Measures	Mitigation Measures	Responsible Party	Residual Impact's Significance after Measures
Waste Disposal	9.Solid Waste	<ul style="list-style-type: none"> Demolished wastes such as bricks, concrete materials, glass, iron, wood materials Domestic wastes from workers 	Low	<ul style="list-style-type: none"> Properly collect solid wastes, well packed and stores at a designated area before the final disposal point. 	Demolition Company under the management of HSE Team of June Cement Industry Ltd.	Very low
	10. Liquid Waste	<ul style="list-style-type: none"> Sewage from workers and effluent from site area 	Very low	<ul style="list-style-type: none"> Adopt the appropriate waste management system for decommissioning. 	Demolition Company under the management of HSE Team of June Cement Industry Ltd.	Very low
	11. Hazardous Waste	<ul style="list-style-type: none"> Engine oil leaks, spills of vehicles and machines used in decommissioning 	Very low	Adopt the appropriate waste management system for decommissioning.	Demolition Company under the management of HSE Team of June Cement Industry Ltd.	Very low

Table 9.3 Estimated Costs for Mitigation Measures of Channel 1

Notes: 10% of total expenditure on the environmental management plan of whole cement plant project is aimed for Channel 1.

Item	Mitigation Measures	Estimated Cost (USD)
1	Green belt plantation development	10,000
2	Water and waste water treatment	40,000
3	Secondary containment and leakage proof container	1,250
4	PPE and first aid kits	1,250
5	Installation of fire extinguishers, fire hose reels, wet risers and fire alarm system	1,250
6	Waste disposal	1,250
	Total	55,000

9.3 Environmental Monitoring Plan

Monitoring Plan of Environmental Quality, describing environmental monitoring data, is prepared to review the progress of environmental measures detailed in the Environmental Management Plan. According to this Monitoring Plan, the project proponent is responsible to carry out the quality monitoring measurements timely and the resulted quality data are compared with the baseline quality data before the construction of the project. In this way, the environmental issues occurring in actual working condition and causing the deviation from the baseline data, is known to take the corrective measures. Monitoring Plan of Environmental Quality for Channel 1 of June Cement Industry Ltd. is described in Table 9.4.

Table 9.4 Monitoring Plan of Environmental Quality for Channel 1

Item	Environmental Concerns	Parameters	Frequency	Locations	Estimated Cost (USD)	Responsible Party
A		Construction Phase				
1	Air quality	PM ₁₀ , PM _{2.5} , CO, CO ₂ , NO ₂ , SO ₂ , VOC, O ₃	Once	One point within the construction site	1,000	HSE Team of June Cement Industry Ltd.
2	Noise and vibration level	Equivalent noise level dB(A), Equivalent Vibration Level dB	Once	Two points (point source & receptor)	500	The same
3	Water quality (ground water & surface water)	Biochemical Oxygen Demand (BOD) (5 days at 20 °C), Chemical Oxygen Demand (COD), Oil & Grease, pH, Free Chlorine, Total Chlorine, Total Suspended Solids, Total Nitrogen, Total Phosphorus, Thermotolerant (fecal) Coliform Count, Total Coliform Bacteria,	Once	Tube well for site use and surface water of Channel 1	1,000	The same
4	Sediment Quality	Fat, Oil and Grease (mg/kg), Arsenic (As) (mg/kg), Mercury (Hg) (mg/kg), Lead (Pb) (mg/kg), Cadmium (Cd) (mg/kg), Nitrogen (N) (% w/w N), Phosphorus (P) (mg/kg), Chromium (Cr) (mg/kg), Nickel (Ni) (mg/kg), Copper (Cu) (mg/kg), Colour, Total Organic Carbon (% w/w dry weight), Pesticide/ Polychlorinated biphenyls (PCB's) (mg/kg)	Once a year	Bed of the Channel 1	1,000/year	The same
B		Operation Phase				
1	Air quality	PM ₁₀ , PM _{2.5} , CO, CO ₂ , NO ₂ , SO ₂ , VOC, O ₃	Once a year	One point in project area	1,000/year	The same
2	Noise and vibration level	Equivalent noise level dB(A), Equivalent Vibration Level dB	Once a year	Two points (point source & receptor)	500/year	The same
3	Water quality (ground water & surface water)	Biochemical Oxygen Demand (BOD) (5 days at 20 °C), Chemical Oxygen Demand (COD), Oil & Grease, pH, Free Chlorine, Total Chlorine, Total Suspended Solids, Total Nitrogen, Total Phosphorus, Thermotolerant (fecal) Coliform Count, Total Coliform Bacteria,	Once a year	Tube well for water supply and surface water of Channel 1	1,000/year	The same
4	Sediment Quality	Fat, Oil and Grease (mg/kg), Arsenic (As) (mg/kg), Mercury (Hg) (mg/kg), Lead (Pb) (mg/kg), Cadmium (Cd) (mg/kg), Nitrogen (N) (% w/w N), Phosphorus (P) (mg/kg), Chromium (Cr) (mg/kg), Nickel (Ni) (mg/kg), Copper (Cu) (mg/kg), Colour, Total Organic Carbon	Once a year	Bed of the Channel 1	1,000/year	The same

Item	Environmental Concerns	Parameters	Frequency	Locations	Estimated Cost (USD)	Responsible Party
		(% w/w dry weight), Pesticide/ Polychlorinated biphenyls (PCB's) (mg/kg)				
C		Decommissioning Phase				
1	Air quality	PM ₁₀ , PM _{2.5} , CO, CO ₂ , NO ₂ , SO ₂ , VOC, O ₃	Once	One point within the construction site	1,000	The same
2	Noise and vibration level	Equivalent noise level dB(A), Equivalent Vibration Level dB	Once	Two points (point source & receptor)	500	The same
3	Water quality (ground water & surface water)	Biochemical Oxygen Demand (BOD) (5 days at 20 °C), Chemical Oxygen Demand (COD), Oil & Grease, pH, Free Chlorine, Total Chlorine, Total Suspended Solids, Total Nitrogen, Total Phosphorus, Thermotolerant (fecal) Coliform Count, Total Coliform Bacteria,	Once	Tube well for site use and surface water of Channel 1	1,000	The same

9.4 Fire Protection and Firefighting Plan

Due to the nature of work functions, Channel 1, itself, has the least probability for fire hazards. However loading/ unloading process of cement sling bags, with ship loaders, barges loading and other relevant machineries and equipment, the fire risk can be found. Thus firefighting plan will be prepared for Channel 1 by June Cement Industry Ltd. Water for firefighting will be pumped from tube well and reserved in 50,000 gallon- storage tank for the whole cement project including Channel 1. Then water will be discharged into hydrant and fire lines by pumps. ABC Powder fire extinguishers, CO₂ fire extinguishers and fire hose racks as well as Contact numbers of local fire services department are also provided.

The related buildings are also steel structures to prevent the fire risk. Fire safety procedures will be set up and HSE Team of June Cement Industry will check the employees to follow the procedures. Smoking in the project site will be prohibited. Engine oil and fuel will be stored in reinforced concrete tanks and steel tanks which are distant from the working area. The restricted areas for passage will be defined and the waste disposal will be made to avoid the fire hazard. Firefighting training and fire drill will be conducted by cooperating with respective Fire Service Department.

9.5 Emergency Preparedness and Response Plan

The main emergencies affecting the proposed project are accidental fire, earthquake and flood.

For emergency preparedness of the fire, fire alarm system including bell and manual call point, and smoke alarm will be installed in the project infrastructures for fire safety. All workplaces have clearly identified escape routes in the event of fire. These escape routes will be kept clear at all times to ensure that everyone can exit the workplace in the event of a fire. Notice boards of escape routes are placed in the routes and emergency evacuation layouts will be kept at seeable positions. The project proponent will prepare Fire Emergency Evacuation Plan as below:

Table 9.5 Fire Emergency Evacuation Plan

When fire is discovered:	<ul style="list-style-type: none">✓ Activate the nearest fire alarm.✓ Notify the local Fire Services Department by calling.✓ If the fire alarm is not available, notify the site personnel about the fire emergency by the following means (check applicable): Voice communication, Phone, Call point, other (specify).
Fight the fire ONLY if:	<ul style="list-style-type: none">✓ The Fire Service Department has been notified.✓ The fire is small and is not spreading to other areas.✓ Escaping the area is possible by backing up to the nearest exit.

	<ul style="list-style-type: none"> ✓ The fire extinguisher is in working condition and personnel are trained to use it.
Upon being notified about the fire emergency, occupants must:	<ul style="list-style-type: none"> ✓ Leave the building using the designated escape routes. ✓ Assemble in the designated area. ✓ Remain outside until the competent authority (Designated Official or designee) announces that it is safe to reenter.
Designated Official, Emergency Coordinator or supervisors must (<u>underline one</u>):	<ul style="list-style-type: none"> ✓ Disconnect utilities and equipment unless doing so jeopardizes his/her safety. ✓ Coordinate an orderly evacuation of personnel. ✓ Perform an accurate head count of personnel reported to the designated area. ✓ Determine a rescue method to locate missing personnel. ✓ Provide the Fire Department personnel with the necessary information about the facility. ✓ Perform assessment and coordinate weather forecast office emergency closing procedures
Area/Floor Monitors must:	<ul style="list-style-type: none"> ✓ Ensure that all employees have evacuated the area/floor. ✓ Report any problems to the Emergency Coordinator at the assembly area.
Assistants to Physically Challenged should:	<ul style="list-style-type: none"> ✓ Assist all physically challenged employees in emergency evacuation.



Figure 9.1 Safety Flyer for Emergency Fire

The project proponent will prepare the structural design of Channel 1 and its appurtenance structures complying with international standards to reduce the consequential effect of earthquake. *Emergency preparedness of earthquake* will be prepared as shown below.

- Pick "safe places" which are in short distance to move to safety and unlikely the person will be injured.
- Practice "drop, cover and hold-on" in each safe place so that they become an automatic response.
- Make a precautions plan for worker to follow in the event of earthquake.
- Inform workers the precautions plan and discuss about earthquakes with workers.
- Provide the trainings such as first-aid.



Figure 9.2 Safety Flyer for Emergency Earthquake

For *emergency preparedness of flood*, the activities described in Figure 9.3 will be considered to reduce the damage of the flood and the project proponent will give awareness programs of flood and related landslide, by applying Government's Awareness Posters as shown in Figure 9.4 and 9.5, to employees and staff.

- Get information about flood watches and warnings from radio, television stations and hydrological and meteorological websites.
- Move to higher ground immediately as soon as information about the possibility of flooding.
- Prepare to evacuate before water level rises and potentially cut off evacuation routes.
- Build emergency supply kits including food, water and other supplies to last for at least 72 hours, for employees.
- Provide the training to the employees to know what to do in case of emergency case.

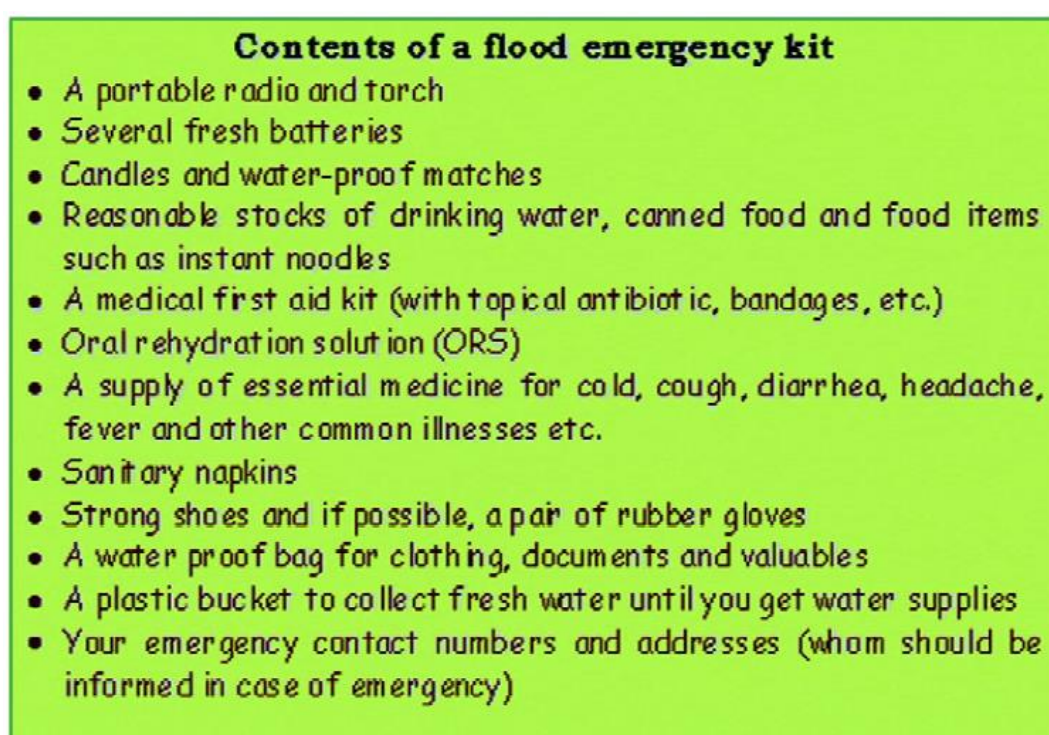


Figure 9.3 Things for A Flood Emergency Kit

(Source: Manual on Flood: Causes, Effects & Preparedness, UN-HABITAT, Myanmar)

ရေဘေးအသိပညာပေး



Figure 9.4 Flood Awareness Poster

(Source: Myanmar Alinn Newspaper, 22 August 2019)



Figure 9.5 Landslide Awareness Poster

(Source: Myanmar Alinn Newspaper, 20 August 2019)

Likewise, **emergency response plan** will be set up by combining resources of the Company and outside services to achieve the followings:

- Localize the emergency
- Minimize effects on property and people
- Effective rescue and medical treatment
- Evacuation

9.6 Corporate Social Responsible Plan

Corporate Social Responsibility (CSR) plan has been implemented by June Cement Industry Ltd. since 2011, before the project and will be continued during its 30-year investment period. The objective of this plan is to create social welfare of the workers and local community, and to prove that the establishment of proposed project is beneficial. The project proponent is implementing CSR plan concerned with disaster recovery, health assessment,

educational donation, religious donation, and building construction and renovation, for surrounding community (Kawt Pa Naw, Kawt Dun and Mei Ka Yo Villages) of the project. The total CSR fund used from 2011 to 2018 is about twenty million Kyats. The detailed CSR undertaken by June Cement Industry Ltd. can be seen in Annex 14.

9.7 Community Grievance Redress Mechanism

People who live in the project affected area or stakeholders can complain about the problems and impacts that they suffer, though Grievance Redress Committee, which includes the responsible persons of June Cement Industry Ltd., village administrators and representative from General Administration Department (Kyaikmaraw Township). Small issues will be solved at the Grievance Committee stage and other unsolved problems will be submitted to higher responsible authorities and finally the responsible person decided by the court in legal terms. The following diagram shows steps of Grievance Redress Mechanism for Channel 1 of June Cement Plant.

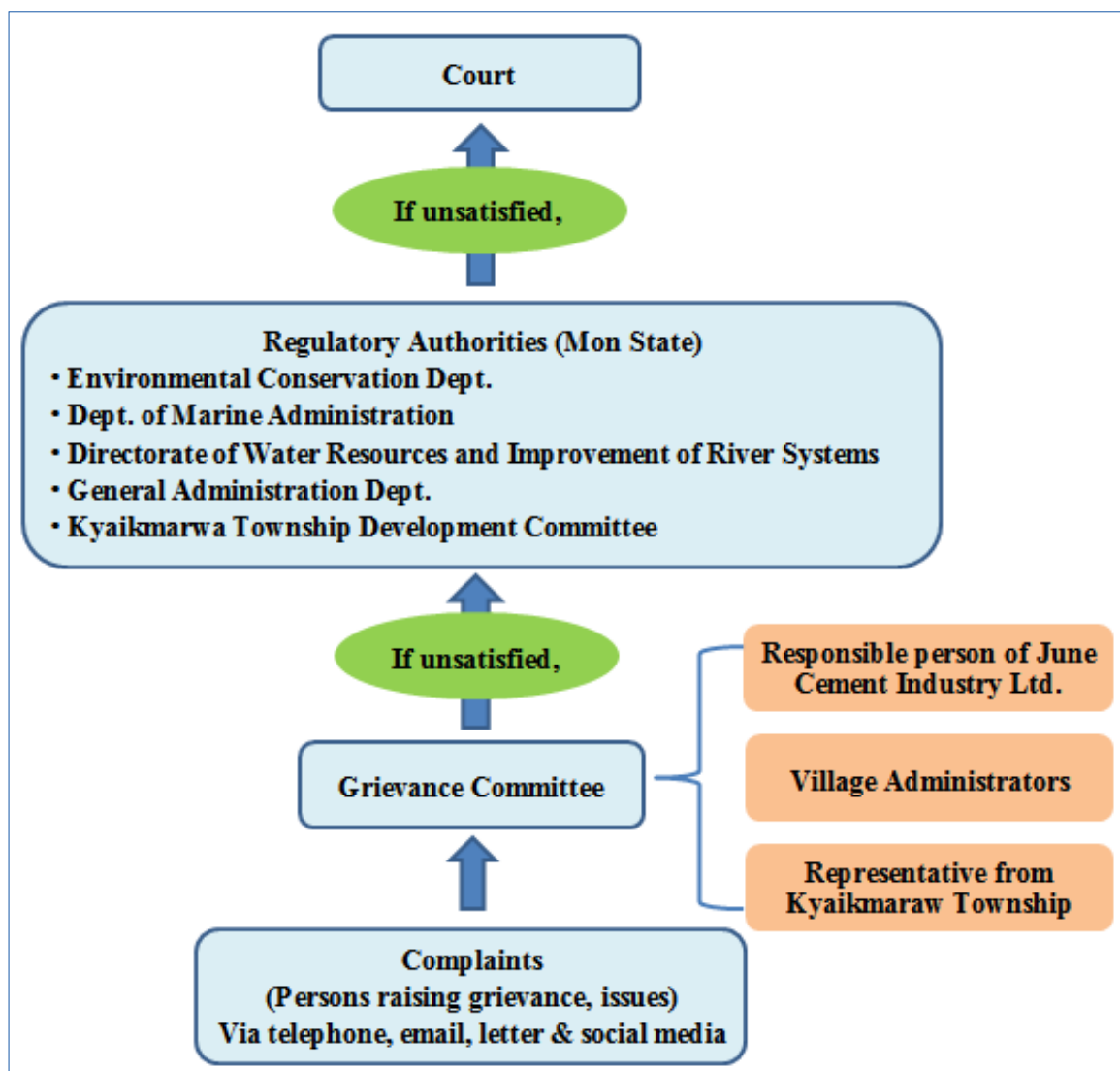


Figure 9.6 Grievance Redress Mechanism

10 . CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusion

Under Myanmar Citizen Investment Law, 2012, June Cement Industry Ltd. is proposing Greenfield cement plant with a kiln capacity of 5000 t/d with an annual production of approximately 2.1 to 2.3 million tons of Portland cement manufactured by dry processing method in Myanmar, to MIC. On the other hand, separate IEE for the Channel 1 of the said cement plant, which is for loading and unloading cement sling bags, has been prepared according to the ECD's comments on overall EIA, with the help of the study team for IEE, E Guard Environmental Services.

June Cement Industry Ltd. will construct the Channel 1 in consistent with National laws and regulations for environmental protection. Total land area of the Channel 1 is about 18.13 acres (73,360 square meters) with the elevation of 7 meters above the sea level. The length of the canal is 560 meters. The base width of the canal is 70 meters and the surface width is 131 meters. The canal depth is 12 meters and the canal bed is at the elevation of 5.5 meters below the mean sea level i.e. RL (-) 5.5 meter. The cross section of the channel is trapezium in shape and the area of the cross section is 1206 square meters.

The project is in tropical area with average annual rainfall 3680 mm. Topography is mainly flat in the 3 km-radius and the estimated watershed area of Channel 1 is about 1.35 km². The ground at project site area is almost covered with thick sediment of Younger Alluvium, mostly flood plain deposit. The bed rock of the project area is limestone with the shallowest depth of 19 meters from ground level.

According to the quality measurement in March 2019, PM_{2.5} is higher than NEQG value due to the dry season. Total Suspended Solids in surface water (Channel 1) is higher than NEQG value and it can be treated by coagulation, sedimentation, and filtration, disinfection using chlorine, ozone and ultraviolet irradiation. Ground water has turbidity which is slightly higher than NEQG value and it can be treated by coagulation, sedimentation, filtration, and disinfection using chlorine, ozone and ultraviolet irradiation. Noise level in the project area is consistent with NEQG value. There is no cultural heritage site in the project area.

According to activities that are to be performed by the project, the possible environmental impacts are concerned with environmental resources, ecological resources, human and waste disposal. The potential impacts will occur in construction, operation and decommissioning phases. The significance of the impact is assessed by using a ranking scale of four parameters. As per the results of analysis, most of the project activities have the low significance on environment while only some show moderate significance which needs to improve for environmental performance.

Public consultation for Initial Environmental Examinations of related projects of June Cement Plant has been conducted by June Cement Industry Ltd. on 15 June, 2019. 152 participants have attended the meeting and given their comments on the project implementation. June Cement Industry Ltd. has taken into account these comments and prepared the Environmental Management Plan (EMP).

The EMP covering the anticipated impacts, mitigation measures, and Environmental Monitoring Plan during all phases will be implemented by June Cement Industry Ltd. Besides these plans, Fire Protection and Firefighting Plan, Emergency Preparedness and Response Plan, Corporate Social Responsibility (CSR) plan and Community Grievance Redress Mechanism will also be performed by the project proponent for the sake of employees and local community. These plans should be accomplished by Health, Safety and Environment (HSE) Team of June Cement Industry Ltd. The team will review EMP regularly to cover all potential impacts, amendments and modifications.

10.2 Recommendations for Future Works

According to Initial Environmental Examination, the development of Channel 1 of June Cement Plant has the low significant impacts through successful implementation of Environmental Management and Monitoring Plans and other related plans. After publishing the approved IEE via the respective ways, all feedbacks from the public should be considered in modifying the Environmental Management and Monitoring Plans by combination of actual conditions.

ANNEXES

Annex 1 Commitment of June Cement Industry Ltd.



No.(80), Sayarsan Lane, Bahan Township, Yangon, Myanmar.

Tel: 95-1-202743, 296754 Fax:95-1-299832

Commitment to follow Environmental Conservation Law, Rules and Regulation, Environmental Standards and Mitigation Measures Stated in the Environmental Management Plan (EMP) of IEE Reports

With regard to the above matter, we, June Cement Industry Limited has established for related projects (Jetty construction, channel construction, clay soil production and laterite production) needed for Cement plant. Our company strongly commits that all our operations will be performed in an environmentally friendly manner by following Environmental Conservation Law 2012, Environmental Conservation Rules 2014, Environmental Impact Assessment Procedure and National Environmental Quality (emission) Guidelines (2015) and relevant environmental standards through successful implementation of mitigation measures stated in the Environmental Management Plan (EMP), EMoP, CSR Plan and Grievance Redress Mechanism of IEE Reports.



Myint Soe

Managing Director

June Cement Industry Ltd;

Annex 2 Commitment of E Guard Environmental Services



No. (11), Airport Avenue Road, (ခလောင်မိုင်လမ်း)
Yangon Airport Road, Saw Bwar Gyi Gone Quarter,
Insein Township, Yangon 11011, Myanmar.
Tel: (95) 1 666512 Fax: (95) 19667757
H.P (95) 9 44801676



**Commitment to follow and compliance with Environmental Conservation Law,
Rules, Environmental Impact Assessment Procedure, National Environmental
(Quality) Emission Guidelines, Standards and Mitigation Measures Stated in the
Environmental Management Plan (EMP) of IEE reports**

With regard to the above matter, we, E Guard Environmental Services has prepared the Initial Environmental Examination (IEE) Reports for related projects (Jetty construction, channel construction, clay soil production and laterite production) needed for Cement plant. Our company strongly commits that this IEE report has been prepared by following Environmental Conservation Law (2012), Environmental Conservation Rules (2014), Environmental Impact Assessment Procedure (2015), National Environmental (Quality) Emission Guidelines (2015) and relevant environmental standards through successful implementation of mitigation measures and monitoring plan stated in the Environmental Management Plan (EMP) of IEE Reports.



Tin Aung Moe
Director
E guard Environmental Services



Email: info@eguardservices.com


URL: www.eguardservices.com

Annex 3 License of Canal Construction from DWIR



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ပို့ဆောင်ရေးနှင့် ဆက်သွယ်ရေးဝန်ကြီးဌာန
ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းများဖွံ့ဖြိုးတိုးတက်ရေးဦးစီးဌာန

မြစ်ချောင်းနယ်၊ ကမ်းပါးနယ်နှင့် ကမ်းနားနယ်တို့တွင်
မြောင်းဖော်၍ သင်္ဘောကမ်းထိုးခြင်းလုပ်ငန်းအတွက်
လုပ်ငန်းခွင့်ပြုချက် အမှတ် (၃၅ / ၂၀၁၈)
(နည်းဥပဒေ ၇၆ (က))



၁။ ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းများဖွံ့ဖြိုးတိုးတက်ရေးဦးစီးဌာနသည် နည်းဥပဒေ ၇၆ (က) အရ လုပ်ငန်းလုပ်ကိုင်ခွင့်ပြုရန် လျှောက်ထားချက်ကို စိစစ်ပြီး အောက်ဖော်ပြပါ ပုဂ္ဂိုလ်/ အဖွဲ့အစည်းအား မြစ်ချောင်းနယ်၊ ကမ်းပါးနယ်နှင့် ကမ်းနားနယ်တို့တွင် မြောင်းဖော်၍ သင်္ဘောကမ်းထိုးခြင်းလုပ်ငန်း လုပ်ကိုင်ရန် လုပ်ငန်းခွင့်ပြုချက် ထုတ်ပေးလိုက်သည် -

(က) လုပ်ငန်းခွင့်ပြုချက်ရရှိသည့်ပုဂ္ဂိုလ် /အဖွဲ့အစည်းအမည်၊ _____
June Cement Industry Limited

(ခ) လုပ်ငန်းခွင့်ပြုချက်ရရှိသည့်ပုဂ္ဂိုလ်/အဖွဲ့အစည်း၏ ကိုယ်စားလှယ်အမည်၊ _____
ဒေါက်တာနုနုဝင်း

(ဂ) လုပ်ငန်းခွင့်ပြုချက်ရရှိသည့်ပုဂ္ဂိုလ်၏ နိုင်ငံသားစိစစ်ရေးကတ်အမှတ်၊ _____
၁၀/မလမ (နိုင်) ၁၄၃၂၄၀

(ဃ) လုပ်ငန်းခွင့်ပြုချက်ရရှိသည့်ပုဂ္ဂိုလ်၏ နေရပ်လိပ်စာ ၊ အမှတ် (၈၀)၊ ဆရာစံလမ်းသွယ်၊ ဆရာစံမြောက်/ အနောက်ရပ်ကွက်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။

(င) လုပ်ငန်းခွင့်ပြုချက်ရရှိသည့်အဖွဲ့အစည်း၏ မှတ်ပုံတင်အမှတ်၊ ရက်စွဲနှင့် တည်နေရာလိပ်စာ၊ June Cement Industry Limited (၉/၂၀၁၁-၂၀၁၂)
အမှတ် (၈၀) ၊ ဆရာစံလမ်းသွယ် ၊ ဗဟန်းမြို့နယ် ၊ ရန်ကုန်တိုင်းဒေသကြီး။

D:\Yantai\Sample Form For Jaty\June Cement.docx

- ၂။ လုပ်ငန်းလုပ်ကိုင်ဆောင်ရွက်ခွင့်ပြုသည့် တည်နေရာ၊ မွန်ပြည်နယ်၊ မော်လမြိုင်ခရိုင်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအုပ်စု၊ ပျားတောင်(မြောက်ပိုင်း)
- ၃။ ဆောင်ရွက်ခွင့်ပြုသည့်လုပ်ငန်းအမျိုးအစား၊ မြောင်းဖော်၍သင်္ဘောကမ်းထိုးခြင်း
လုပ်ငန်း (၂) ခု
- ၄။ လုပ်ငန်းဆောင်ရွက်ခွင့်ပြုသည့်နေရာ အကျယ်အဝန်း၊ အတိုင်းအတာ၊ တူးမြောင်းအမှတ် (၁) (၇၀၀မီတာx၉၄မီတာxသမီတာ)၊ တူးမြောင်းအမှတ် (၂) (၆၀၀မီတာ x ၉၄ မီတာxသမီတာ)
- ၅။ လုပ်ငန်းခွင့်ပြုချက်ရရှိသူသည် -
- (က) မြစ်ချောင်းအတွင်း သတ်မှတ်ချက်ထက်ပို၍ တည်ဆောက်ခြင်းမပြုရ။
 - (ခ) ခွင့်ပြုသည့် လုပ်ငန်းနေရာ အကျယ်အဝန်း အတိုင်းအတာထက်ပို၍ တည်ဆောက်ခြင်း၊ လုပ်ကိုင်ခြင်း မပြုရ။
 - (ဂ) မြစ်ချောင်းရေလမ်းကြောင်းအတွင်း ရေယာဉ်သွားလာမှုကို အနှောင့်အယှက် ဖြစ်စေခြင်း မပြုရ။
 - (ဃ) ရေထုညစ်ညမ်းမှုကိုဖြစ်စေသည့် သို့မဟုတ် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုကို ဖြစ်စေသည့် ကိစ္စရပ်များ မပြုရ။
 - (င) လုပ်ငန်းတည်ဆောက်ပြီးပါက လုပ်ငန်းပြီးဆုံးကြောင်း ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းများဖွံ့ဖြိုးတိုးတက်ရေးဦးစီးဌာနသို့ ပြန်လည်အစီရင်ခံ တင်ပြရမည်။
 - (စ) နိုင်ငံပိုင်မြေပေါ်တွင် နိုင်ငံတော်စီမံကိန်းများ ဆောင်ရွက်ရန်ရှိပါက အဖိုးစားနားသတ်မှတ်ခြင်းမရှိဘဲ အပြီးဖယ်ရှားပေးရန်။
- ၆။ ပို့ဆောင်ရေးနှင့်ဆက်သွယ်ရေးဝန်ကြီးဌာန/ ဦးစီးဌာန၏ စီမံခန့်ခွဲရေးကော်မတီအမိန့်အမှတ်၊ ပို့ဆောင်ရေးဝန်ကြီးဌာန၊ စီမံခန့်ခွဲရေးကော်မတီ (၂၄-၁၁-၂၀၁၅) ရက်နေ့
အစည်းအဝေးအမှတ်စဉ် (၁၉/၂၀၁၅) တွင် အတည်ပြုပြီး ဖြစ်ပါသည်။

၇။ မြောင်းဖော်၍ သင်္ဘောကမ်းထိုးခြင်း လုပ်ငန်း ခွင့်ပြုချက်သည် (၁-၂-၂၀၁၆) မှ (၃၁-၁-၂၀၁၉) ထိ သက်တမ်းသည် ထုတ်ပေးသည့်နေ့မှစ၍ (၃) နှစ်ဖြစ်သည်။

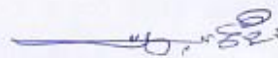
(နည်းဥပဒေ ပုဒ်မ ၇၆(ခ))

(က) ဒုတိယအကြိမ်သက်တမ်းတိုးသည့်ကာလမှာ (၁-၂-၂၀၁၈) မှ (၃၁-၁-၂၀၁၉) အထိ ဖြစ်သည်။

(ခ) လုပ်ငန်းခွင့်ပြုချက်ရရှိသူသည် ခွင့်ပြုသည့် ကာလကုန်ဆုံးပြီးနောက် ဆက်လက် လုပ်ကိုင်လိုပါက လုပ်ငန်းခွင့်ပြုချက်သက်တမ်း မကုန်ဆုံးမီအနည်းဆုံး ရက်ပေါင်း (၃၀) ကြိုတင်၍ သက်တမ်းတိုးမြှင့်ပေးရန် လျှောက်ထားရမည်။

၈။ အထူးညွှန်ကြားချက်

တူးမြောင်းဖောက်လုပ်ပြီးပါက အတ္တရံမြစ်၏ ဒီရေအောက်အကျဖြင့် ရေဝင်ရောက်မှုသာရှိ သဖြင့် နှစ်စဉ်ပြန်လည်တူးဖော်ရန် လိုအပ်မည်ဖြစ်ရာ ဤသို့ ပြန်လည်တူးဖော်ပါက ဤဦးစီးဌာနသို့ တင်ပြဆောင်ရွက်သွားရန် လိုအပ်မည် ဖြစ်ပါသည်။ ကမ်းနားနယ် (၁၅၀) ပေ အတွင်း မည်သည့်တည်ဆောက်ရေးလုပ်ငန်းကိုမှ တည်ဆောက်ခြင်း မပြုရန် နှင့် မဖြစ်မနေဆောင်ရွက်ရန် လိုအပ်ပါက ဤဦးစီးဌာန သို့ ခွင့်ပြုချက်ရယူ ဆောင်ရွက်သွားရန် လိုအပ်မည်ဖြစ်ပါသည်။ နိုင်ငံခြားရေယာဉ်များ ဆိုက်ကပ်မည် ဆိုပါက ရေကြောင်းပို့ဆောင်ရေးညွှန်ကြားမှုဦးစီးဌာန နှင့် မြန်မာ့ဆိပ်ကမ်းအာဏာပိုင် တို့၏ လုပ်ထုံးလုပ်နည်းများကို ဆက်လက်လိုက်နာ ဆောင်ရွက်ရမည်။



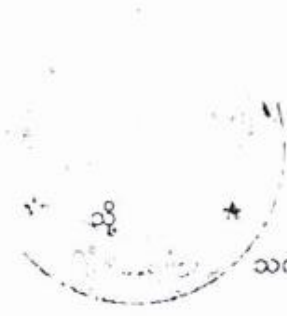
ထွန်းလွင်ဦး

ညွှန်ကြားရေးမှူးချုပ်

စာအမှတ်၊ ၆၂ / ရလထ / ရအန - ၆၁ / ၂၀၁၈

ရက်စွဲ၊ ၂၀၁၈ ခုနှစ်၊ အောက်တိုဘာလ၊ ၂ ရက်

Annex 4 Recommendation of Land Ownership, from Kyaikmaraw Township GAD




သက်ဆိုင်ရာသို့/-

မြို့နယ် အထွေထွေ အုပ်ချုပ်ရေး ဦးစီးဌာန
ကျိုက်မရောမြို့နယ် - ကျိုက်မရောမြို့
စာအမှတ်၊ ၅ / ၁ - ၂ / ဦး ၁
ရက်စွဲ၊ ၂၀၁၅ခုနှစ်၊ စက်တင်ဘာလ ၃ ရက်

အကြောင်းအရာ။ ထောက်ခံချက်ပေးပို့ခြင်း
ရည်ညွှန်းချက်။ မန်နေဂျင်းဒါရိုက်တာဒေါက်တာနုနုဝင်း၊ June Cement Industry Ltd. ၏
(၂၆-၈-၂၀၁၅)ရက်စွဲပါတင်ပြစာ

June Cement Industry Ltd.မှ ဘိလပ်မြေစက်ရုံစီမံကိန်းအတွက် တူးမြောင်း
ဖောက်လုပ်ခြင်းကို ကွင်းအမှတ်(၄၀၇/က)၊ မယ်ကရီအရှေ့ကွင်း၊ ဦးပိုင်အမှတ်(၁၇)၊ (၁၈)၊ (၂၀)တို့
ရှိ ဧရိယာ(၂၉.၆၀)ဧကတွင် တူးမြောင်း(၁)ခုနှင့် ကွင်းအမှတ်(၄၀၈)၊ ပျားတောင်မြောက်ကွင်း၊
ဦးပိုင်အမှတ်(၁)၊ (၂)၊ (၁၅)၊ (၁၆)၊ (၂၄)၊ (၂၇/၂)တို့ရှိ ဧရိယာ(၄၇.၀၀)ဧကတွင် တူးမြောင်း(၁)ခု
စုစုပေါင်းတူးမြောင်း(၂)ခု တူးဖော်ဆောင်ရွက်မည်ဖြစ်ကြောင်း ရည်ညွှန်းပါစာဖြင့် တင်ပြလာခြင်း
နှင့်ပတ်သက်၍ (၂-၉-၂၀၁၅) ရက်နေ့တွင် ကျင်းပပြုလုပ်သော မြို့နယ်ကော်မတီ(၄)ရပ်၏ ပုံမှန်
အစည်းအဝေးအမှတ်စဉ်(၉/၂၀၁၅)၊ ဆုံးဖြတ်ချက်အပိုဒ်(၂)အရ ကွင်းအမှတ်(၄၀၇/က)၊ ဦးပိုင်
အမှတ်(၁၇)၊ (၁၈)၊ (၂၀)၊ ဧရိယာဧက(၂၉.၆၀)နှင့် ကွင်းအမှတ်(၄၀၈)၊ ဦးပိုင်အမှတ်(၁)၊ (၂)၊ (၁၅)၊
(၁၆)၊ (၂၄)၊ (၂၇/၂)၊ ဧရိယာဧက(၄၇.၀၀)တို့သည် June ကုမ္ပဏီမှ ဒေါက်တာနုနုဝင်းအမည်ဖြင့်
ပုံစံ(၇)ထွက်ရှိပြီးဖြစ်ကြောင်းနှင့် သက်ဆိုင်ရာဌာနများ၏ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ဆောင်ရွက်
ပါကကန့်ကွက်ရန်မရှိပါကြောင်း ထောက်ခံအပ်ပါသည်။



မြို့နယ်အုပ်ချုပ်ရေးမှူး
(အောင်ထိုက်၊ ၁/၄/၂၆၈)

မိတ္တူ ကို

လှည့်လည်စာတွဲ

ရုံးလက်ခံ

Annex 5 Application to Use The Paddy Land by Other Means

သို့

မြို့နယ်မြေစာရင်းဦးစီးဌာနမှူး

မြို့နယ်မြေစာရင်းဦးစီးဌာန

ကျွန်ုပ်မရောမြို့။

ရက်စွဲ၊ ၂၀၁၅ ခုနှစ်၊ ဧပြီလ (၈) ရက်

- ၁။ လျှောက်ထားသူအမည် - ဒေါက်တာနုနုဝင်း
 ၂။ အဘအမည် - ဒေါက်တာမင်းသိမ်း
 ၃။ နိုင်ငံသားစိစစ်ရေးကတ်အမှတ် - ၁၀/မလမ (နိုင်) ၁၄၃၂၄၀
 ၄။ အလုပ်အကိုင် - မန်နေဂျင်းဒါရိုက်တာ
 ၅။ အမြဲနေထိုင်သည့်နေရပ်လိပ်စာ - အမှတ် (၈၀)၊ ဆရာစံလမ်းသွယ်၊ ဆရာစံမြောက်/
 အနောက်ရပ်ကွက်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။

၆။ လျှောက်ထားသည့်မြေ၏ အကြောင်းအရာ

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၁	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁	လယ်	၂. ၃၆	
၂	မယ်ကရို	၄၀၆/ကျေးလစပ်	၄/၁+၂	လယ်	၆. ၁၄	
	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅/၁ က	လယ်	၄. ၀၀	
၄	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅/၁ ခ	လယ်	၂. ၀၃	
၅	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅/၂	လယ်	၃. ၈၄	
၆	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅ / ၃+၉	လယ်	၆. ၈၆	
၇	မယ်ကရို	၄၀၆/ကျေးလစပ်	၆	လယ်	၄. ၂၇	
၈	မယ်ကရို	၄၀၆/ကျေးလစပ်	၇	လယ်	၈. ၉၆	
၉	မယ်ကရို	၄၀၆/ကျေးလစပ်	၈	လယ်	၄. ၈၆	
၁၀	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁၁	လယ်	၁၁. ၃၈	
၁၁	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁၂	လယ်	၂. ၁၉	
၁၂	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁၃	လယ်	၃. ၃၁	
၁၃	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁၄	လယ်	၄၈. ၁၀	
၁၄	မယ်ကရို	၄၀၆/ကျေးလစပ်	၁၅	လယ်	၁၁. ၀၆	
၁၅	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၂/၂	လယ်	၂. ၀၀	
၁၆	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၂/၃	လယ်	၃. ၀၀	

- ၂ -

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၁၇	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၃	လယ်	၄. ၂၉	
၁၈	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၄	လယ်	၄. ၉၁	
၁၉	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၆	လယ်	၄. ၀၀	
၂၀	မယ်ကရို	၄၀၆/ကျေးလစပ်	၂၈/၁	လယ်	၂. ၀၀	
၂၁	မယ်ကရို	၄၀၆/ကျေးလစပ်	၃၅/၁	လယ်	၁. ၈၀	
၂၂	မယ်ကရို	၄၀၆/ကျေးလစပ်	၄၄/၁	လယ်	၄. ၀၀	
၂၃	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅၆	လယ်	၃. ၄၈	
၂၄	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅၇	လယ်	၃. ၀၃	
၂၅	မယ်ကရို	၄၀၆/ကျေးလစပ်	၅၉	လယ်	၁. ၄၉	
၂၆	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 2	လယ်	၁. ၅၀	
၂၇	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 65	လယ်	၂. ၄၅	
၂၈	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 68	လယ်	၄. ၀၀	
၂၉	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 79	လယ်	၁. ၀၀	
၃၀	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 82	လယ်	၁. ၀၀	
၃၁	မယ်ကရို	၄၀၆/ကျေးလစပ်	N 6	လယ်	၅. ၀၀	
					၁၆၈. ၃၁	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁/၁	လယ်	၃. ၃၄	
၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁/၂	လယ်	၃. ၉၀	
၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၂/၁	လယ်	၆. ၀၀	
၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၃	လယ်	၄. ၀၀	
၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၄	လယ်	၃. ၀၀	
၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၅/၁	လယ်	၅. ၃၂	
၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၅/၁က	လယ်	၁. ၀၀	
၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၅/၂	လယ်	၈. ၁၄	
၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၅/၃	လယ်	၆. ၃၇	
၁၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၆/၁	လယ်	၄. ၀၀	
၁၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၆/၂	လယ်	၅. ၀၀	
၁၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၇/၂	လယ်	၇. ၀၀	
၁၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၈	လယ်	၅. ၀၀	
၁၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၉/၁	လယ်	၄. ၂၂	
၁၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၉/၂က	လယ်	၂. ၅၃	
၁၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၉/၂ခ	လယ်	၂. ၅၃	
၁၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၉/၃	လယ်	၅. ၂၁	
၁၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၀	လယ်	၅. ၆၇	
၁၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၁/၁	လယ်	၃. ၃၉	
၂၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၁/၂	လယ်	၃. ၃၉	
၂၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၂	လယ်	၄. ၃၉	
၂၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃က	လယ်	၃. ၁၂	
၂၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃ ခ	လယ်	၃. ၃၇	
၂၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃ဃ	လယ်	၄. ၀၀	
၂၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃ င	လယ်	၂. ၅၇	
၂၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃ ဆ	လယ်	၂. ၅၀	
၂၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၃ စ	လယ်	၄. ၀၀	
၂၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၅/၁	လယ်	၃. ၇၇	
၂၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၆/၁က	လယ်	၄. ၀၀	
၃၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရှေ့	၁၆/၁ခ	လယ်	၆. ၂၁	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၃၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၆/၂	လယ်	၂. ၃၀	
၃၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၆/၂၁	လယ်	၃. ၂၀	
၃၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၇/၁	လယ်	၁. ၉၀	
၃၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၇/၂	လယ်	၈. ၆၇	
၃၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၇/၃	လယ်	၃. ၈၀	
၃၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၇/၄	လယ်	၄. ၃၂	
၃၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၈/၁	လယ်	၂. ၆၄	
၃၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၈/၂	လယ်	၂. ၅၈	
၃၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၈/၃	လယ်	၂. ၀၆	
၄၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၉/၁	လယ်	၃. ၀၄	
၄၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၉/၂	လယ်	၃. ၀၄	
၄၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၉/၃	လယ်	၃. ၀၄	
၄၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၁၉/၄	လယ်	၃. ၀၄	
၄၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၀	လယ်	၃. ၆၃	
၄၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၁/၁	လယ်	၄. ၀၇	
၄၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၁/၂	လယ်	၃. ၇၈	
၄၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၂/၁	လယ်	၂. ၀၀	
၄၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၂/၂	လယ်	၂. ၀၀	
၄၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၂/၃	လယ်	၂. ၀၂	
၅၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၃	လယ်	၇. ၄၀	
၅၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၅/၁	လယ်	၄. ၉၈	
၅၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၈	လယ်	၃. ၄၃	
၅၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၂၉/၂	လယ်	၄. ၀၀	
၅၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၀	လယ်	၁၀. ၀၀	
၅၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၅	လယ်	၄. ၉၄	
၅၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၆/၁	လယ်	၄. ၀၄	
၅၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၆/၂	လယ်	၃. ၃၃	
၅၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၇/က	လယ်	၂. ၀၆	
၅၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၇၁/၁	လယ်	၂. ၈၃	
၆၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၇၁/၂	လယ်	၂. ၅၀	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၆၁	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၇၁/၃	လယ်	၂. ၀၀	
၆၂	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	၃၈	လယ်	၄. ၀၀	
၆၃	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၁	လယ်	၁. ၈၄	
၆၄	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၃	လယ်	၄. ၀၈	
၆၅	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၅	လယ်	၁. ၆၈	
၆၆	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၇	လယ်	၁. ၅၀	
၆၇	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၈	လယ်	၄. ၃၀	
၆၈	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၁၀	လယ်	၃. ၀၀	
၆၉	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၁၁	လယ်	၂. ၀၀	
၇၀	မယ်ကရို	၄၀၇ က/မယ်ကရိုအရွေ့	N ၁၄	လယ်	၀. ၃၄	
					၂၆၂. ၃၂	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၁	လယ်	၁. ၉၆	
၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၂	လယ်	၁. ၉၆	
၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၃	လယ်	၃. ၉၅	
၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၄	လယ်	၁. ၉၆	
၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၅	လယ်	၁. ၀၀	
၆	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၆	လယ်	၂. ၈၈	
၇	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁/၇	လယ်	၁. ၉၆	
၈	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃/၁	လယ်	၂. ၈၃	
၉	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃/၂	လယ်	၃. ၁၃	
၁၀	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၁	လယ်	၅. ၄၄	
၁၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၅	လယ်	၃. ၉၃	
၁၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၆	လယ်	၃. ၃၂	
၁၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၇/၁	လယ်	၂. ၉၈	
၁၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၇/၂	လယ်	၂. ၉၉	
၁၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၈၁	လယ်	၁. ၉၅	
၁၆	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၀	လယ်	၂. ၈၁	
၁၇	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၁/၁	လယ်	၃. ၀၀	
၁၈	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၁/၂	လယ်	၂. ၈၄	
၁၉	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၂/၁	လယ်	၄. ၇၉	
၂၀	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၄/၁	လယ်	၂. ၆၃	
၂၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၄/၂	လယ်	၁. ၃၀	
၂၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၄/၃	လယ်	၃. ၉၀	
၂၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၅/၁	လယ်	၅. ၀၄	
၂၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၅/၂	လယ်	၁. ၅၁	
၂၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၅/၃	လယ်	၁. ၅၁	
၂၆	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၇	လယ်	၇. ၀၂	
၂၇	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၈/၃	လယ်	၄. ၇၇	
၂၈	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၁၉/၁	လယ်	၆. ၈၀	
၂၉	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၀/၁	လယ်	၂. ၇၈	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၃၀	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၀/၂	လယ်	၅. ၂၅	
၃၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၀/၃	လယ်	၁. ၃၉	
၃၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၁	လယ်	၄. ၀၃	
၃၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၂/၁	လယ်	၁၄. ၁၀	
၃၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၂/၃	လယ်	၃. ၄၉	
၃၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၃	လယ်	၈. ၇၄	
၃၆	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၄	လယ်	၈. ၄၆	
၃၇	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၅	လယ်	၃. ၅၅	
၃၈	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၆/၁	လယ်	၈. ၅၃	
၃၉	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၆/၂	လယ်	၂. ၄၄	
၄၀	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၈ က/၁	လယ်	၃. ၂၃	
၄၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၈ က/၃	လယ်	၂. ၁၂	
၄၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၈ ဃ	လယ်	၂. ၇၈	
၄၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၈ င	လယ်	၃. ၁၁	
၄၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၂၈ စ	လယ်	၂. ၇၈	
၄၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃၄/၁	လယ်	၂. ၇၃	
၄၆	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃၄/၂	လယ်	၂. ၀၀	
၄၇	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃၅	လယ်	၄. ၀၀	
၄၈	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၃၇/၁	လယ်	၅. ၄၅	
၄၉	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၀/ခ ၁	လယ်	၃. ၅၇	
၅၀	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၀ က/၁	လယ်	၈. ၅၉	
၅၁	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၀ ခ/၂	လယ်	၁. ၇၃	
၅၂	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၂	လယ်	၄. ၆၄	
၅၃	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၆/၁	လယ်	၆. ၈၅	
၅၄	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၇/ ၁+၂+ ၃+၄+၅	လယ်	၂၄. ၁၁	
၅၅	ကျေးပနော	၄၀၈/ပျားတောင်မြောက်	၄၈/ ၁+၂+၃	လယ်	၇. ၄၉	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၅၆	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၄၈/၄	လယ်	၁. ၅၀	
၅၇	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၆	လယ်	၄. ၃၆	
၅၈	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၂/၁	လယ်	၁. ၄၃	
၅၉	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၂/၂	လယ်	၄. ၀၀	
၆၀	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၃/၃	လယ်	၃. ၁၃	
၆၁	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၄/က	လယ်	၁. ၀၅	
၆၂	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၄/ဃ	လယ်	၁. ၅၂	
၆၃	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၈ က/၁	လယ်	၁. ၅၀	
၆၄	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၂	လယ်	၁. ၅၉	
၆၅	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၄	လယ်	၁. ၅၉	
၆၆	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၅	လယ်	၁. ၅၉	
၆၇	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၆	လယ်	၉. ၇၁	
၆၈	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၉/၂	လယ်	၄. ၀၀	
၆၉	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၂၂/၂	လယ်	၁. ၆၉	
					၂၇၆. ၇၆	

စဉ်	ကျေးရွာအုပ်စု/ ကျေးရွာ	ကွင်း/အကွက် အမှတ် နှင့်အမည်	ဦးပိုင်	မြေမျိုး/ အတန်း	ဧရိယာ ဧက	မှတ်ချက်
၇၀	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၁	လယ်	၃. ၁၈	ဦးကျော်ဌေး
၇၁	ကျေးပုဇွန်	၄၀၈/ပျားတောင်မြောက်	၁၈/၆	လယ်	၃. ၀၀	မိမြသန္တာအောင်
					၂၈၂. ၉၄	

မူလဧရိယာ (ဧက)

- ၇၁၃. ၅၇ ဧက

လျှောက်ထားသည့်ဧရိယာဧက


- ၇၁၃. ၅၇ ဧက

အခြားနည်းဖြင့် အသုံးပြုလိုသည့် နည်းလမ်း - ဘိလပ်မြေစက်ရုံမြေအဖြစ် အသုံးပြုရန်။

၇။ လျှောက်ထားသည့်မြေအသုံးပြုထားမှုအခြေအနေ - မြေပြုပြင်ဆဲ

၈။ မှတ်ချက် ။ ။ မမှန်မကန် လိမ်လည်လျှောက်ထားခြင်းဖြစ်ပါက တည်ဆဲဥပဒေအရ အရေးယူခြင်းခံရမည်ဖြစ်ကြောင်း သိရှိပါသည်။

လက်မှတ်
အမည်


ဒေါက်တာနုနုဝင်း
(လျှောက်ထားသူ)

Annex 6 Letter of DALMS, Mon State to Use the Paddy Land by Other Means



သို့

အတွင်းရေးမှူး

ပြည်နယ်လယ်ယာမြေစီမံခန့်ခွဲမှုအဖွဲ့

(လယ်ယာမြေစီမံခန့်ခွဲရေးနှင့် စာရင်းအင်းဦးစီးဌာန)၊ မွန်ပြည်နယ်

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ပြည်နယ်အစိုးရအဖွဲ့

မွန်ပြည်နယ်

စာအမှတ်၊ ၃၀၀ / ၁ - ၁၀ / ၀၁ရ (မွန်)

ရက်စွဲ၊ ၂၀၁၆ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၂၈ ရက်

အကြောင်းအရာ။ လယ်မြေအားအခြားနည်းအသုံးပြုခွင့်တင်ပြလာခြင်းကိစ္စ

ရည် ညွှန်း ချက်။ အတွင်းရေးမှူး၊ ပြည်နယ်လယ်ယာမြေစီမံခန့်ခွဲမှုအဖွဲ့(လယ်ယာမြေစီမံခန့်ခွဲရေးနှင့် စာရင်းအင်းဦးစီးဌာန)မွန်ပြည်နယ်၏ (၂၇-၁-၂၀၁၆)ရက်စွဲပါ စာအမှတ်၊ ၂၂/၁၈/လယဖ/၂၀၁၆

မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအုပ်စုနှင့် မယ်ကရိုကျေးရွာ၊ ကွင်းအမှတ် (၄၀၆ + ၄၀၇-က + ၄၀၈)၊ ဦးပိုင်ပေါင်း (၁၇၂)ဧက၊ မြေဧရိယာ (၇၁၃.၅၇) ဧကရှိ လယ်မြေအား ခေါက်တာနုနုဝင်း၊ ၁၀/မလမ (နိုင်) ၁၄၃၂၄၀၊ (ကုမ္ပဏီ၊ မန်နေဂျင်းဒါရိုက်တာ) အမှတ်(၈၀)၊ ဆရာစံလမ်း သွယ်၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် နေထိုင်သူမှ ဘီလပ်မြေစက်ရုံဆောက်လုပ်ရန်မြေအဖြစ် အသုံးပြုခွင့်ရရှိရေးအတွက် အမှုတွဲဖွင့်လှစ် တည်ဆောက်၍ မြို့နယ်/ ခရိုင်/ ပြည်နယ်လယ်ယာမြေ စီမံခန့်ခွဲမှုအဖွဲ့အဆင့်ဆင့် အစည်းအဝေး ဆုံးဖြတ်ချက်သဘောထား တို့နှင့်အညီ လယ်မြေအားအခြားနည်း အသုံးပြုခွင့် လယ်ယာမြေ ဥပဒေပုဒ်မ ၃၀(က) ရရှိရေးအတွက် ရည်ညွှန်းချက်ပါစာဖြင့် တင်ပြလာခြင်းနှင့် စပ်လျဉ်း၍ (၄ - ၂-၂၀၁၆) ရက်နေ့၊ မွန်ပြည်နယ်အစိုးရအဖွဲ့အစည်းအဝေး (၄ / ၂၀၁၆)၊ ဆုံးဖြတ်ချက် အပိုဒ်(၆၉)အရ လုပ်ထုံးလုပ်နည်းနှင့်အညီ တင်ပြဆောင်ရွက်သွားရန် အကြောင်းကြားပါသည်။

ပူးတွဲ။ အမှုတွဲအမှတ်၊ ၅ / ၂၀၁၅-၂၀၁၆

ဝန်ကြီးချုပ်(ကိုယ်စား)

(ဇော်လင်းထွန်း၊ အတွင်းရေးမှူး)

မိတ္တူကိုင်

ဝန်ကြီး၊ စိုက်ပျိုးရေးနှင့် မွေးမြူရေးဝန်ကြီးဌာန၊ မွန်ပြည်နယ်

အုပ်ချုပ်ရေးမှူး၊ မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန၊ ကျိုက်မရောမြို့

✓ ခေါက်တာနုနုဝင်း၊ (ကုမ္ပဏီ၊ မန်နေဂျင်းဒါရိုက်တာ) အမှတ်(၈၀)၊ ဆရာစံလမ်းသွယ်၊

ဗဟန်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

ရုံးလက်ခံစာတွဲ / မျှောစာတွဲ။

AAAA-4 251

Annex 7 Farmland Form 15 - The Permit to Use the Paddy Land by Other Means

ပုံစံ - ၁၅

ဗဟိုလယ်ယာမြေစီမံခန့်ခွဲမှုအဖွဲ့
လယ်မြေအား အခြားနည်းဖြင့်အသုံးပြုရန် ခွင့်ပြုမိန့်

မွန် တိုင်းဒေသကြီး/ ပြည်နယ်၊ မော်လမြိုင် ခရိုင်၊ ကျိုက်မရော မြို့နယ်၊ (မယ်ကရို၊ ကော့ပနော) ရပ်ကွက်/ ကျေးရွာအုပ်စု ဦး မင်းသိန်း ၏ သား/ သမီး ဦး/ ဒေါ်/ အဖွဲ့အစည်း နှုတ်ခွင့် နိုင်ငံသား/ အမျိုးသားစိစစ်ရေးကတ်အမှတ် ၁၀/ မလမ (နိုင်) ၁၄၃၂၄၀ အား လယ်ယာမြေ ဥပဒေပုဒ်မ ၂၉ နှင့် ၃၀ တို့အရ အောက်ဖော်ပြပါ လယ်မြေကို သတ်မှတ်ထားသည့် စည်းကမ်းချက် များနှင့်အညီ အခြားနည်းဖြင့် အသုံးပြုခွင့်ပြုလိုက်သည်။

အခြားနည်းအသုံးပြုခွင့်ပြုသည့် လယ်မြေအကြောင်းအရာ
မွန် တိုင်းဒေသကြီး/ ပြည်နယ်၊ မော်လမြိုင် ခရိုင်၊ ကျိုက်မရော မြို့နယ်

စဉ်	ရပ်ကွက်/ ကျေးရွာ အုပ်စု	ကွင်း/ အကွက် အမှတ်နှင့် အမည်	ဦးပိုင် အမှတ်	မြေမျိုး	ခွင့်ပြုသည့် ဧရိယာ		ခွင့်ပြုသည့် နည်းလမ်း	မှတ် ချက်
					ဧက	ဒသမ		
၁	၂	၃	၄	၅	၆	၇	၈	၉
	မယ်ကရို၊ ကော့ပနော	(၄၀၆၊ ၄၀၇၊ ၄၀၈၊ ၄၀၉)၊ ကော့လစပ်၊ မယ်ကရိုအရှေ့၊ ပျားတောင် မြောက်ကွင်း	ဦးပိုင်ပေါင်း (၁၇၂) ခု	လယ်	၇၁၃	၅၇	ဘိလပ်မြေစက်ရုံ လုပ်ငန်းသုံး မြေနေရာ	
					၇၁၃	၅၇		

သက်သေခံမြေပုံပူးတွဲထားပါသည်။

ဗဟိုလယ်ယာမြေစီမံခန့်ခွဲမှုအဖွဲ့၏ (၁၉-၁၀-၂၀၁၆) ရက်နေ့ အစည်းအဝေးအမှတ်စဉ် (၃/၂၀၁၆) ဆုံးဖြတ်ချက်အမှတ် ၁(ဈ) အရ လက်မှတ်ရေးထိုးထုတ်ပေးခြင်းဖြစ်သည်။



စာအမှတ်၊ ၁၅/ လယ-၃၀ (၀၀၁ /၂၀၁၆)
ရက်စွဲ၊ ၂၀၁၆ ခုနှစ်၊ နိုဝင်ဘာလ (၁၆) ရက်

အတွင်းရေးမှူး
ဗဟိုလယ်ယာမြေစီမံခန့်ခွဲမှုအဖွဲ့
နေပြည်တော်

Annex 8 Site Photos in March 2019



Annex 9 Photo Records for Quality Measurements





Annex 10 Sediment Quality Result (1)



United Analyst and Engineering Consultant Co., Ltd.

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260

Tel. 0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

ANALYSIS REPORT

PROJECT NAME : CONSTRUCTION OF CANAL PROJECT
CUSTOMER NAME : E-GUARD ENVIRONMENTAL SERVICE CO., LTD
ADDRESS : NO.11, AIRPORT AVENUE ROAD YANGON MYANMAR
CONTACT INFORMATION : TEL : +97 9700 5170 e-mail : Chue@guardservices.com
SAMPLING SOURCE : -
SAMPLE TYPE : SEDIMENT
SAMPLING DATE : JUNE 16, 2019
SAMPLING TIME : -
SAMPLING METHOD : -
SAMPLING BY : CUSTOMER
ANALYZED BY : MISS CHOMTHANAN APHIPATPAPHA

RECEIVED DATE : JUNE 27, 2019
ANALYTICAL DATE : JUNE 27 - JULY 15, 2019
REPORT NO. : 2019-U39343
WORK NO. : 2019-004613
ANALYSIS NO. : T19AI861-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CANAL T19AI861-0002	
NITROGEN	% w/w	AOAC OFFICIAL METHOD 955.04	ND	0.05
TOTAL ORGANIC CARBON	mg/kg (dry weight)	HIGH-TEMPERATURE COMBUSTION METHOD (SM: 5310 B)	12,514	-
FAT OIL AND GREASE	mg/kg (dry weight)	SOXHLET EXTRACTION METHOD (SM: 5520 E)	125	100
PCBs	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8082 A)	ND	0.10
METALS				
ARSENIC (As)	mg/kg (dry weight)	ACID DIGESTION AND HYDRIDE GENERATION AAS METHOD (U.S.EPA 1996:3050 B AND 1992:7061 A)	51.4	0.100
CADMIUM (Cd)	mg/kg (dry weight)	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (U.S.EPA 1996:3050 B AND 2007:7000 B)	ND	0.300
MERCURY (Hg)	mg/kg (dry weight)	ACID DIGESTION AND COLD VAPOUR AAS METHOD (U.S.EPA 2007:7471 B)	ND	0.100
CHROMIUM (Cr)	mg/kg (dry weight)	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (U.S.EPA 1996:3050 B AND 2007:7000 B)	25.4	0.500
COPPER (Cu)	mg/kg (dry weight)	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (U.S.EPA 1996:3050 B AND 2007:7000 B)	30.5	0.300
LEAD (Pb)	mg/kg (dry weight)	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (U.S.EPA 1996:3050 B AND 2007:7000 B)	47.7	1.55
NICKEL (Ni)	mg/kg (dry weight)	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (U.S.EPA 1996:3050 B AND 2007:7000 B)	56.6	1.00
PHOSPHORUS (P)	mg/kg (dry weight)	ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (U.S.EPA 1996:3050 B AND 2018:6010 D)	459	0.250
ORGANOCHLORINE PESTICIDES				
α-BHC	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
β-BHC	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
δ-BHC	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL .
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.



Sediment Quality Result (2)



United Analyst and Engineering Consultant Co., Ltd.

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260

Tel. 0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			CANAL T19AI861-0002	
γ-BHC	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
HEPTACHLOR	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ALDRIN	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
HEPTACHLOR EPOXIDE	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ENDOSULFAN I	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
p,p-DDE	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
DIELDRIN	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ENDRIN	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ENDOSULFAN II	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
p,p-DDD	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ENDRIN ALDEHYDE	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
ENDOSULFAN SULFATE	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
p,p-DDT	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
METHOXYCHLOR	mg/kg (dry weight)	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (ECD) METHOD (U.S. EPA 2007:3550 C AND 8081 B)	ND	0.001
SAMPLE CONDITION			BROWN SEDIMENT	

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

*United Analyst Engineering Consultant Co., Ltd is Sub-contractor of REM-UAE Laboratory and Consultant Co., Ltd

(MISS BENJAWAN VIRIYOTHA)
LABORATORY SUPERVISOR

JULY 24, 2019

• DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL .

• REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

2/2

2019-U39343

Annex 11 Surface Water Quality Result (1)

(Remarks: Laboratory makes comparison between observed values and WHO Drinking Water Guidelines. But in the study, the observed values are compared with NEQG.)



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 - 01-1-2016

Effective Date - 01-1-2016

Issue No - 1.0/Page 1 of 1

M0319 054

WATER QUALITY TEST (MICROBIOLOGY) RESULTS FORM

Client Channel
Nature of Water Surface Water
Location Kyeikmayaw Township
Date and Time of collection 17.3.2019
Date and Time of arrival at Laboratory 18.3.2019
Date and Time of commencing examination 18.3.2019
Date and Time of completing 19.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Total Coliform Count	10	CFU/100ml	Not detected
Thermotolerant (fecal) Coliform Count	2	CFU/100ml	Not detected
pH	7.6		6.5 - 8.5
Turbidity	392	NTU	5 NTU
Colour (True)	180	TCU	15 TCU
Free Chlorine	Nil	mg/l	
Total Chlorine	Nil	mg/l	

Remark : Unsatisfactory for drinking purpose.

: This certificate is issued only for the receipt of the test sample.

: < - Less than

Tested by

Signature:

Name:

Hein
Zaw Hein Oo
B.Sc (Chemistry)
Sr. Chemist
ISO TECH Laboratory

Approved by

Signature:

Name:

Soe Thit
Soe Thit
B.E (Civil) 1980,
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Surface Water Quality Result (2)



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)

W0319 588

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 1 of 2

WATER QUALITY TEST RESULTS FORM

Client Channel
Nature of Water Surface Water
Location Kyeikmayaw Township
Date and Time of collection 17.3.2019
Date and Time of arrival at Laboratory 18.3.2019
Date and Time of commencing examination 19.3.2019
Date and Time of completing 24.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	7.6	6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	mg/l as CaCO ₃	
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium chloride (as NaCL)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Suspended Solids	mg/l	
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 Hein
Signature: Zaw Hein Oo
Name: B.Sc (Chemistry)
Sr. Chemist
ISO TECH Laboratory

Approved by Soe Thit
Signature: Soe Thit
Name: B.E (Civil) 1980,
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Surface Water Quality Result (3)



Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E(Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 2 of 2

W0319 588

WATER QUALITY TEST RESULTS FORM

Client Channel
Nature of Water Surface Water
Location Kyeikmayaw Township
Date and Time of collection 17.3.2019
Date and Time of arrival at Laboratory 18.3.2019
Date and Time of commencing examination 19.3.2019
Date and Time of completing 24.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Temperature (°C)	°C	
Fluoride (F)	mg/l	1.5 mg/l
Lead (as Pb)	mg/l	0.01 mg/l
Arsenic (As)	mg/l	0.01 mg/l
Nitrate (N.NO ₃)	mg/l	50 mg/l
Chlorine (Residual)	mg/l	
Ammonia (NH ₃)	mg/l	
Ammonium (NH ₄)	mg/l	
Dissolved Oxygen (DO)	mg/l	
Chemical Oxygen Demand (COD)	64 mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	20 mg/l	
Cyanide (CN)	mg/l	0.07 mg/l
Zinc (Zn)	mg/l	3 mg/l
Copper (Cu)	mg/l	2 mg/l
Silica (Si)	mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Hein
Name: Zaw Hein Oo
B.Sc (Chemistry)
Sr. Chemist
ISO TECH Laboratory

Approved by

Signature: Soe Thit
Name: Soe Thit
B.E (Civil) 1980,
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Surface Water Quality Result (4)



ANALYSIS REPORT

ORIGINAL

Job Ref: 2000391/19

Date: 25/03/2019

Page 1 of 1

Sample Described as : Waste Water
Client Name : Channel Project
Sample Received Date : 18. March .2019
Sample Brought By : Client
Sample Marking : SW
Sample Location : Kyaik Ma Yaw
Analysed Date : 19. March .2019
Lab Code No. : 092/19

No.	Test Parameter	Method	LOQ	Unit	Result
1	Total Suspended Solid	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012; 2540-D.Dried at 103-105 °C	20	mg/L	214
2	Total Nitrogen	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012; 4500-N _{org} B.Macro Kjeldahl Method	1	mg/L	<1
3	Total Phosphorous	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012;4500-P E.Ascorbic Acid Method	0.01	mg/L	0.020
4	Oil & Grease	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012;5520B	5	mg/L	<5

***** End of Report *****

SGS (Myanmar) Limited

(Nu Nu Yi)
Manager

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.
"Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."
REPORTED RESULTS REFER TO SUBMITTED SAMPLE (S) ONLY THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF COMPANY General Conditions for Inspection and Testing Services : If the requirements of the Client necessitate the analysis of samples by the Client's or by any third party's laboratory the Company will pass on the result of the analysis but without responsibility for its accuracy Likewise where the Company is only able to witness an analysis by the Client's or by any third party's, Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only.
WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

SGS (Myanmar) Limited

Minerals Services, 79/D, Bo Chein Street, 6 ½ Mile, Hlaing Township, Yangon, Myanmar
t +95(1) 654 795, 654 796, 654 864, 654 865 e sgs.myanmar@sgs.com

Member of SGS Group(SGS SA)

Annex 12 Groundwater Water Quality Result (1)



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 - 01-1-2016
Effective Date - 01-1-2016
Issue No - 1.0/Page 1 of 1

M0319 055

WATER QUALITY TEST (MICROBIOLOGY) RESULTS FORM

Client Laterite Soil Production
Nature of Water Ground Water
Location Kyeikmayaw Township
Date and Time of collection 17.3.2019
Date and Time of arrival at Laboratory 18.3.2019
Date and Time of commencing examination 18.3.2019
Date and Time of completing 19.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Total Coliform Count	2 CFU/100ml	Not detected
Thermotolerant (fecal) Coliform Count	Not detected (<1) CFU/100ml	Not detected
pH	6.8	6.5 - 8.5
Turbidity	2 NTU	5 NTU
Colour (True)	Nil TCU	15 TCU
Free Chlorine	Nil mg/l	
Total Chlorine	Nil mg/l	

Remark : Unsatisfactory for drinking purpose.

: This certificate is issued only for the receipt of the test sample.

: < - Less than

Tested by

Signature: *Hein*
Name: Zaw Hein Oo
B.Sc (Chemistry)
Sr. Chemist
ISO TECH Laboratory

Approved by

Signature: *Soe Thit*
Name: Soe Thit
B.E (Civil) 1980,
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18. Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Groundwater Water Quality Result (2)



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)

W0319 589

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 1 of 2

WATER QUALITY TEST RESULTS FORM

Client _____ Laterite Soil Production
Nature of Water _____ Ground Water
Location _____ Kyeikmayaw Township
Date and Time of collection _____ 17.3.2019
Date and Time of arrival at Laboratory _____ 18.3.2019
Date and Time of commencing examination _____ 19.3.2019
Date and Time of completing _____ 24.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH	6.8	6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	mg/l as CaCO ₃	
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium chloride (as NaCL)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Suspended Solids	mg/l	
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: _____

Zaw Hein Oo

B.Sc (Chemistry)

Sr. Chemist

ISO TECH Laboratory

Approved by

Signature: _____

Name: _____

Soe Thit

B.E (Civil) 1980

Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.

Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Groundwater Water Quality Result (3)



Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E.(Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 2 of 2

W0319 589

WATER QUALITY TEST RESULTS FORM

Client Laterite Soil Production
Nature of Water Ground Water
Location Kyeikmayaw Township
Date and Time of collection 17.3.2019
Date and Time of arrival at Laboratory 18.3.2019
Date and Time of commencing examination 19.3.2019
Date and Time of completing 24.3.2019

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Temperature (°C)	°C	
Fluoride (F)	mg/l	1.5 mg/l
Lead (as Pb)	mg/l	0.01 mg/l
Arsenic (As)	mg/l	0.01 mg/l
Nitrate (N.NO ₃)	mg/l	50 mg/l
Chlorine (Residual)	mg/l	
Ammonia (NH ₃)	mg/l	
Ammonium (NH ₄)	mg/l	
Dissolved Oxygen (DO)	mg/l	
Chemical Oxygen Demand (COD)	32 mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)	2 mg/l	
Cyanide (CN)	mg/l	0.07 mg/l
Zinc (Zn)	mg/l	3 mg/l
Copper (Cu)	mg/l	2 mg/l
Silica (Si)	mg/l	

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
ISO TECH Laboratory

Approved by

Signature: Soe Thit
Name: B.E (Civil) 1980,
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)

No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-30339681, 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

Groundwater Water Quality Result (4)



ANALYSIS REPORT

ORIGINAL

Job Ref: 2000391/19

Date: 25/03/2019

Page 1 of 1

Sample Described as : **Waste Water**
 Client Name : **Laterite Soil Production Project**
 Sample Received Date : 18. March .2019
 Sample Brought By : Client
 Sample Marking : GW
 Sample Location : Kyaik Ma Yaw
 Analysed Date : 19. March .2019
 Lab Code No. : 090/19

No.	Test Parameter	Method	LOQ	Unit	Result
1	Total Suspended Solid	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012; 2540-D.Dried at 103-105 °C	20	mg/L	<20
2	Total Nitrogen	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012; 4500-Norg B.Macro Kjeldahl Method	1	mg/L	<1
3	Total Phosphrous	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012;4500-P E.Ascorbic Acid Method	0.01	mg/L	<0.01
4	Oil & Grease	Standard methods for the examination of water & waste water APHA ,AWWA & WEF,22nd ed, 2012;5520B	5	mg/L	<5

***** End of Report *****

SGS (Myanmar) Limited

(Nu Nu Yi)
Manager

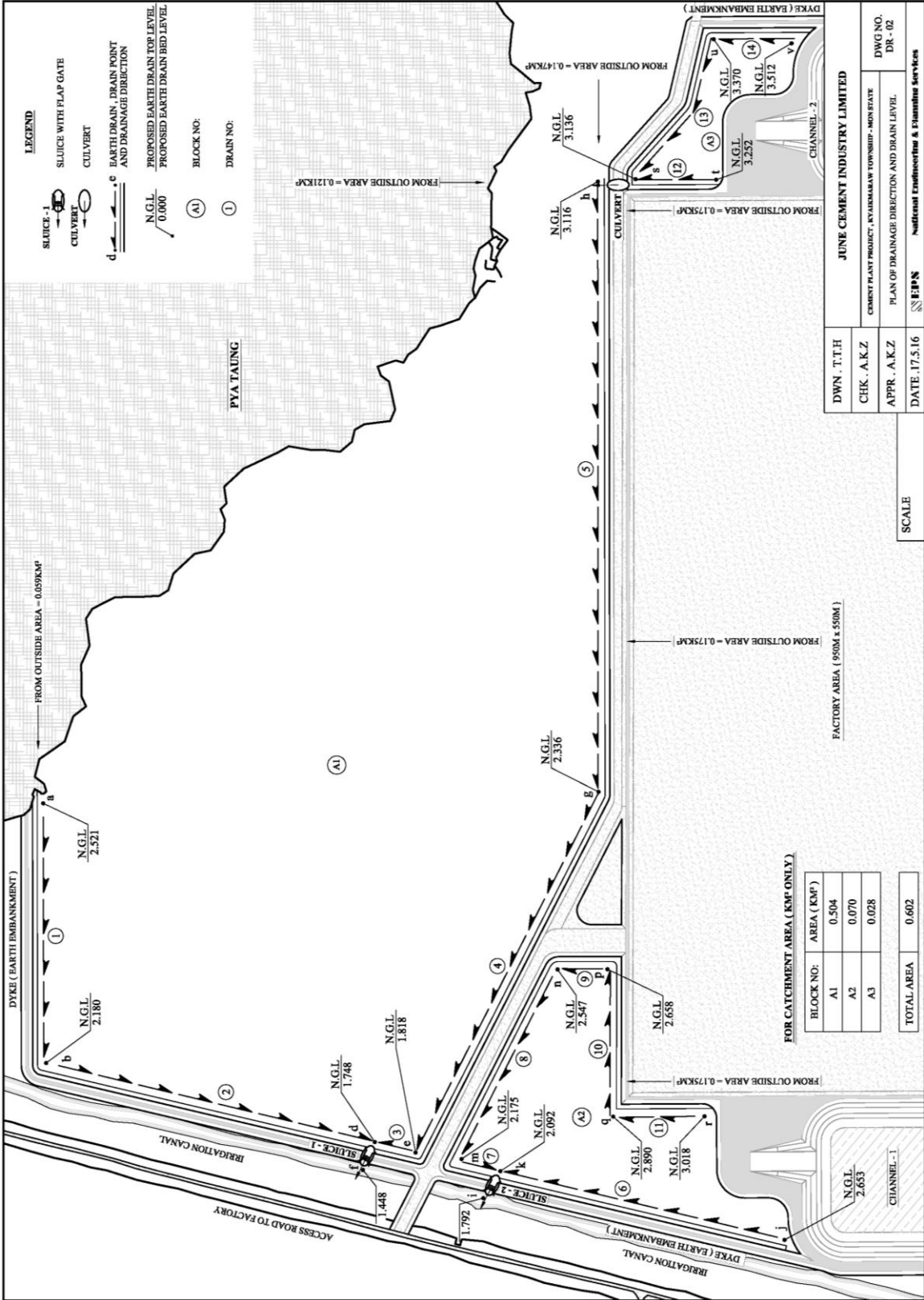
This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.
 "Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."
 REPORTED RESULTS REFER TO SUBMITTED SAMPLE (S) ONLY THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF COMPANY.General Conditions for Inspection and Testing Services : If the requirements of the Client necessitate the analysis of samples by the Client's or by any third party's laboratory the Company will pass on the result of the analysis but without responsibility for its accuracy Likewise where the Company is only able to witness an analysis by the Client's or by any third party's, Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only.
 WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

SGS (Myanmar) Limited

Minerals Services, 79/D, Bo Chein Street, 6 ½ Mile, Hlaing Township, Yangon, Myanmar
 t +95(1) 654 795, 654 796, 654 864, 654 865 e sgs.myanmar@sgs.com

Member of SGS Group(SGS SA)

Annex 13 Layout of Drainage System of Channel 1



Annex 14 Public Consultation

(a) Participants List

June Cement Industry Limited မှုမန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင်အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘိလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက်ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း(Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း

ပုဂ္ဂလိကကုမ္ပဏီများ (Private Company)

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ရာထူး	ကုမ္ပဏီအမည်	ဖုန်းနံပါတ်	လက်မှတ်
၁။	ဦးမြင့်ထွန်း	MD	June Group	၀၇၄၅၈၀၅၂၂၂	
၂။	ဦးတင်စိုး	Senior Engineer	"	၀၇-၄၅၇၆၁၃၇၇	
၃။	ဦးစောဝင်း	Mining Eng.	"	၀၇-၄၂၀၇၃၂၄၇၆	
၄။	ဦးစောစော	စက်မောင်း	"	၀၇ ၂၅၃၇၇၄၆၆	
၅။	ဦးအောင်ကျော်	Geologist	"	၀၇၅၅၅၇၅၅၅၅	
၆။	ဦး ဂျွန်	စာရေး ဝန်ထမ်း	"	-	
၇။	ဦးစောစော	စာရေး ဝန်ထမ်း	"	၀၇၄၅၅၅၅၅၅၅	
၈။	ဦးစောစော	ရုံးအကြံပေး	"	၀၇၅၅၅၅၅၅၅	
၉။	ဦးစောစော	ယဉ်ကျေးမှု	"	၀၇-၄၂၀၇၂၅၅၅၅	
၁၀။					
၁၁။					
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Limited မှုမန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင်အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘိလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက်ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း(Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း

NGOs/INGOs အဖွဲ့များ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	ဖုန်းနံပါတ်	လက်မှတ်
၁။	ဦးမြင့်ထွန်း	ဒုတိယဥပဒေရေးရာ	ဦးမြင့်ထွန်း	၀၇၂၅၅၅၅၅၅၅	
၂။	ဦးမြင့်ထွန်း	ဒုတိယဥပဒေရေးရာ	ဦးမြင့်ထွန်း	၀၇၂၅၅၅၅၅၅၅	
၃။					
၄။					
၅။					
၆။					
၇။					
၈။					
၉။					
၁၀။					
၁၁။					
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရေမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့်
ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သော ဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-
IEE) ဆိုင်ရာလုပ်ငန်းများ ရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းနားသို့တက် ရောက်လာသူများစာရင်း

သတင်းမီဒီယာများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	မှတ်ပုံတင်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးစွန်းစွန်း	၁၁/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၂။	ဒီဂရီ	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	MLM	field reporter	မူရမ်း
၃။	ပိစောဇာက(မြန်မာ့ကျေးဇူး)	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	MLM	Reporter	မူရမ်း ၀၉-၂၅၅၆၀၈၀၂၇
၄။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	MLM	Reporter	မူရမ်း ၀၉-၂၅၅၆၀၈၀၂၇
၅။	မူရမ်း	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	MLM	Reporter	မူရမ်း ၀၉-၂၅၅၆၀၈၀၂၇
၆။					
၇။					
၈။					
၉။					
၁၀။					
၁၁။					
၁၂။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရေမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့်
ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သော ဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-
IEE) ဆိုင်ရာလုပ်ငန်းများ ရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းနားသို့တက် ရောက်လာသူများစာရင်း

လွှတ်တော်

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	မှတ်ပုံတင်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၂။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၃။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၄။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၅။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၆။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၇။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၈။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၉။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၁၀။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၁၁။	ဦးစောစော	၁၀/၈၈၄(၂၀၁၈)၀၀၀၀၀၀	ကျိုက်မရေ (NLD)	ဒါရိုက်တာချုပ်	မူရမ်း
၁၂။					

June Cement Industry Limitedမှပွင့်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင်အကောင်ထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက်ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း(Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း

အစိုးရဌာနဆိုင်ရာအဖွဲ့အစည်းများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ရာထူး	ဌာန	ဖုန်းနံပါတ်	လက်မှတ်
၁။	ဦးမြင့်ဝင်း	ဒုတိယသင်္ကြံဦးစီး	မိသားစု	၀၇၂၆၃၄၈၈၃၂	
၂။	ဒေါ်စုစု	၂/၁၀ ဦးစီးအရာရှိ	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇၇၇၇၇၇၇၇၇	
၃။	ဒေါ်စုစု	အထွေထွေ	ကျေးလက်ရေးရာဦးစီးဌာန		
၄။					
၅။	ဦးသိန်း	၁/၁၀ ဦးစီးအရာရှိ	ပညာရေး	၀၇-၄၂၅၃၄၄၀၃၇	
၆။	ဒေါ်စုစု	၁/၁၀ ဦးစီးအရာရှိ	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၇။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇၇၇၇၇၇၇၇၇	
၈။	ဦးစိုးစိုး	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၅၅၅၅	
၉။	ဒေါ်စုစု	၁/၁၀ ဦးစီးအရာရှိ	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၅၅၅၅	
၁၀။	ဦးစိုးစိုး	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၅၅၅၅	
၁၁။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၅၅၅၅	
၁၂။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၅၅၅၅	
၁၃။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇၇၇၇၇၇၇၇၇	
၁၄။					

June Cement Industry Limitedမှပွင့်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင်အကောင်ထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက်ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း(Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း

အစိုးရဌာနဆိုင်ရာအဖွဲ့အစည်းများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ရာထူး	ဌာန	ဖုန်းနံပါတ်	လက်မှတ်
၁။	ဒေါ်စုစု	ဒုတိယသင်္ကြံဦးစီး	မိသားစု	၀၇-၄၂၅၃၇၇၇၇	
၂။	ဒေါ်စုစု	၁/၁၀ ဦးစီးအရာရှိ	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၃။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၄။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၅။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၆။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၇။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၈။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၉။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၁၀။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၁၁။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၁၂။	ဒေါ်စုစု	ကျေးလက်ရေးရာဦးစီးဌာန	ကျေးလက်ရေးရာဦးစီးဌာန	၀၇-၄၂၅၃၇၇၇၇	
၁၃။					
၁၄။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သော ဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာ လုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့် ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	မောင်.ဝေရာ မွန်	၀၉-၄၂၅၅၃၅၂၄၅	နီစို	မောင်.ဝေရာ မွန်	
၂။	ဒေါ်.အိန်	-	မယ်.စို	ဒေါ်.အိန်	
၃။	မ.အိန်	-	။	မ.အိန်	
၄။	ဦး.စိန်.အောင်	၀၉-၇၆၅၆၇၄၃၄၁	။	မ.အိန်	
၅။	မောင်.ဖြူ	-	မောင်.ပရော	မ.အိန်	
၆။					
၇။					
၈။					
၉။					
၁၀။					
၁၁။					
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သော ဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာ လုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့် ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	မောင်.ရွှေဝိစိ	-	မောင်.ရွှေဝိ	မ.အိန်	
၂။	ဒေါ်.အိန်	၀၉ ၆၉၂၃၇၀၈၄၆	မောင်.ပရော	မ.အိန်	
၃။	ဒေါ်.အိန်	၀၉ ၇၆၁၇၄၃၃၄၀		မ.အိန်	
၄။	ဒေါ်.အိန်	၀၉ ၇၇၀၇၆၀၂၃၄	မောင်.ပရော	မ.အိန်	
၅။	မ.အိန်	၀၉ ၇၇၇၇၇၇၇၇၇	မောင်.ပရော	မ.အိန်	
၆။	ဒေါ်.အိန်		မ.အိန်	မ.အိန်	
၇။	မ.အိန်		မ.အိန်	မ.အိန်	
၈။	မ.အိန်		မ.အိန်	မ.အိန်	
၉။	မ.အိန်		မ.အိန်	မ.အိန်	
၁၀။	မ.အိန်		မ.အိန်	မ.အိန်	
၁၁။	မ.အိန်		မ.အိန်	မ.အိန်	
၁၂။	မ.အိန်		မ.အိန်	မ.အိန်	
၁၃။	မ.အိန်		မ.အိန်	မ.အိန်	
၁၄။	မ.အိန်	၀၉-၇၇၇၇၇၇၇၇	မ.အိန်	မ.အိန်	

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘိလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	မျိုးနွယ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးချစ်အိမ် ဦးစွန်	-	မယ်ဂရီ	ကျွပ်နု	ချစ်အိမ်
၂။	ဦးစိန်စွန်း	-	"	ကျွပ်နု	စွန်း
၃။	ဦးစိုး	-	မော့ဒိုက်	လယ်	စိုး
၄။	ဦးအောင်	-	မော့ဒိုက်	လယ်	အောင်
၅။	ဦးအောင်မယ်	-	မယ်ဂရီ	ဒီဇို	အောင်မယ်
၆။	ဒေါ်ဝင်းစွာ	-	"	"	ဝင်းစွာ
၇။	ဒေါ်သောင်းစိုး	-	"	လယ်	သောင်းစိုး
၈။	ဦးမိုး	-	"	လယ်	မိုး
၉။	ဦးသနောင်	-	မော့ပရာ	ကျွပ်နု	သနောင်
၁၀။	ဦးမောင်ချစ်	-	မယ်ဂရီ	လယ်	မောင်ချစ်
၁၁။	ဦးမောင်ဇော်	-	မယ်ဂရီ	လယ်	မောင်ဇော်
၁၂။	ဦးအောင်မောင်	-	"	လယ်	အောင်မောင်
၁၃။	ဦးအောင်မောင်	-	"	လယ်	အောင်မောင်
၁၄။	မောင်မိုးမောင်	-	မယ်ဂရီ	ဒီဇို	မောင်မိုးမောင်

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘိလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	မျိုးနွယ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးခိုင်မောင်	-	မော့ပရာ	လယ်	ခိုင်မောင်
၂။	ဦးစိုးမောင်	-	မော့ဒိုက်	"	စိုးမောင်
၃။	ဦးအောင်မောင်ဦးသနောင်	-	မော့ပရာ	"	အောင်မောင်
၄။	ဦးစိုးစိုး မိုင်မောင်	-	"	ဒီဇို	စိုးစိုး
၅။	ဒေါ်စိုး	-	"	လယ်	စိုး
၆။	ဦးအောင်မောင်	-	ကျွပ်နု	ကျွပ်နု	အောင်မောင်
၇။					
၈။					
၉။					
၁၀။					
၁၁။					
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	မောင်	-	မောင်ကျော်	မောင်	မောင်
၂။	အောင်ကျော်	-	မောင်	မောင်	X
၃။	မောင်	-	မောင်	မောင်	X
၄။	မောင်	၀၉- ၇၇ ၃၇ ၈၆၁၉၅	မောင်	မောင်	
၅။	မောင်	၀၉- ၄၇ ၅၂ ၇၄၆၁၃	မောင်	မောင်	
၆။					
၇။					
၈။					
၉။					
၁၀။					
၁၁။					
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Limited မှ မွန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	မောင်	၀၁-၅၅၅၀	မောင်	မောင်	မောင်
၂။	မောင်	၀၉-၄၇၅၅၄၇၆၇	မောင်	မောင်	မောင်
၃။	မောင်		မောင်	မောင်	မောင်
၄။	မောင်	၀၉-၇၅၅၅၅၅၅	မောင်	မောင်	မောင်
၅။	မောင်		မောင်	မောင်	မောင်
၆။	မောင်	၀၉-၇၅၅၅၅၅၅	မောင်	မောင်	မောင်
၇။	မောင်		မောင်	မောင်	မောင်
၈။	မောင်		မောင်	မောင်	မောင်
၉။	မောင်		မောင်	မောင်	မောင်
၁၀။	မောင်		မောင်	မောင်	မောင်
၁၁။	မောင်		မောင်	မောင်	မောင်
၁၂။	မောင်		မောင်	မောင်	မောင်
၁၃။	မောင်		မောင်	မောင်	မောင်
၁၄။	မောင်		မောင်	မောင်	မောင်

June Cement Industry Limited မှန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးအောင်	-	ကျိုက်မရော	၆	
၂။	ဦးအောင်	-	"	၈	
၃။	ဦးအောင်	-	ကျိုက်မရော	၈	X
၄။	ဦးအောင်	-	ကျိုက်မရော	၈	
၅။	ဦးအောင်	-	ကျိုက်မရော	၆	
၆။	ဦးအောင်	-	"	၆	
၇။	ဦးအောင်	-	"	၈	X
၈။	ဦးအောင်	-	"	၈	X
၉။	ဦးအောင်	-	ကျိုက်မရော	၈	
၁၀။	ဦးအောင်	-	ကျိုက်မရော	၆	
၁၁။	ဦးအောင်	၀၉-၇၇၆၀၂၄၈၇၇	ကျိုက်မရော	၈	
၁၂။	ဦးအောင်	၀၉၇၈၁၁၄၃၆၇၃	ကျိုက်မရော	၆	
၁၃။	ဦးအောင်	၀၉၇၇၅၂၆၈၈၆၁	ကျိုက်မရော	၈	
၁၄။	ဦးအောင်	-	ကျိုက်မရော	၈	

June Cement Industry Limited မှန်ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘီလပ်မြေစက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့တက်ရောက်လာသူများစာရင်း












ရပ်မိရပ်ဖဒေသခံပြည်သူများ

ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်









စဉ်	အမည်	ဖုန်းနံပါတ်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဦးအောင်	-	ကျိုက်မရော	၈	၀၆
၂။	ဦးအောင်	-	ကျိုက်မရော	၆	X
၃။	ဦးအောင်	-	ကျိုက်မရော	၈	
၄။	ဦးအောင်	၀၉၇၇၁၁၉၆၄၁၂	ကျိုက်မရော	၈	
၅။	ဦးအောင်	-	ကျိုက်မရော	၈	
၆။	ဦးအောင်	-	ကျိုက်မရော	၈	
၇။	ဦးအောင်	-	"	၈	
၈။	ဦးအောင်	၀၉၇၈၂၂၃၅၂၇၂	"	၈	
၉။	ဦးအောင်	-	ကျိုက်မရော	၈	၀၆
၁၀။	ဦးအောင်	-	ကျိုက်မရော	၈	
၁၁။	ဦးအောင်	-	"	၆	
၁၂။	ဦးအောင်	-	"	၈	
၁၃။	ဦးအောင်	-	ကျိုက်မရော	၈	
၁၄။	ဦးအောင်	-	ကျိုက်မရော	-	

June Cement Industry Limited မှ ပြည်နယ်၊ ကျိုက်မရောမြို့နယ်၊ ကော့ပနောကျေးရွာအနီးတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဘိလပ်မြေဝက်ရုံတည်ထောင်ခြင်းလုပ်ငန်းဆောင်ရွက်နိုင်ရန် လိုအပ်သောဆက်စပ်စီမံကိန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination-IEE) ဆိုင်ရာလုပ်ငန်းများရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူနှင့်ဆွေးနွေးတိုင်ပင်ခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်လာသူများစာရင်း


ရပ်မိရပ်ဖဒေသခံပြည်သူများ ရက်စွဲ - ၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်

စဉ်	အမည်	ပြည်သူ့စာ	နေရပ်လိပ်စာ	အလုပ်အကိုင်	လက်မှတ်
၁။	ဒေါ်ရှေ့		မော်ကဏ္ဍ	ကယ်လူဇ်	
၂။	ဒေါ်ပင်မေ		"	ဗိုဗို	
၃။	ဒေါ်စားသစ်		မော်ကဏ္ဍ	ကယ်လူဇ်	
၄။	ဒေါ်ရှေ့		မော်ကဏ္ဍ	ကယ်လူဇ်	
၅။	ဒေါ်ဆုဂ္ဂိုလ်		"	ကယ်လူဇ်	
၆။	ဒေါ်ခင်ခင်		မော်ကဏ္ဍ	ဗိုဗို	
၇။	မောင်ပင်၊ နှိုရှေ့		ကော့ဗွန်း	ပင်၊ နှို	
၈။	ဒေါ်လွှဲမာ		မော်ကဏ္ဍ	ဗိုဗို	
၉။	ဒေါ်လွှဲ		မော်ကဏ္ဍ	ဗိုဗို	
၁၀။	ဇနီးကျော်မိုးမြင့်	၈၇၇၆၈၆၅၅၈၇၇	ကော့ပနောကျေးရွာ	မယ်	
၁၁။	ဦးလွှဲ		မော်ကဏ္ဍ	ကျွဲလူဇာသား	
၁၂။					
၁၃။					
၁၄။					

June Cement Industry Ltd;
IEE's Public Consultation သို့ တက်ရောက်လာမည့်လူဦးရေစာရင်း

စဉ်	အမည်	လိပ်စာ	လက်မှတ်
၁။	ဦး ဆိုး ဗျဇင်	မော်ကဏ္ဍ	
၂။	" စား ဗျဇင်	"	
၃။	" ကောင်သိန်း	ကော့ဗွန်း	
၄။	" ကောင်ဝင်း	မော်ကဏ္ဍ	
၅။	" ဗျဇင်	"	
၆။	" အုန်း	"	
၇။	" သိန်းအုန်း	ကော့ဗွန်း	
၈။	" မြို့	ကော့ဗွန်း	
၉။			
၁၀။			
၁၁။			
၁၂။			
၁၃။			
၁၄။			
၁၅။			
၁၆။			
၁၇။			
၁၈။			
၁၉။			
၂၀။			

(b) Meeting Minutes of Public Consultation

E Guard Environmental Services Co., Ltd.	
Meeting Minutes	
	
Subject: Public Consultation of Initial Environmental Examinations for related projects of Cement Plant by June Cement Industry Ltd.	Date: 15/June/2019
Venue: Mei Ka Yo Monastery, Mei Ka Yo Village, Kyaikmaraw Township, Mon State	Time: 10:00 AM-12:00 PM
Attendees: Local People - 106 Parliament Member - 9 Government - 22 Media - 4 NGO - 2 Private Company - 9 Total - 152	
Prepared by : U Lwin Thu Htun (Project Associate, E Guard Environmental Services), U Zwe Wint Phyo (Project Assistant, E Guard Environmental Services)	

The Stakeholder meeting was held by the following Agenda:

1. Opening Ceremony
2. Opening speech by U Saw Aung Myint Khine (Minister of Kayin Ethnic Affair, Mon State)
3. Speech by U Khin Zaw Oo (Amyotha Hluttaw Representative, Mon State)
4. Presentation of project descriptions about related projects of June Cement Industry Ltd. by U Tin Oo (Director, June Cement Industry Ltd.)
5. Presentation about the Initial Environmental Examination and Procedure of IEE by U Tin Aung Moe (Director, E Guard Environmental Services)
6. Questions and Suggestions by Attendees
7. Closing Remarks by U Saw Kyaw Win Maung (Pyithu Hluttaw Representative, Mon State)

1. Opening Ceremony

2. Opening Speech by U Saw Aung Myint Khine (Minister of Kayin Ethnic Affair, Mon State)

Briefly, he said, all of you know that today's ceremony is public consultation for related four projects of cement industry. Public consultation is a must to do and all of you can ask the questions freely which you would like to know without hesitating.

3. Speech by U Khin Zaw Oo (Amyotha Hluttaw Representative, Mon State)

Firstly, he said that he didn't know the detail process of project as well as the villagers (local people). So, the villagers should ask the questions so as to know clearly about the project and he also prepared to ask. He hoped that the project client will explain how they prepare and plan so that the project would not impact the public and environment. Apparently, June Company proposed MIC and bought the farmlands from nearby villages for the project since 2010. June Company will construct the road near the villages in order to ease project transportation. So the transportation becomes better than before and 700 people will be employed when the June project operates. Therefore, local people will get the good opportunities. On the other hand, June Company is currently supporting and funding the local people from nearby villages (for example, education, healthcare, etc).

4. Presentation of project descriptions about related projects of June Cement Industry Ltd. by U Tin Oo (Director of June Cement Industry Ltd.)

Briefly, he presented about the related projects, facts and figures of the projects, existing project conditions and corporate social responsibility of June Cement Industry Ltd.

5. Presentation about the initial environmental examination and procedure of IEE by U Tin Aung Moe (Director of E Guard Environmental Services)

He firstly explained about the requirements of Initial Environmental Examination of the project which has been prepared in line with the EIA procedure of Environmental Conservation Department of the Ministry of Natural Resources and Environmental Conservation (MONREC), objectives of public consultation, related laws and regulation, background environmental condition of project site. He also presented the anticipated environmental and social impacts, mitigation measures, processes and schedule that will be mentioned and prepared in the IEE Report.

6. Questions and Suggestions by Attendees

Jetty Project

Questions (1): U Khin Zaw Oo (Amyotha Hluttaw Representative, Mon State)

He said that how do you plan for jetty project especially the condition of fishermen who are working along the Attaran River before and after the project? Besides, how do you pay 2 percent of profit for CSR? Does 2 percent of CSR intend to Kyaikmaraw Township or Mon State?

Answers: U Tin Oo (Director, June Cement Industry Ltd.)

He said that when the jetty project is finished, we will only allow the ship transfer within the tonnage limits. Currently, the main operation relating to the project is sand transportation to the project site via barges that are sometimes cause some disturbances to fishing activities especially hook with fishing net. Therefore, care has to be taken to implement this operation by pointing out with small boat in front of the barges so as to solve this problem. We will also reduce the quantity of shipping time to the lowest during the fishing season. In the case of CSR, CSR should be for Kyaikmaraw Township because our project is located at

Kyaikmaraw Township and this township is higher potential to affect by project activities. Thus, we will emphasize the CSR for Kyaikmaraw Township. We will have to plan and fund for CSR or community development. Even though we haven't planned or funded for CSR, we already supported education, healthcare and donated 5 million to Mei Ka Yo village and 10 million to Kawt Pa Naw village in the last two years. At present, we are building crematory that is imported from Myawaddy at Mei Ka Yo village and the crematory construction will be finished soon.

Jetty and Channel Project

Questions (2): U Aung Tin Oo (Fishermen Head)

He asked, if fishermen are affected by ship transferring of June Cement Project, who will response that case and who is a respondent person? Nowadays, MCL Company cooperates with the member of fishing team by giving the number of contacted person, ship number. According to the construction of jetty and channel, fishermen who are working there will face the difficulties and lost their opportunities. So, how will you do if fisher men lost their opportunities?

Answers: U Tin Oo (Director, June Cement Industry. Ltd)

Obviously, there may be more or less confrontation between the barges and fisher men due to the project. We will give the contact number of responsible person or set up 24 hour hot line number to inform their grievance or complaint. As well, we will do an engagement with the affected fishermen and we will do best for not losing too much.

Cement Production Project

Questions (3): U Naing Shwe Win (Villager, Mei Ka Yo Village)

He wanted to know, which power plant is going to be used for cement industry? How many MW to be used for that industry? How many tonnages are produced per day? Where is the clay production area? Is it near the village and how far is it? Does it affect or impact to the nearest village? As for him, he isn't going to object or protest the June Company. MCL Company is currently using Attaran River for their ships' transportation. The river is almost damaged by MCL Company. Also, June Company will have to be used Attaran River for their ships' transportation in the future. So, the Attaran River is probably going to be more damaged. So, which company does we complaint about the impacts in the future? Which organization or department has responsibility to act upon the company that damages the environment seriously? Which organization or department monitors whether the project damages the public or not?

Answers: U Tin Oo (Director, June Cement Industry. Ltd)

Recently, we are intending to use coal-fired plant (15 MW of 2 quantities) for power supply. We've proposed coal-fired plant to get permission from the Union of Myanmar. We didn't get permission yet so that we haven't constructed coal-fired plant. We are going to use a very small amount of clay for cement production. Limestone percentage is 80-83%, clay percentage is 12% and laterite percentage is 8% are needed for cement production. Fortunately, small amount of clay composition is found in limestone production area and we

only need around 4% of clay for cement production. Therefore, we will excavate a small amount of clay at clay site. During the production of clay, we will manage carefully not to damage the environment and also the nearby villages. For barges transportation, the public can complain via the responsible person of the Company by calling 24 hours hot line number. For deciding whether the project damages or not, Environment Conservation Department will monitor in the future. Nowadays, ECD has many modern instruments for environmental monitoring and the public can see the monitoring results on the website.

Questions (4): Daw Pa Pa (Local People, Mei Ka Yo Village)

She said that, we have lost our farmlands without getting any compensation. Therefore, we would like to get the compensation not only by giving cash but also providing an alternative land. So, do we lose ours without getting any compensation like that? Which opportunities can we get?

Answers: U Tin Oo (Director, June Cement Industry. Ltd)

He said that the purpose of today's ceremony is only noticing and requesting opinions from the local people for the related projects of June Cement Industry. Therefore, Land acquisition case is probably concerned with the land acquisition department so we can't decide it right now.

Limestone Production Project

Questions (5): U Naing Htun Kyi (Villager, Mei Ka Yo Village)

He said that the main constituent of cement production is limestone. There is a historical cave near the production area of limestone. He only concern about this cave not to damage. How do you manage not to damage the cave during the limestone production period?

Answers: U Tin Oo (Director, June Cement Industry. Ltd)

He said that we are also Buddhism and we will focus on not to be damaged during the operation period. Foremost, we will operate the limestone production from the boundary of MCL Company that is far away from the historical cave. When we blast the limestone, we will use delay detonator which vibrates lesser than the others. Besides, we will do operation charily till the end.

Questions (6): U Khin Zaw Oo (Philanthropic Officer, Mei Ka Yo Village)

He said, it is sure that stones will be reached and affect the nearest farms that are not bought or owned by the June Company because of the blasting of limestone. What would you do if it happened? And the public should know the detail of the projects and June Company should disclose its projects clearly.

Answers: U Tin Oo (Director, June Cement Industry Ltd.)

He said that the farms near the limestone site will not be damaged by the project because we will be using one type of mining method that starts to extract the inner portion of mineral, we would not blast or explode the outer portion. Even if there is damage to the farms, we would buy the farms with reasonable price or give compensation. And if you want to know the details of project, you can list the facts what you want to know and you can ask directly the company office.

Clay Production Project

Questions (7): U Htain Win (Villager, Mei Ka Yo Village)

He asked about the location of clay production. The villagers are now facing difficulties about transportation due to the construction of factory. The result of air and water monitoring results need to display as Myanmar language so as to read easily by local people. He desired that local people from nearby villages should include in the Grievance Mechanism. And what kind of coal will be used for clean-coal system?

Answers: U Tin Oo (Director, June Cement Industry. Ltd)

We will start using clay from the plot No. 406 and we will manage not to impact the others as much as we can. For announcing the results of air and water monitoring results, we will display it with Myanmar Language by using LED board. Subsequently, we will organize the Grievance Mechanism with public, stakeholders, responsible persons from government departments, mayors and philanthropic people. In the case of coal, there are four grades of coal and we will be using third-grade coal that is imported from Australian and Indonesia.

(c) Public Consultation Photos



Attendees' Registration



Opening speech by U Saw Aung Myint Khine (Minister of Kayin Ethnic Affair, Mon State Government)



Speech by U Khin Zaw Oo (Amyotha Hluttaw Representative, Mon State)



Presented by U Tin Oo (Director of June Cement Industry Ltd.)



Presented by U Tin Aung Moe (Director of E Guard Environmental Services)



Questions by Attendee



Questions by Attendee



Questions by Attendee


(d) Presentation



June Cement Industry Limited

မှအကောင်အထည်ဖော်ဆောင်ရွက်မည့် သီလပ်မြစ်ကန်ရုံစီမံကိန်းအတွက် လိုအပ်သည့်
ဆတ်စပ်လုပ်ငန်းများအတွက်
ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ ရင်းလင်းတင်ပြခြင်းနှင့်
အများပြည်သူသဘောထားရယူခြင်း
အခမ်းအနား

၂၀၁၉ ခုနှစ်၊ ဇွန်လ (၁၅) ရက်၊ ဝေနေ့နေ့



နိဒါန်း

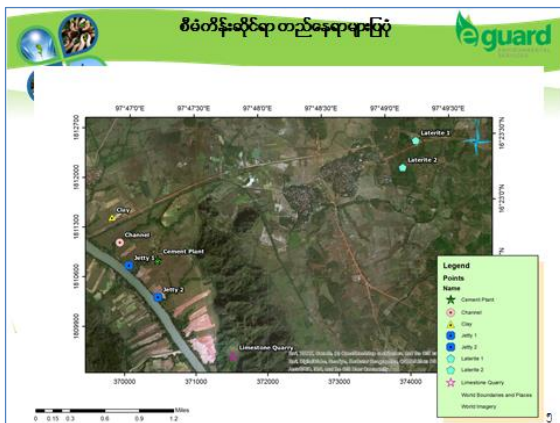
ရင်းနှီးမြှုပ်နှံမှု ကုမ္ပဏီ	- June Cement Industry Limited
ရင်းနှီးမြှုပ်နှံမှုပုံစံ	- ပြည်တွင်းရင်းနှီးမြှုပ်နှံမှု
လုပ်ငန်းအမျိုးအစား	- ဆိပ်ခံတံတားတည်ဆောက်လုပ်ခြင်း၊ တူးမြောင်း၊ ဆောက်လုပ်ခြင်း၊ ကံကျောက်ထုတ်လုပ်ခြင်း နှင့် ရွှံ့စေးမြေတူးဖော်ခြင်းလုပ်ငန်းများ
စီမံကိန်းအဓိကရည်ရွယ်ချက်	- သီလပ်မြစ်ကန်ရုံ တည်ဆောက်လည်ပတ်နိုင်ရန်
စီမံကိန်းတည်နေရာ	- ကော့ပုဆွန်ကျေးရွာအနီး၊ ကျိုက်မရောမြို့နယ်၊ မော်လမြိုင်၊ မွန်ပြည်နယ်။
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင် (MIC) သို့အဆိုပြုလွှာ တင်ပြသည့် ရက်စွဲ	- ၂၀၁၅ ခုနှစ်၊ ဩဂုတ်လ၊ (၁၉) ရက်

June Cement Industry Limited ၏
ဒါရိုက်တာအမည်စာရင်းများ

စဉ်	အမည်	နိုင်ငံသားစိစစ်ချက်အမှတ်	နေရပ်လိပ်စာ
၁။	ဒေါ်နုနုဝင်း (မန်းမန်းကျင်းဒါရိုက်တာ)	၁၀/မလမ(နိုင်) ၁၄၃၂၄၀	အမှတ် (၈၀)၊ ဆရာမလမ်းလမ်းလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့။
၂။	ဦးအောင်စိုး (ဒါရိုက်တာ)	၁၂/အလန(နိုင်) ၀၃၃၆၃၄	အမှတ် (၁၁/၁၃)၊ သရဖီလမ်း၊ အလုံမြို့နယ်၊ ရန်ကုန်မြို့။
၃။	ဦးမြင့်နိုင် (ဒါရိုက်တာ)	၁၂/ကတတ(စည်) ၀၀၀၂၃၁	အမှတ် (၈၀)၊ ဆရာမလမ်းလမ်းလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့။
၄။	ဦးမြင့်စိုး (ဒါရိုက်တာ)	၁၂/ဗဟန(နိုင်) ၀၄၀၆၀၄	အမှတ် (၂၇)၊ ရွှေတောင်ကုန်းမိုင်သာ၊ အင်းလျာမြို့လမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့။

ရင်းနှီးမြှုပ်နှံမှုငွေပမာဏ

စဉ်	အကြောင်းအရာ	အခြေခံရန် ခေါ်ယူသင့်သည့်အခါ	ကျပ်သန်းအခါ	ရရမည့်ကျပ်သန်းအခါ
၁။	စီမံကိန်းနှင့် ပြီးစီးပြီးတိုင်းလုပ်ငန်းများနှင့် ဆက်စပ် အဆောက်အအုံများ	၀.၁၄၅	၇.၂၇၃	၁၅၂.၂၇၃
၂။	စက်ပစ္စည်းများ၊ စက်ကိရိယာများ စသည့် ပစ္စည်းတို့၏တန်ဖိုးပမာဏ	၀.၂၈၂		၂၈၂.၁၀၇
၃။	ရုံးသုံး ပစ္စည်းကိရိယာများ	၀.၀၀၀၂	၀.၀၄၅	၀.၂၈
၄။	ငွေသား	၀.၀၄၄	၁.၃၃	၄၅.၃၃
	ရရမည့်အခါ	၀.၄၇၁	၈.၆၄၇	၄၈၀
၅။	ဆိပ်ခံတံတားငယ်တည်ဆောက်လုပ်ခြင်း၊ တူးမြောင်းဖောက်လုပ်ခြင်း၊ ကံကျောက်ထုတ်လုပ်ခြင်း နှင့် ရွှံ့စေးမြေတူးဖော်ခြင်း လုပ်ငန်းများ	ရင်းနှီးမြှုပ်နှံငွေ၏ ၄၀%		၂၈၈



စီမံကိန်းဆိုင်ရာ အချက်အလက်များ

ဆောက်လုပ်ရမည့်နေရာ	- (၃) နှစ်
ဝဘာကုမ္ပဏီလီမိတက်	- (၁) နှစ်
ရင်းနှီးမြှုပ်နှံမှုကုမ္ပဏီ	- ၃ နှစ် (၃၀)
ရရမည့်အကြောင်းအရာ	- (မရမည့်) စတ
ဝန်ထမ်းအရေအတွက်	- ၇၀၀ ဦး
စီမံကိန်းတည်နေရာ (လက်တီတွဒ်)	- ၁၆°၂၂.၂၉၃၇'N
လောင်ဂျီတွဒ်	- ၉၇°၃၈'၅၃.၅၃'E

စီမံကိန်းအနီးရှိ ကျေးရွာဆိုင်ရာအချက်အလက်များ

စဉ်	ကျေးရွာအမည်	အိမ်ခြေ	အိမ်ထောင်စု	လူဦးရေ		
				ကျား	မ	စုစုပေါင်း
၁။	ကျေးရွာ	၄၅၀	၅၀၀	၄၉၂	၅၁၀	၁၀၀၂
၂။	ကျေးရွာ	၃၆၉	၄၂၉	၄၃၀	၄၃၅	၈၆၅
၃။	ဓလံတို	၂၈၉	၂၉၆	၇၅၉	၈၅၃	၁၆၁၀

လက်ရှိစီမံကိန်းအခြေအနေ



တူးမြောင်းတည်ဆောက်မည့်နေရာ



ဆိပ်ခံတံတားတည်ဆောက်မည့်နေရာ



ရွှံ့စေးမြေတူးဖော်မည့်နေရာ



ကံကျောက်တူးဖော်မည့်နေရာ



ကျေးဇူးတင်ပါသည်။

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination)

E Guard Environmental Services

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း

စီမံကိန်းအကျိုးခံစားခွင့်ရရှိသော အကျိုးသက်ရောက်မှုများ

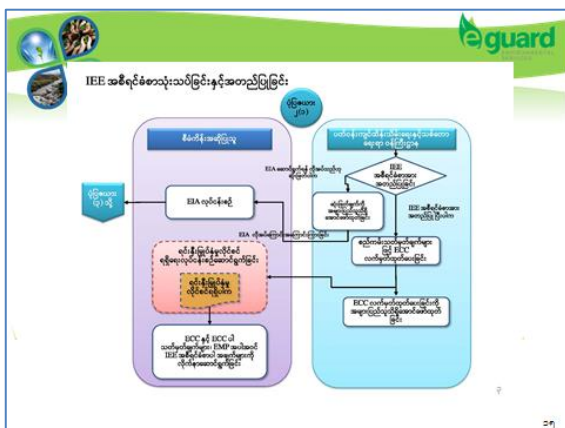
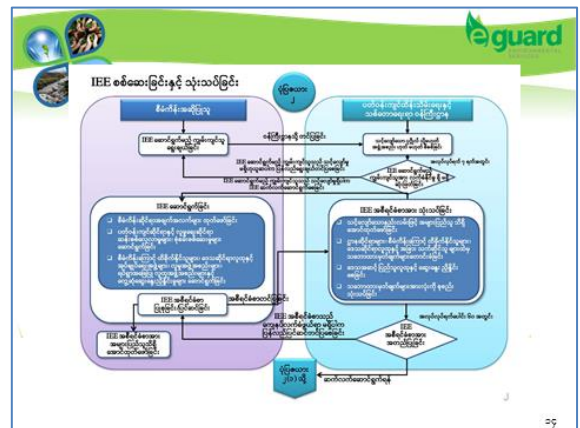
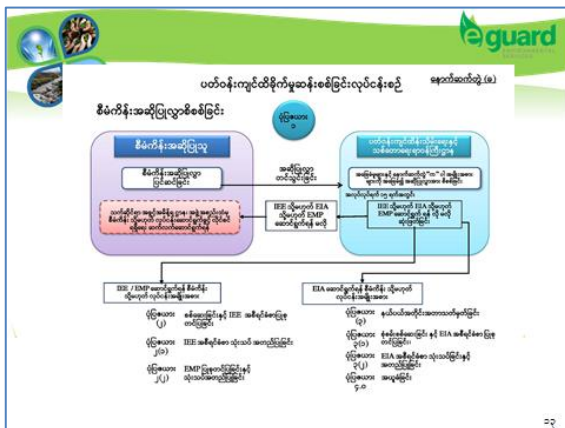
စစ်ဆေးခြင်း

- ✓ သိသာထင်ရှားမှု ရှိ၊ မရှိ
- ✓ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆောင်ရွက်ရန် လိုအပ်ခြင်း ရှိ၊ မရှိ
- ✓ သတ်မှတ်ထားသော အဆောက်အအုံများ ပြုစုတင်ပြရန် လိုအပ်ခြင်း ရှိ၊ မရှိ

ဆောင်ရွက်သည့်အဖွဲ့အစည်း - E Guard Environmental Services Co., Ltd.

စီမံကိန်းပြုစုသူအဖွဲ့အစည်း - သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန

လိုက်နာရမည့် နည်းဥပဒေ စည်းမျဉ်းစည်းကမ်းများ - ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော် ဖွဲ့စည်းပုံအခြေခံဥပဒေ (၂၀၀၈) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ နှင့် ပြည်ပအခြေခံ စည်းမျဉ်းစည်းကမ်းများ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအုတ်မြစ် (လုပ်ထုံးလုပ်နည်း) လမ်းညွှန်ချက်များ



ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း၏ ရည်ရွယ်ချက်များ

- စီမံကိန်းဆောင်ရွက်မှုကြောင့်ဖြစ်ပေါ်လာနိုင်သည့် ပြဿနာများကို ဖော်ထုတ်ခြင်း
- ထိခိုက်လာနိုင်မှုများကို လျော့ချပေးနိုင်မည့် အစီအစဉ်များကို အကြံပြုတင်ပြခြင်း
- စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များ ကြိုတင်ပြင်ဆင်ခြင်းအကောင်အထည်ဖော်ဆောင်ရွက်ခြင်း
- ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်း လိုလောက်မှု ရှိ/မရှိဆန်းစစ်ခြင်း

အများပြည်သူနှင့် ဆွေးနွေးညှိနှိုင်းသဘောထားရယူခြင်း၏ ရည်ရွယ်ချက်များ

- ဖြစ်ပေါ်လာနိုင်သည့် ကောင်းကျိုး/ဆိုးကျိုးများကို တင်ပြခြင်း
- ပတ်ဝန်းကျင်ဆိုင်ရာများ၏ အမြင်နှင့် အကြံပြုချက်များ ထိခိုက်သက်ရောက်မှုများကို လျော့ချပေးနိုင်မည့် အစီအစဉ်များ၊ စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များတွင် ထည့်သွင်းစဉ်းစားပေးခြင်း
- စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်ခြင်းနှင့် လည်ပတ်ခြင်း၏ ပွင့်လင်းမြင်သာမှုနှင့် တာဝန်ယူနိုင်မှု တိုးတက်စေခြင်း
- အငြင်းပွားမှုများ လျော့ချခြင်းနှင့် စီမံကိန်းအကောင်အထည်ဖော်ရာတွင် ချောမွေ့ရှိရန် ဆောင်ရွက်ခြင်း

စီမံကိန်းပတ်ဝန်းကျင်လက်ရှိအနေအထား

အတိုင်းအတာများ	စီမံကိန်းတည်ဆောက်ခြင်းနှင့် လုပ်ငန်းဆောင်ရွက်ခြင်းအတွက် လိုအပ်သည့်အခြေအနေ	ရွှေ့ပြောင်းနေထိုင်ခြင်းနှင့် ကုန်သွယ်ရေးလုပ်ငန်းများ
လေထုထွက်စွမ်းရည် အချိုးအစား	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက် အချဉ်အသွေး	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက် အချဉ်အသွေး
လေထုထွက်စွမ်းရည် တာဝန်ယူမှု	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်
ရေအချဉ်အသွေး	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်
ဆူညံသံ	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်	အချိုးအစားပတ်ဝန်းကျင်ဆိုင်ရာ အချဉ်အသွေး (လူတိလွတ်မှု) လမ်းညွှန်ချက်များအတွက်

စီမံကိန်းပတ်ဝန်းကျင်လက်ရှိအနေအထားတိုင်းတာခြင်း




စီမံကိန်းအတွင်းလေထုအချဉ်အသွေး တိုင်းတာနေပုံ

စီမံကိန်းအတွင်းရေအချဉ်အသွေး တိုင်းတာနေပုံ

စီမံကိန်းပတ်ဝန်းကျင်လက်ရှိအနေအထားတိုင်းတာခြင်း




စီမံကိန်းအတွင်းဆူညံသံအချဉ်အသွေး တိုင်းတာနေပုံ

စီမံကိန်းအတွင်းမြေအချဉ်အသွေး တိုင်းတာနေပုံ

စီမံကိန်းပတ်ဝန်းကျင်လက်ရှိအနေအထားတိုင်းတာခြင်း




စီမံကိန်းအတွင်းရေအချဉ်အသွေး တိုင်းတာနေပုံ

လူနေမှုအဆင့်နှင့် စီမံကိန်းတည်ဆောက်ခြင်း သက်ရောက်မှုအဆင့်

လူနေမှုအဆင့်	လူနေမှုအဆင့်နှင့် စီမံကိန်းတည်ဆောက်ခြင်း သက်ရောက်မှုအဆင့်	အဆင့်မြင့်	အဆင့်နိမ့်	စီမံကိန်းအဆင့်မြင့်	စီမံကိန်းအဆင့်နိမ့်
အလွန်နိမ့် (very low)	လူနေမှုအဆင့်မြင့်	-	-	၁	၁
နိမ့် (low)	လူနေမှုအဆင့်မြင့်	၄	၄	၄	၁၂
အလယ် (moderate)	လူနေမှုအဆင့်မြင့်	၄	၂	၃	၉
မြင့် (high)	လူနေမှုအဆင့်မြင့်	-	၁	-	၁
အလွန်မြင့် (very high)	လူနေမှုအဆင့်မြင့်	-	-	-	-
စုစုပေါင်း		၈	၇	၈	၂၃

ရွှေ့ပြောင်းနေထိုင်ခြင်းနှင့် ကုန်သွယ်ရေးလုပ်ငန်းများ သက်ရောက်မှုအဆင့်

လူနေမှုအဆင့်	လူနေမှုအဆင့်နှင့် စီမံကိန်းတည်ဆောက်ခြင်း သက်ရောက်မှုအဆင့်	အဆင့်မြင့်	အဆင့်နိမ့်	စီမံကိန်းအဆင့်မြင့်	စီမံကိန်းအဆင့်နိမ့်
အလွန်နိမ့် (very low)	လူနေမှုအဆင့်မြင့်	-	-	-	-
နိမ့် (low)	လူနေမှုအဆင့်မြင့်	၈	၄	၁၀	၂၃
အလယ် (moderate)	လူနေမှုအဆင့်မြင့်	၂	၃	-	၄
မြင့် (high)	လူနေမှုအဆင့်မြင့်	-	၂	-	၂
အလွန်မြင့် (very high)	လူနေမှုအဆင့်မြင့်	-	-	-	-
စုစုပေါင်း		၁၀	၁၀	၁၀	၃၀

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်

- စီမံကိန်းအကြံပြုချက်အတိုင်း (တည်ဆောက်သည့်ကာလ)
- စီမံကိန်းလုပ်ငန်းစဉ် (လုပ်ငန်းလုပ်ဆောင်သည့် ကာလ)
- စီမံကိန်းသက်တမ်းကုန်ဆုံး (စီမံကိန်းအဆုံးသတ်သည့် ကာလ)

ဆုံးဖြတ်ချက်ချခြင်း

✓ ကာကွယ်ရန်

✓ ရှောင်ကြဉ်ရန်

✓ လျော့နည်းစေရန်

နည်းလမ်းနှင့် အစီအစဉ်များ

တည်ဆောက်သည့်ကာလ


ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်

ဆုံးဖြတ်ချက်ချခြင်းအရ အရေးယူဆောင်ရွက်မှုများနှင့်

စောင့်ကြည့်ကြည့်ရှုရမည့် အစီအစဉ်

စီမံကိန်းတည်ဆောက်သည့် ကာလ

Annex 15 CSR Programs undertaken by June Cement Industry Ltd. (2011 -2018)

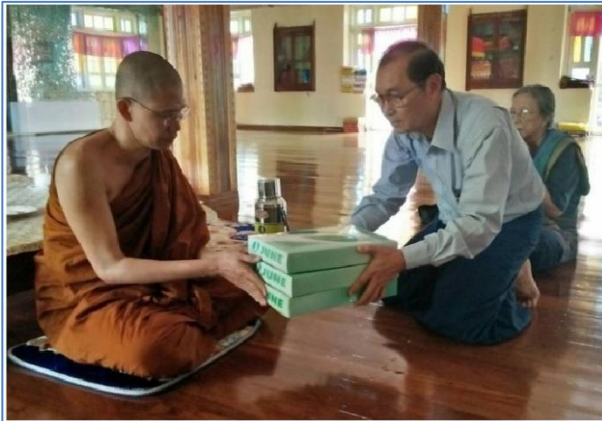
 JUNE CEMENT INDUSTRY LTD. ၏ လှူဒါန်းမှုများ (၂၀၁၁ မှ ၂၀၁၈ အထိ)	
စဉ်	ဖော်ပြချက်
၁။ ပညာရေး ဝန်ဆောင်မှု	
၁(၁)။	ဒေသခံရွာများရှိ စာသင်ကျောင်းများသို့ ကျောင်းသုံးဝလာစာအုပ်များ လှူဒါန်းခြင်း။
၁(၂)။	ဒေသခံရွာများရှိ ထူးချွန်သော ကျောင်းသားများကို ပညာရည်ချွန်ဆု ချီးမြှင့်ပေးခြင်း။
၁(၃)။	ဒေသခံရွာများရှိ စာသင်ကျောင်းများသို့ ကျောင်းသုံး အသုံးအဆောင်ပစ္စည်းများ လှူဒါန်းခြင်း။
၁(၄)။	ကျော့ပနောအထက်တန်းကျောင်းခွဲ ကျောင်းဆောင်သစ် ဆောက်လုပ်လှူဒါန်းခြင်း။
၁(၅)။	မယ်ကရီမူလတန်းလွန်ကျောင်း ကျောင်းခြံစည်းရိုးနှင့် သံပန်းတံခါးလှူဒါန်းခြင်း၊ သမံသလင်းခင်းခြင်း။
၁(၆)။	ဒေသခံရွာများရှိ စာသင်ကျောင်းများသို့ အသုံးအဆောင်ပစ္စည်းများ လှူဒါန်းခြင်း။
၁(၇)။	ကျော့ပနောကျေးရွာ မူကြိုကျောင်းဆောက်လုပ်ရန် လှူဒါန်းခြင်း။
၁(၈)။	ဒေသခံရွာများရှိ ကျောင်းများသို့ အလှူငွေများ ပေးအပ်လှူဒါန်းခြင်း။
၁(၉)။	ဒေသခံရွာများရှိ ကျောင်းများသို့ ဗလာစာအုပ်နှင့် အလှူငွေများ ပေးအပ်လှူဒါန်းခြင်း။
၁(၁၀)။	ကျိုက်မရောမြို့နယ်ရှိ အခြေခံပညာကျောင်းများအတွက် ကျောင်းသုံးဗလာစာအုပ်လှူဒါန်းခြင်း။
၁(၁၁)။	မွန်ပြည်နယ်၊ အစိုးရအဖွဲ့သို့ ကျောင်းသုံးဗလာစာအုပ်များလှူဒါန်းခြင်း။
၁(၁၂)။	ဒေသခံရွာများရှိ ထူးချွန်သော ကျောင်းသားများကို ပညာရည်ချွန်ဆု ချီးမြှင့်ပေးခြင်း။
၂။ ဘာသာရေး ဝန်ဆောင်မှု	
၂(၁)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ ကထိန်သယ်န်း ကပ်လှူပူဇော်ခြင်း။
၂(၂)။	ဘုန်းတော်ကြီးကျောင်းရှိ လိုအပ်သည်များကို ပြုပြင်လှူဒါန်းခြင်း။
၂(၃)။	ဒေသခံရွာများရှိ ဘုန်းကြီး (၇) ပါးနှင့် လူ (၇) ဦးကို အိမ်ယာနှင့် ဗုဒ္ဓဂါယာသို့ ဘုရားဖူးပို့ဆောင်ခြင်း။
၂(၄)။	ကျော့ပနောရွာ သုသာန်ဇရပ် ဆောက်လုပ်လှူဒါန်းခြင်း။
၂(၅)။	ဘုန်းတော်ကြီးကျောင်း ကျောင်းဆောက်လုပ်ခြင်းအတွက် လှူဒါန်းခြင်း။
၂(၆)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ ဝါဆိုသယ်န်း ကပ်လှူပူဇော်ခြင်း။
၂(၇)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ ကထိန်သယ်န်း ကပ်လှူပူဇော်ခြင်း။
၂(၈)။	ဆေးဝါးလှူဒါန်းခြင်း။
၂(၉)။	ဘုန်းကြီးကျောင်း ကျောင်းဆောင်သစ် ဆောက်လုပ်ရန် လှူဒါန်းခြင်း။
၂(၁၀)။	ဈာပနအတွက် အလှူငွေလှူဒါန်းခြင်း။
၂(၁၁)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ မဟာသင်္ကြန်ကာလအတွင်း ဆေးဝါးများနှင့် အလှူငွေများကပ်လှူဒါန်းခြင်း။
၂(၁၂)။	ကျိုက်မရောမြို့နယ်ရှိ သာသနာ့ဥပဒေအသင်းမှကြီးမှူးပြုလုပ်သော စုပေါင်းဒုလ္လဘ ရဟန်းခံပွဲအတွက် လှူဒါန်းခြင်း။
၂(၁၃)။	သမိုင်းဝင်ကျိုက်သလ္လစေတီတော်မြတ်ကြီးဘတ်စုပြုပြင်ရန်အတွက် လှူဒါန်းခြင်း။
၂(၁၄)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ ဝါဆိုသယ်န်း ကပ်လှူပူဇော်ခြင်း။
၂(၁၅)။	ကျော့ခွန်းကျောင်းဟောင်း ကျောင်းပြုပြင်ဆောက်လုပ်ရန်လှူဒါန်းခြင်း။
၂(၁၆)။	ဒေသခံရွာများရှိ ဘုန်းကြီးကျောင်းများ၌ ဝါဆိုသယ်န်း ကပ်လှူပူဇော်ခြင်း။
၃။ လူမှုရေး ဝန်ဆောင်မှု	
၃(၁)။	အုပ်ချုပ်ရေးရုံး ပြုပြင်လှူဒါန်းခြင်း။
၃(၂)။	လမ်းပြုပြင်ရန် လှူဒါန်းခြင်း။
၃(၃)။	နှစ်စဉ် မဟာသင်္ကြန်ကာလ၌ သက်ကြီးပူဇော်ပွဲကျင်းပခြင်း။
၃(၄)။	ကျိုက်မရောမြို့နယ် အမေ့ကုသိုလ်ဖြစ်ဆေးကုခန်းတွင် ဆေးပဒေသာပင်လှူဒါန်းခြင်း။
၃(၅)။	မွန်အမျိုးသားနေ့ အခမ်းအနားတွင် လှူဒါန်းခြင်း။
၃(၆)။	ရခိုင်ပြည်နယ်စစ်ဘေးအတွက် အလှူငွေလှူဒါန်းခြင်း။
၃(၇)။	(၇၁) ကြိမ်မြောက်၊ မွန်အမျိုးသားနေ့အတွက် လှူဒါန်းခြင်း။
၃(၈)။	နှစ်စဉ် မဟာသင်္ကြန်ကာလ၌ သက်ကြီးပူဇော်ပွဲကျင်းပခြင်း။
၃(၉)။	ကျိုက်မရောမြို့နယ်၊ အမေ့ကုသိုလ်ဖြစ်ဆေးခန်းအတွက်လှူဒါန်းခြင်း။
၄။ သဘာဝဘေး ဝန်ဆောင်မှု	
၄(၁)။	သဘာဝဘေး အန္တရာယ် ကာကွယ်ရေး ဟောပြောပွဲများ ပြုလုပ်ပေးခြင်း။
၄(၂)။	သဘာဝဘေး အန္တရာယ်ကျရောက်သောရွာများသို့ လိုအပ်သော ဆန်အိတ်နှင့် ရေသန့်ပူးများ လှူဒါန်းခြင်း။
၄(၃)။	သဘာဝဘေး အန္တရာယ်ကျရောက်သောရွာများသို့ သောက်သုံးရေ လှူဒါန်းခြင်း။
၄(၄)။	သဘာဝဘေး အန္တရာယ်ကျရောက်သောရွာများသို့ ရေသန့်ပူး၊ ခေါက်ဆွဲခြောက်၊ ဆန် နှင့် ဆီ များလှူဒါန်းခြင်း။
၄(၅)။	ကျိုက်မရောမြို့နယ်ရေဘေးအတွက် လှူဒါန်းခြင်း။
၄(၆)။	သဘာဝဘေး အန္တရာယ်ကျရောက်သောရွာများသို့ သောက်သုံးရေလှူဒါန်းခြင်း။

Annex 16 CSR Photo Records

(a) Education



(b) Religious Affairs



ဘုန်းကြီးကျောင်းများအတွက် ငွေကျပ် - ၁,၆၇၅,၀၀၀/-



ကျေးရွာဘုန်းကြီးကျောင်း ကျောင်းဆောင်သစ်ဆောက်လုပ်ရန် အလှူငွေ
(၁,၀၀၀,၀၀၀/-)



ဘုန်းတော်ကြီးကျောင်းများအတွက် ကာထိန်းသယံဇာတလှူဒါန်းခြင်း။
(၂,၄၅၀,၀၀၀/-)



June Cement Industry Ltd. မှ ဆောက်လုပ်လှူဒါန်းသော
ကျေးပနောကျေးရွာရှိ သုသာန်ဇရပ်ရေစက်ချအလှူတွင် သံဃာတော် (၁၁)ပါးအား လှူဒါန်းခြင်း
(၅၅၀,၀၀၀/-)



မဟာသင်္ကြန်ကာလ၊ ဘုန်းတော်ကြီးကျောင်းများအတွက် ဆေးဝါးများ
နှင့်
အလှူငွေကျပ် - ၂,၀၀၀,၀၀၀/- လှူဒါန်းခြင်း။



ကျေးပနောကျေးရွာ ရာဘာခြံဘုန်းကြီးကျောင်း ဆေးလှူဒါန်းခြင်း
(၆၀၂,၀၀၀/-)

(c) Social Affairs



ကျေးပန်းတောအုပ်စု အုပ်ချုပ်ရေးရုံး ပြုပြင်လှူဒါန်းငွေ
(၆၅၀,၀၀၈/-)



ကျိုက်မရောမြို့နယ်၊ ကျေးပန်းတောအုပ်စု သင်္ကြန်သက်ကြီးပုဇွန်ပွဲ လှူဒါန်းခြင်း။
(၁,၈၂၀,၀၀၇/-)



ကျိုက်မရောမြို့နယ်၊ မယ်ကရီကျေးရွာ သင်္ကြန်သက်ကြီးပုဇွန်ပွဲ လှူဒါန်းခြင်း။
(၁,၂၂၀,၀၀၇/-)



ကျေးပန်းတော၊ ကော့ဒွန်း၊ ဝဲငဲ့ကျေးရွာများရှိ သက်ကြီးပုဂ္ဂိုလ်
(၉၀)ဦးအတွက် အလှူငွေ (၁,၈၀၀,၀၀၈/-)



ကျိုက်မရောမြို့နယ် အခမဲ့ကုသိုလ်ဖြစ်ဆေးကုခန်းတွင်
ဆေးပဒေသာပင် (၂၀၀,၀၀၀/-) နှင့် မွန်အမျိုးသားနေ့
အခမ်းအနားတွင် လှူဒါန်းခြင်း။ (၂၀၀,၀၀၀/-)



ကျေးပန်းတောအုပ်စုရှိ သုသာန်ဇရပ် ဆောက်လုပ်လှူဒါန်းခြင်း
(၁၅,၈၀၀,၀၀၀/-)

(d) Disasters



သဘာဝဘေးအန္တရာယ် ကာကွယ်ရေးဟောပြောပွဲများ ပြုလုပ်ပေးခြင်း



ကျိုက်မရောမြို့နယ် မယ်ကရီကျေးရွာ ရေဘေးအတွက် လှူဒါန်းခြင်း
ရေသန့် (၂၀၉)ဗူး၊ ဆန် (၁၀) အိတ် (၄၄၉,၄၄၆/-)



ကျေးဝမ်းကျေးရွာအတွက် သောက်သုံးရေလှူဒါန်းခြင်း
(၅၀,၀၀၆/-)



ကျိုက်မရောမြို့နယ်၊ မယ်ကရီကျေးရွာ ရေဘေးအတွက် လှူဒါန်းခြင်း
ရေသန့် (၁၈၂၅)ဘူး ၊ ခေါက်ဆွဲခြောက် (၁၆၂၀) ထုပ်၊
ဆန် (၃) အိတ်၊ ဆီ (၃) ဘူး
(၇၄၁,၂၀၆/-)

REFERENCES

1. Australian and New Zealand Environment and Conservation Council, and Agriculture and Resource Management Council of Australia and New Zealand. (October 2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Paper No.4 of National Water Quality Management Strategy, Volume 1, The Guidelines, (Chapters 1–7). ARTARMON NSW 2064: Australian Water Association.
2. Chris Vick and et al. (November 2017). *Canal Operation and Maintenance: Embankments*. Reclamation: Managing Water in the West. Colorado: U.S. Department of the Interior Bureau of Reclamation.
3. Data Tada, Phandeevar. (2019). *Myanmar Flood 2019*.
<https://www.myanmaratatada.com/myanmar-flood-2019.html>
4. Food and Agriculture Organization of the United Nations (FAO). (1992). Annex 2: *How to construct a canal*. Irrigation Water Management Training Manual 7: CANALS. Rome, Italy: FAO.
5. Guy Howard and Jamie Bartram. (2003). *Domestic Water Quantity, Service Level and Health*. WHO/SDE/WSH/03.02. Geneva, Switzerland: WHO Document Production Services.
6. International Federation of Red Cross and Red Crescent Societies. (24 September 2019). *Emergency Plan of Action Operation Update – Myanmar: Monsoon Floods*.
www.ifrc.org
7. Kyaikmaraw Township Disaster Management Committee (TDMC). (March 2015). *Kyaikmaraw Township Disaster Management Plan*. Myanmar: Kyaikmaraw TDMC.
8. Kyaikmaraw Township General Administration Department (GAD). (October 2017). *Kyaikmaraw Township Data*. Kyaikmaraw Township: GAD.
9. Myanmar Government and et al. (July 2009). *Hazard Profile of Myanmar*. Myanmar: Department for International Development (DFID), United Kingdom.
10. Nam Ton Watershed, Knowledge Platform. *Sediment Quality Monitoring*.
http://www.riversweb.org/namton/032017/index.php?option=com_content&view=article&id=49:sediment-quality-monitoring&catid=81&Itemid=312
11. Natural Disaster Management Committee (NDMC) & Ministry of Social Welfare, Relief and Resettlement, Myanmar. (16 August 2019). *Situation Report*. No (1).
12. Project Management Unit, Ayeyarwady Integrated Management project. (September 2016). *Initial Environmental Examination Report of Micro Projects for River Enhancement Works at Pakkouku and Nyaung U Waterway*. Yangon, Myanmar: Directorate of Water Resource and River Improvement Systems
13. Saurabh Tewari and Abhinav Sirvaiya. (October 2015). *Oil Spill Remediation and Its Regulation*. Article in International Journal of Engineering Research and General Science. Volume: 1 Issue: 6. <http://www.ijrise.org|editor@ijrise.org/>

14. UN-HABITAT, Myanmar. *Manual on Flood: Causes, Effects & Preparedness*. Yangon, Myanmar: UN-HABITAT, Myanmar.
15. World Health Organization. (2011). *Guidelines for Drinking-water Quality, FOURTH EDITION*. Geneva, Switzerland.

