ENVIRONMENTAL MANAGEMENT PLAN

FOR

YANGON BOTTLING PLANT (GRGICL)



PREPARED BY:

ENVIRONMENTAL CONSERVATION CONSULTING ENGINEERS ASSOCIATION

MYANMAR ENGINEERING SOCIETY (MES)

PREPARED FOR:

GRAND ROYAL GROUP INTERNATIONAL COMPANY LIMITED

JULY 2022 (Revision-III)

LETTER OF ENDORSEMENT BY THE PROJECT PROPONENT

This Environmental Management Plan (EMP) for Grand Royal Group International Company Limited was prepared by Environmental Conservation Consulting Engineers Association of MES on behalf of Grand Royal Group International Company Limited. I hereby issue my letter of endorsement to confirm:

- (a) the accuracy and completeness of the EMP;
- (b) that the EMP has been prepared in strict compliance with applicable laws including the EIA Procedure; and
- (c) that the Project will at all times comply fully with the commitments, mitigation measures, and plans in the EMP Report.
- (d) GRGICL will be comply factory decommissionsing management plan specifically without effecting the environment and social

Signed

Name	:
Position	:
Organization	:

LETTER OF ENDORSEMENT BY THE THIRD PARTY

This Environmental Management Plan has been done with resonable skills, care and diligence in accordance with the stipulations of Environmental Impact Assessment Procedure (Paragraph 76-82). I hearby signed this report on behalf of the Environmental Conservation and Consulting Engineers Association of Myanmar Engineering Society (MES) to certify that all the information in it are true and convincing to the best of our knowledge.

Signed

A

Name	. U YAN NAING AUNG
Position	PUBLIC RELATION OFFICER
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LIST OF ABBREVIATIONS

BOD	Biochemical Oxygen Demand
CFD	Cooking Fermentation and Distillation
CIP	Cleaning in Place
COD	Chemical Oxygen Demand
DMP	Decommissioning Management Plan
EMP	Environmental Management Plan
FG	Finished Goods
GRGICL	Grand Royal Group International Company Limited
HOD	Head of Department
MEMs	Mitigation and Enhancement Measures
NaOH	Sodium Hydroxide
NC	Non-Compliance
NEQG	National Environmental Quality (Emissions) Guidelines
NSRs	Noise Sensitive Receivers
OSH	Occupational Safety and Health
CSH	Community Ssafety and Health
PAC	Poly Aluminium Chloride
QC	Quality Control
RM	Raw Materials
SLM	Sound Level Meter
TSS	Total Suspended Solids
UV	Ultraviolet
WH	Warehouse
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

အနှစ်ချုပ် အစီရင်ခံစာ

နိဒါန်း

ရန်ကုန် ပုလင်းသွပ် စက်ရုံသည် ရန်ကုန်တိုင်းဒေသကြီး၊ မှော်ဘီမြို့နယ်၊ လိပ်ပုတ်ကျေးရွာအနီးရှိ မြန်မာဒစ္စလာရီ အရက်ချက်စက်ရုံဝင်းအတွင်းတွင် တည်ရှိပါသည်။ ၂၀၁၂ ခုနှစ် အစောပိုင်း၌စတင် တည်ဆောက်ခဲ့ပြီး ၂၀၁၄ခုနှစ်တွင် တည်ဆောက်ရေး လုပ်ငန်းများပြီးစီး၍ အဆိုပါစက်ရုံအား စတင်လည်ပတ်ခဲ့ပါသည်။ ရန်ကုန်ပုလင်းသွပ် စက်ရုံသည် လက်ရှိတွင် တစ်နေ့လျှင် ဝီစကီလီတာပေါင်း အနည်းဆုံး ၃၃၆,၀၀၀ နှင့် အများဆုံး ၅၈၈,၀၀၀ ခန့်ထုတ်လုပ်လျက်ရှိပါသည်။

တည်နေရာ

ရန်ကုန် ပုလင်းသွပ် စက်ရုံသည် အမှတ် ၅၆၀(ဂ) ၊ အထက်သဲကုန်ကျေးရွာအုပ်စု ၊ အမှတ် (၄) လမ်းမကြီး၊ မှော်ဘီမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် တည်ရှိသည့် မြန်မာဒစ္စလာရီ အရက်ချက်စက်ရုံ ဝင်းအတွင်းတွင် တည်ရှိပြီး စက်ရုံ၏ အကျယ်အဝန်းမှာ ၃၀.၄၅ဧက ဖြစ်ပါသည်။

ဥပဒေရေးရာသုံးသပ်ချက်

ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ငန်းများ ဆောင်ရွက်ရာတွင် အောက်ဖော်ပြပါ ပြဌာန်းချက်များ၊ လမ်းညွှန်ချက်များနှင့် အပြည်ပြည်ဆိုင်ရာ လမ်းညွှန်ချက်များအား ကိုးကားလုပ်ဆောင်ခဲ့ပြီး Grand Royal Group International Co., Ltd မှ ထိုဥပဒေပြဌာန်းချက်များကို လိုက်နာဆောင်ရွက် ရမည်ဖြစ်ပါသည်။

- (၁) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)၊ ပုဒ်မ ၇ (ဏ)၊ ၁၄၊၁၅၊၂၄၊၂၉)
- (၂) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေများ (၂၀၀၄) (နည်း ၆၉)
- (၃) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ် ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊၂၀၁၅ (အပိုဒ် ၁၀၂ မှ ၁၁၀၊ ၁၁၃၊ ၁၁၅၊ ၁၁၇)
- (၄) အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
- (၅) တိုင်းရင်းသားလူမျိုးများ အခွင့်ရေးကာကွယ် စောင့်ရှောက်ရေးဉပဒေ၊(၂၀၁၅) (ပုဒ်မ ၅)
- (၆) မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု ဥပဒေ၊၂၀၁၆ (ပုဒ်မ ၅၀(ဃ)၊ ၅၁၊ ၆၅(စ) မှ (ထ)၊ ၇၃)
- (၇) မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှုနည်းဥပဒေများ၊၂၀၁၇(နည်း၂၀၂၊၂၀၃၊၂၀၆၊၂၁၂)

- (၂၈) ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်း သောက်သုံးမှုထိန်းချုပ် ရေးဉပဒေ၊ (ပုဒ်မ ၉)
- (၂၇)ကူးစက်ရောဂါများကာကွယ်နှိမ်နှင်းရေးဥပဒေ၊ ၁၉၉၅ (ပုဒ်မ ၃(က)(င)၊ ၄ ၊ ၁၁)
- (၂၆) မြန်မာနိုင်ငံ ပြည်သူ့ကျန်းမာရေးဥပဒေ၊ ၁၉၇၂(ပုဒ်မ ၃၊ ၅)
- (၂၅) လူမှုဖူလုံရေးဥပဒေ၊၂၀၁၂
- (၂၁) ခွင့်နှင့်အလုပ်ပိတ်ရက်များဥပဒေ၊ ၁၉၅၁
- (၂၄) Workmen Compensation Act, 1983
- (၂၃) အခကြေးငွေပေးချေရေးဥပဒေ၊၂၀၁၆
- (၂၂) အနည်းဆုံးအခကြေးငွေဥပဒေ၊၂၀၁၃
- (၂၁) အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံဖြိုး တိုးတက်ရေးဥပဒေ၊၂၀၁၃
- (၂၀) အလုပ်သမား အငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ၊၂၀၁၂
- (၁၉) အလုပ်သမားအဖွဲ့အစည်းဥပဒေ၊၂၀၁၁
- (၁၈) ပို့ကုန်သွင်းကုန်ဥပဒေ၊၂၀၁၂ (ပုဒ်မ ၇) (ရှိလျှင်)
- (၁၇) ရှေးဟောင်းအဆောက်အအုံကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊၂၀၁၅ (ပုဒ်မ ၁၂၊ ၁၅၊၂၀(ခ))
- (၁၆) ရှေးဟောင်းဝတ္တုပစ္စည်းကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊၂၀၁၅ (ပုဒ်မ ၁၂)
- (၁၅) မြန်မာအင်ဂျင်နီယာကောင်စီဥပဒေ၊ ၂၀၁၃ (ပုဒ်မ ၃၇၊၃၄)
- (၁၄) ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊၂၀၁၅ (ပုဒ်မ ၃၇၊၃၄)
- (၁၃) စံချိန်စံညွှန်းသန်မှတ်ခြင်းဆိုင်ရာဥပဒေ ၊၂၀၁၄ (ပုဒ်မ ၁၇၊ ၁၉၊၂၆)
- (၁၂) မော်တော်ယာဉ်ဥပဒေ၊၂၀၁၅
- ပုဒ်မ ၁၁၊ (ကန် ဖြင့်လှောင်လျှင်) ပုဒ်မ ၁ဝ(က)(ဂ)(ဃ))
- (၁၁) ရေနံနှင့်ရေနံထွက်ပစ္စည်းဆိုင်ရာဥပဒေ၊၂၀၁၇ (ပုဒ်မ ၉ (က) (င)၊ ၁၀(ခ)၊ (လောင်စာဆီ/ သယ်)
- (၁၀) မြန်မာ့မီးသတ်တပ်ဖွဲ့ဥပဒေ၊၂၀၁၅ (ပုဒ်မ၂၅)
- ၁၃၊ ၂၂၊ ၂၃)
- (၉) ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ အန္တရာယ်မှ တားဆီးကာကွယ်ခြင်းဥပဒေ၊၂၀၁၃ (ပုဒ်မ ၁၅၊ ၁၆၊
- (၈) ပုပ္ပလိကစက်မှုလုပ်ငန်းဥပဒေ၊ ၁၉၉၀(ပုဒ်မ ၄၊ ၁၃(ခ)(စ)(ဆ)၊ ၁၅(က)(ခ))

(၂၉) ရန်ကုန်တိုင်းဒေသကြီးစည်ပင်သာယာရေးအဖွဲ့ဥပဒေ၊၂၀၁၈

၂၄(ခ))

(၃၁) ရေချိုငါးလုပ်ငန်းဥပဒေ (၁၉၉၁)

(၃၄) လျှပ်စစ်ဥပဒေ (၂၀၁၄)

(၃၂) စားသုံးသူအကာအကွယ်ပေးရေးဥပဒေ (၂၀၁၄)

ထို့အပြင် Grand Royal Group International Co., Ltd. သည် ISO 14001-2015, ISO 9001-2015, ISO 22000-2018, ISO 45001-2018, Recommendation for Food Manufacturing Permission,

(၃၃) လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်းရေးနှင့်ကန်းမာရေးဆိုင်ရာဥပဒေ (၂၀၁၉)

ရက/ကြီး/၄၂၄၂, Excise Form D1A(Temporar), D1 License, D2 License, ဘေးအန္တရာယ်လုပ်ငန်းလိုင်စင် များကို လည်းရရှိထားပြီးဖြစ်ပြီး APPENDIX-E တွင်ဖော်ပြထားပါသည်။

(၃၀) ရေအရင်းအမြစ်နှင့် မြစ်ချောင်းများထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၀၆ (ပုဒ်မ ၈(က)၊ ၁၁၊ ၁၉၊ ၂၁(ခ)၊ ၂၂၊

ရန်ကုန် ပုလင်းသွပ်စက်ရုံ၏ ဝီစကီထုတ်လုပ်မှုနည်းစဉ်

ရန်ကုန် ပုလင်းသွပ် စက်ရုံသည် လက်ရှိတွင် တစ်နေ့လျှင် ပျမ်းမျှ ဝီစကီသေတ္တာပေါင်း ၃ဝဝဝဝခန့် ထုတ်လုပ်လျှက်ရှိပါသည်။ ဝီစကီထုတ်လုပ်ရာတွင် လိုအပ်သောပုလင်းများကို တရုတ်၊ မလေးရှားနှင့် ထိုင်းနိုင်ငံ နှင့် အိန္ဒိယနိုင်ငံ တို့မှဝယ်ယူသုံးစွဲလျက်ရှိပါသည်။ ရန်ကုန်ပုလင်းသွပ် စက်ရုံ၏ ဝီစကီ ထုတ်လုပ်မှုနည်းစဉ်မှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

(၁) အရက်ပြင်းများကို သက်တမ်းရင့်စေရန်သိုလှောင်ခြင်း

(၂) အနံ့အရသာရောစပ်ခြင်း

(၃) ပုလင်းသွပ်ခြင်း

ရန်ကုန် ပုလင်းသွပ် စက်ရုံသည် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရန်အတွက် ရေဆိုးသန့်စင်စနစ်၊ ဝီစကီ ထုတ်လုပ်ရာတွင်အသုးပြုသောရေအား ကျန်းမာရေးနှင့်ညီညွတ်၍ သန့်ရှင်းမှုရှိစေရန် ရေသန့်စင်စနစ် အစရှိသော စနစ်များကိုလည်းတပ်ဆင်ထားသည့်အပြင် ဘွိုင်လာနှင့် အခြားသောလျှပ်စစ်ပစ္စည်းများကိုလည်း စနစ်တကျ အသုံးပြုလျက်ရှိပါသည်။ ရန်ကုန် ပုလင်းသွပ်စက်ရုံ၏ ဝီစကီပုလင်းထုတ်လုပ်ပုံ အဆင့်ဆင့်ကို အောက်ဖော်ပြပါပုံတွင် တွေ့ရှိနိုင်ပါသည်။



ပုံ(က) ရန်ကုန် ပုလင်းသွပ်စက်ရုံ၏ ဝီစကီပုလင်းထုတ်လုပ်ပုံအဆင့်ဆင့်

လက်ရှိပတ်ဝန်းကျင်အခြေအနေ

(၁) လေအရည်အသွေး

လက်ရှိစက်ရုံပတ်ဝန်းကျင်၏ လေထုအရည်အသွေးသိရှိနိုင်စေရန်အတွက် လေထုဖိအား၊ ကာဗွန်ဒိုင်အောက်ဆိုဒ်၊ ဟိုက်ဒရိုဂျင် ဆာလဖိုက်ဒ်၊ မီသိန်း၊ နိုက်ဒရိုဂျင်ဒိုင်အောက်ဆိုဒ်၊ အိုဇုန်း၊ PM₁₀၊ PM_{2.5}၊ စိုထိုင်းဆ၊ ဆာလဖာဒိုင် အောက်ဆိုဒ်၊ ဆိုလာဓါတ်ရောင်ခြည်၊ အပူချိန်၊ လေတိုက်နှုန်း နှင့် လေတိုက်ရာအရပ်တို့ကို တိုင်းခဲ့ပါသည်။

လေထုအရည်အသွေးအား အမှတ် (၁) မှတ်လျှင် (၂၄) နာရီတိုင်းတာခဲ့ပြီး စက်ရုံဧရိယာနှင့် ဧရိယာအနီးပတ်ဝန်းကျင်တွင်ရှိသောကျေးရွာများဖြစ်သည့် လိပ်ပုတ် နှင့် သဲကုန်ကျေးရွာ တို့အပြင် စက်ရုံဧရိယာအတွင်း၌ပါ တိုင်းတာမှုများပြုလုပ်ခဲ့ပါသည်။ တိုင်းတာမှုများရလဒ်များကို Table (27) တွင်အသေးစိတ်ဖော်ပြထားပါသည်။

(၂) ရေအရည်အသွေး

ရန်ကုန်အရက်ချက်စက်ရုံ လုပ်ငန်းတွင် အသုံးပြုရန်အတွက် ရေကို စက်ရုံဧရိယာအတွင်းရှိ မြေအောက်ရေမှ ရယူသုံးစွဲပါသည်။ စက်ရုံပတ်ဝန်းကျင်၏ လက်ရှိရေအရည်အသွေး နှင့်

iv

ရေဆိုးအရည်အသွေးကိုသိရှိနိုင်စေရန် အတွက် စက်ရုံဧရိယာအတွင်းရှိ မြေအောက်ရေ နှင့် ရေဆိုးသန့်စင်စနစ် အဝင်၊ စွန့်ထုတ်ရေ တို့မှ ရေနမူနာ (၃) ခု ကောက်ယူခဲ့ပြီး ရေအရည်အသွေး တိုင်းတာမှုများ ပြုလုပ်ခဲ့ပါသည်။ ရေအရည်အသွေးတိုင်းတာရာတွင် ရေဆိုးသန့်စင်စနစ် အဝင်၊ စွန့်ထုတ်ရေ ၏ ချဉ်ဖန်ကိန်း၊ ဇီဝဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက်၊ ဓာတုဆိုင်ရာအောက်ဆီဂျင်လိုအပ်ချက်၊ ဆိုင်းကြွအနည်၊ စုစုပေါင်းနိုက်ဒရိုဂျင်၊ မီးစုန်းဓါတ်၊ စက်ဆီနှင့် ချောဆီ၊ စုစုပေါင်းပိုးအရေအတွက် တို့အားတိုင်းတာပြီး တိုင်းတာမှုရလဒ်များကို Table (23 နှင့် 24) တို့တွင် ဖော်ပြ ထားပါသည်။

(၃) မြေအရည်အသွေး

Table (19) နှင့် (20) တို့တွင် ဖော်ပြထားသော ရန်ကုန်အရက်ချက်စက်ရုံ အနီးပတ်ဝန်းကျင်ရှိ လိပ်ပုတ် နှင့် သဲကုန်တို့မှ ကောက်ယူထားသည့်မြေကို တိုင်းတာထားသော မြေတိုင်းတာမှုရလဒ်များအရ လက်ရှိမြေအရည်အသွေးမှာ အက်စစ်ဓါတ်များလျက် ရှိကြောင်း တွေ့ရှိရပါသည်။

(၄) ဇီဝဝန်းကျင်

စက်ရုံတည်ရှိရာ မှော်ဘီမြို့နယ် နှင့် စက်ရုံနှင့်နီးကပ်လျက်ရှိသော ရွှေပြည်သာမြို့နယ် အတွင်းတွင် သဘာဝပေါက်ပင်များ၊ တောရိုင်းတိရိစ္ဆာန်များနှင့် သစ်တောပြုန်းတီးမှုများ မရှိသည်ကို တွေ့ရှိ ရပါသည်။

(၅) မြေမျက်နှာသွင်ပြင်

မှော်ဘီမြို့နယ်သည် အရှေ့မြောက်ဘက်တွင်ရှိသည့်ပဲခူးရိုးမမှ နိမ့်လျောလာသော တောင်ကုန်း၊ တောင်ပူဇာငယ်များကြောင့် မြောက်ဘက်နှင့် တောင်ဘက်တို့တွင် မညီညာသောကုန်းမြင့်များကို တွေ့ရှိရပြီး မှော်ဘီမြို့နယ်ကိုဖြတ်သန်းသွားသည့် ရန်ကုန်-ပြည် ကားလမ်းမကြီး အနောက်ဘက်သို့ နိမ့်ဆင်းသွားပါသည်။ မှော်ဘီမြို့နယ်၏ မြောက်ဘက်အဆုံးတွင် လှိုင်မြစ်တည်ရှိပါပြီး မှော်ဘီချောင်း၊ ဒွန်းတပဲ့ချောင်းနှို့ မြောင်းတကာချောင်းတို့သည် လှိုင်မြစ်အတွင်းသို့စီးဝင်ပါသည်။ မှော်ဘီမြို့နယ်သည် ပင်လယ်ရေ မျက်နှာပြင်အထက် ပျမ်းမျှအမြင့် (၂၇) ပေအထက်တွင် တည်ရှိပါသည်။

(၆) ရာသီဥတု

မှော်ဘီမြို့နယ်သည်ပူအိုက်စွတ်စိုသောရာသီဉတုရှိပြီး နှစ်စဉ်ပျမ်းမျှအပူချိန် (၃၂.၃) ဒီဂရီစင်တီ ဂရိတ် ရှိပါသည်။ ဧပြီလသည် မှော်ဘီမြို့နယ်၏ အပူဆုံးလဖြစ်ပြီး အပူချိန် ၃၇ ဒီဂရီစင်တီ ဂရိတ်ရှိ၍ ဇန်နဝါရီလမှာမူ

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မှော်ဘီမြို့နယ်၏ အအေးဆုံးလဖြစ်ပြီး အပူချိန် ၁၇.၉ ဒီဂရီစင်တီ ဂရိတ် ရှိပါသည်။ နှစ်စဉ်ပျမ်းမျှမိုးရေချိန်မှာ ၂၂၃.၄၂ မီလီမီတာဖြစ်ပါသည်။ ဇူလိုင်လသည် မိုးရွာသွန်းမှုအများဆုံးလဖြစ်ပြီး ထိုလအတွင်း ၂၆.၂ ရက်ခန့် မိုးရွာသွန်းပါသည်။ ဖေဖော်ဝါရီလသည် မိုးရွာသွန်းမှုအနည်းဆုံးလဖြစ်ပြီး ပျမ်းမျှမိုးရေချိန်မှာ၂ မီလီမီတာခန့် ရှိပါသည်။ မှော်ဘီမြို့နယ်၏ မိုးလေဝသနှင့် ဇလဗေဒဆိုင်ရာအချက်အလက်များကို အခန်း (3.5) တွင် အသေးစိတ်ဖော်ပြထားပါသည်။

(၇) လူမှုစီးပွားပတ်ဝန်းကျင်

မှော်ဘီမြို့နယ်သည် ရပ်ကွက် (၄) ခု၊ ကျေးရွာ (၃၉) ရွာဖြင့်ဖွဲ့စည်းထားသော မြို့နယ်တစ်ခုဖြစ်ပါသည်။ မှော်ဘီမြို့နယ်အတွင်းတွင် အိမ်ခြေ ၄၀၄၄၀ အိမ်ရှိပြီး လူဦးရေ ၁၉၃၃၁၀ ဦး ရှိပါသည်။ ဗမာလူမျိုးအများစုနေထိုင်ကြပြီး ဗုဒ္ဓဘာသာကိုးကွယ်သူများဖြစ်ကြပါသည်။ ကရင်လူမျိုးများ ဒုတိယ အများဆုံး နေထိုင်ကြပြီး ဗုဒ္ဓဘာသာကိုးကွယ်ကြပါသည်။ ခရစ်ယာန်ဘာသာကိုးကွယ်သူအနည်းငယ် ရှိပြီး အစ္စလာမ်နှင့် ဟိန္ဒူဘာသာကိုးကွယ်သူအနည်းစုရှိပါသည်။

မြို့နယ်အတွင်းရှိဒေသခံ ပြည်သူလူထုအများစုမှာ လယ်ယာ၊ သစ်တောနှင့် ငါးလုပ်ငန်း ကျွမ်းကျင် သူများ ဖြစ်ကြပြီး ဒုတိယအများဆုံးမှာ အခြေခံအလုပ်သမား များဖြစ်ကြပါသည်။ မှော်ဘီမြို့နယ်သည် ရန်ကုန်တိုင်းဒေသကြီးအတွင်းတွင် တည်ရှိပြီး စီးပွားရေးအရ ဖွံဖြိုးတိုးတက်မှုရှိသော မြို့နယ်တစ်ခု ဖြစ်ပါသည်။ မြို့နယ်အတွင်းရှိဒေသခံပြည်သူလူထုသည် စိုက်ပျိုးရေးလုပ်ငန်းကိုအဓိကလုပ်ကိုင် ဆောင်ရွက် ကြပါသည်။ မှော်ဘီမြို့နယ်မှ ရန်ကုန်တိုင်းဒေသကြီးသို့ ကုန်းလမ်း၊ ရေလမ်း၊ ရေကြောင်းလမ်း များဖြင့် သွားလာနိုင်ပြီး လမ်းပန်းဆက်သွယ်ရေး ကောင်းမွန်သောမြို့နယ်ဖြစ်ပါသည်။ မြို့နယ်၏အဓိက ထွက်ကုန် များမှာ ဆန်စပါးဖြစ်ပြီး ရန်ကုန်တိုင်းဒေသကြီးအတွင်းသို့ အများဆုံးတင်ပို့ရောင်းချပါသည်။ မှော်ဘီ မြို့နယ်တွင် အစိုးရဝန်ထမ်း ၂၃၂၉ ဦး၊ စိုက်ပျိုးရေးလုပ်ငန်းတွင်လုပ်ကိုင်သူ ၃၀၄၄၈ ဦး၊ မွေးမြူရေး လုပ်ငန်းတွင် လုပ်ကိုင်သူ ၃၂၀၀၀ ဦး၊ အရောင်းအဝယ်လုပ်ငန်းတွင်လုပ်ကိုင်သူ ၁၄၅၀၀ ဦး၊ စက်မှုလက်မှု လုပ်ငန်းတွင် လုပ်ကိုင်သူ ၉၀၉၁ ဦး၊ ရေလုပ်ငန်းတွင်လုပ်ကိုင်သူ ၁၀၀ ဦး၊ ကျပန်းလုပ်ကိုင်သူ ၈၀၀၀ ဦး နှင့် အခြားလုပ်ငန်းလုပ်ကိုင်သူ ၁၀၀၀၀ ဦးခန့် ရှိပါသည်။

မှော်ဘီမြို့နယ်တွင် နည်းပညာတက္ကသိုလ် (၁) ကျောင်း၊ အထက်တန်းကျောင်း (၁၄) ကျောင်း၊ အလယ်တန်းကျောင်း (၆) ကျောင်းနှင့် မူလတန်းကျောင်း (၁၂၄) ကျောင်း၊ ဘုန်းတော်ကြီးသင်ပညာရေးကျောင်း (၈) ကျောင်း နှင့် မူလတန်းကြိုကျောင်း(၁) ကျောင်းတို့ တည်ရှိပါသည်။ မှော်ဘီမြို့နယ်၏ ကျောင်းနေအရွယ် ကလေးများကျောင်းအပ်နှံမှုရာခိုင်းနှုန်းမှာ (၇၃) ရာခိုင်နှုန်းဖြစ်ပြီး ၂၀၁၇ ခုနှစ်စစ်တမ်းများအရ

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တက္ကသိုလ်ဝင်တန်းအောင်မြင်မှုမှာ (၂၆.၃၃) ရာခိုင်နှုန်းဖြစ်ပါသည်။ မြို့နယ်အတွင်း အသက် (၁၅) နှစ် နှင့်အထက်လူဦးရေ ၁၂၈ဝ၁ ဦး ရှိပြီး စာတတ်မြောက်သူဦးရေ ၁၂၈ဝ၁ ဦး ဖြစ်ပါသဖြင့် စာတတ်မြောက်မှု ရာခိုင်နှုန်းမှာ (၁ဝဝ) ရာခိုင်နှုန်းဖြစ်ပါသည်။

မှော်ဘီရှိမြို့နယ်တွင် အဝီစိတွင်းရေ၊ ပိုက်လိုင်း နှင့် ရေတွင်း(အုတ်စီ) ကန်များမှရေကို အဓိကထား အသုံးပြုကြသည်။ ထို့အပြင် အိမ်ထောင်စုများ၏ (၈၉) ရာခိုင်နှုန်းသည် သောက်ရေအတွက် ရေကောင်းရေသန့် (ရေပိုက်လိုင်း၊ အဝီစိတွင်း၊ ရေတွင်း (အုတ်စီ)၊ ရေသန့်စက်/ရေသန့်ဘူး) ကို အသုံးကြပါသည်။ လျှပ်စစ်မီးကိုအဓိကအသုံးပြုကြပြီး လျှပ်စစ်မီးမရရှိသည့် ကျေးရွာများတွင် ဖယောင်းတိုင်မီး၊ ရေနံဆီမီး နှင့် ဆိုလာမီးတို့ကိုအသုံးပြုကြပါသည်။ ထမင်း၊ဟင်း ချက်ပြုတ်ရန် လောင်စာအဖြစ် လျှပ်စစ်မီးကိုသာ အဓိကထားအသုံးပြုကြပြီး ကျေးလက်ဒေသများတွင် ထင်းကို အသုံးပြုကြပါသည်။ မှော်ဘီမြို့နယ် အတွင်းတွင် ဆေးရုံ (၃) ရုံ နှင့် ကျေးလက်ဆေးပေးခန်း (၅) ခု နှင့် ကျေးလက်ကျန်းမာရေးဌာန/ဌာနခွဲ (၃၀)ခု ရှိပါသည်။

သက်ရောက်မှု ဆန်းစစ်ခြင်းနှင့် ကုစားခြင်း

စဉ်	လုပ်ငန်းစဉ်	သက်ရောက်မှု ဖြစ်ပေါ်စေသည့်	သက်ရောက်မှု
		အကြောင်းအချက်	
С	ဝက်သစ်ချ	ကားပေါ်မှ ပစ္စည်းများ တင်၊ ချခြင်း	ထိခိုက်နိုင်မှု၊ ယာဉ်အန္တရာယ်
	စည်များဖြင့်	အမြင့်မှပြုတ်ကျခြင်း	ထိခိုက်နိုင်မှု
	အရက်ပြင်းသိုလှောင်	လေးလံသောပစ္စည်းများမခြင်းမှထိခိုက်	ထိခိုက်နိုင်မှု
	ခြင်း	ခြင်း	
		ဝက်သစ်ချစည်အပိုင်းအစများ	အစိုင်အခဲနှင့် စွန့်ပစ်ပစ္စည်း
		ဝက်သစ်ချစည်များအားဆေးကြောခြင်း	စွန့်ပစ်ရေ
		Forklift များအား မောင်းနှင်ခြင်း	ယာဉ်အန္တရာယ်
J	အနံ့အရသာ	အမြင့်မှပြုတ်ကျခြင်း	ထိခိုက်နိုင်မှု
	ရောစပ်ခြင်း	Tankများအားဆေးကြောခြင်း	စွန့်ပစ်ရေ
		အရက်ပြင်းသိုလှောင်ခြင်း	မီးဘေးအန္တရာယ်
9	ပုလင်းများ	ကားပေါ်မှ ပစ္စည်းများ တင်၊ ချခြင်း	ထိခိုက်နိုင်မှု၊ ယာဉ်အန္တရာယ်

ဇယား (က) ပတ်ဝန်းကျင်အပေါ် သက်ရောက်စေမည့် အကြောင်းအချက်များနှင့် သက်ရောက်မှုများ

	သိုလှောင်ခြင်း	အလေးအပင်မခြင်း	ထိခိုက်နိုင်မှု
		ရွေ့လျားနေသောစက်ပစ္စည်းများဖြင့်ထိ	ထိခိုက်နိုင်မှု
		ခိုက်နိုင်မှု	
9	ပုလင်းများအား	ပုလင်းကွဲများနှင့် ထိတွေ့နိုင်မှု	ထိခိုက်နိုင်မှု
	ဆေးကြောခြင်း	စက်ပစ္စည်းများမောင်းနှင်ခြင်း	ဆူညံသံ
		ဖန်ကွဲများစွန့်ပစ်ခြင်း	အစိုင်အခဲ စွန့်ပစ်ပစ္စည်း
		အက်စစ်ဖြင့်ထိတွေ့နိုင်မှု	ဓါတုပစ္စည်းများနှင့် ထိတွေ့နိုင်မှု
		ချော်ကျခြင်း၊ပြုတ်ကျခြင်း	ထိခိုက်နိုင်မှု
		ပုလင်းဆေးရေ	စွန့်ပစ်ရေ
ງ	ပုလင်းသွပ်ခြင်း	ပုလင်းကွဲများနှင့် ထိခိုက်နိုင်မှု	ထိခိုက်နိုင်မှု
		စက်ပစ္စည်းများမောင်းနှင်ခြင်း	ဆူညံသံ
6	တံဆိပ်ကပ်ခြင်း	စက်ပစ္စည်းများမောင်းနှင်ခြင်း	ဆူညံသံ
		လေဝင်လေထွက်မကောင်းခြင်း	ထိခိုက်နိုင်မှု
2	ထုပ်ပိုးခြင်း	စက်ပစ္စည်းများမောင်းနှင်ခြင်း	ဆူညံသံ
		လေဝင်လေထွက်မကောင်းခြင်း	ထိခိုက်နိုင်မှု
ຄ	သိုလှောင်ခြင်း	ကားပေါ်မှ ပစ္စည်းများ တင်၊ ချခြင်း	ထိခိုက်နိုင်မှု၊ ယာဉ်အန္တရာယ်
		အလေးအပင်မခြင်း	ထိခိုက်နိုင်မှု
		ရွေ့လျားနေသောစက်ပစ္စည်းများဖြင့်ထိ	ထိခိုက်နိုင်မှု
		ခိုက်နိုင်မှု	
		အလုပ်သမားများသွားလာရန်အတွက်	ထိခိုက်နိုင်မှု၊ ယာဉ်အန္တရာယ်
		သတ်မှတ်ထားသော လမ်းမရှိခြင်း	
၉	ရေသန့်စင်စနစ်	ရေသန့်စင်စနစ် လည်ပတ်ခြင်း	ထိခိုက်နိုင်မှု
			စွန့်ပစ်ရေ
			ဆူညံသံ
			ရေအရည်အသွေး
00	ရေဆိုး သန့်စင်စနစ်	ရေဆိုးသန့်စင်စနစ် လည်ပတ်ခြင်း	အနည်အနှစ်၊ ဓါတုပစ္စည်းများနှင့်
			ထိတွေ့နိုင်မှု၊ ထိခိုက်နိုင်မှု၊ ရေ
			အရည် အသွေး
L	I	I	

သက်ရောက်မ		လက္ခဏာများ								
ຠຒຬຨໞຒໟ	သဘာ၀	ရင်းမြစ်	လက်ခံ	ပြင်းထန်မှု	ကြာချိန်	ပျံ့နှံမှု	ကြိမ်နှုန်း	ဖြစ်နိုင်ချေ		
ထိခိုက်နိုင်မှု	ဆိုးကိုုး	- ကားပေါ်မှ ချခြင်း - ပစ္စည်းများ ကြိတ်ခွဲ ခြင်း - အလေးအပင်မခြင်း - အမြင့်မှပြုတ်ကျ၊ ချော်ကျ နိုင်ခြင်း - ပုလင်းကွဲများနှင့် ထိခိုက်နိုင်မှု -ရွေ့လျားနေသော စက်ပစ္စည်းများဖြင့်ထိ ခိုက်နိုင်မှု	လုပ်သား	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	သက်ဆိုင်ရာ စက်အစိတ်အပိုင်း အနီး	နေ့စဉ် ရံဖန်ရံခါ	ဖြစ်နိုင်ချေရှိ		

ဇယား (ခ) သက်ရောက်မှု လက္ခဏာများ

		- အလုပ်သမားများ သွားလာရန်အတွက် သတ်မှတ်ထားသော လမ်းမရှိခြင်း						
ဓါတုပစ္စည်း အန္တရာယ်	ဆိုးကျိုး	- အက်စစ်နှင့် ကော့စတစ် ကဲ့သို သော ဓါတုပစ္စည်း များနှင့် ထိတွေ့မှု	လုပ်သား	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	သက်ဆိုင်ရာ စက်အစိတ်အပိုင်း အနီး	နေ့စဉ် ရံဖန်ရံခါ	ဖြစ်နိုင်ချေရှိ
ယာဉ် အန္တရာယ်	ဆိုးကိုူး	- ကားပေါ်မှ ပစ္စည်းများ တင်/ ချခြင်း - Forklift များအား မောင်းနှင်ခြင်း	လုပ်သား	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	သက်ဆိုင်ရာ စက်အစိတ်အပိုင်း အနီး	နေ့စဉ် ရံဖန်ရံခါ	ဖြစ်နိုင်ချေရှိ

		- အလုပ်သမားများ သွားလာရန်အတွက် သတ်မှတ်ထားသော လမ်းမရှိခြင်း						
ဆူညံသံ	ဆိုးကျိုး	- စက်ပစ္စည်းများ မောင်းနှင်ခြင်း - ပုလင်းများ ဆေးကြောခြင်း	လုပ်သား	အန္တရာယ်ရှိမှု အလွန် နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	စက်ရုံ ဧရိယာ	နေ့စဉ် တောက်လျှောက်	ဖြစ်နိုင်ချေရှိ
မီးဘေး အန္တရာယ်	ဆိုးကျိုး	- ဘွိုင်လာ အသုံးပြုခြင်း - အရက်ပြင်း သိုလှောင်ခြင်း	လုပ်သားများနှင့် စက်ရုံဝင်း	အန္တရာယ်ရှိ	စက်ရုံ သက်တမ်း တလျှောက်	စက်ရုံ ဧရိယာ	နေ့စဉ် တောက်လျှောက်	ဖြစ်နိုင်ချေရှိ

အစိုင်အခဲ စွန့်ပစ်ပစ္စည်း	ဆိုးကျိုး	- ဝက်သစ်ချစည် အပိုင်းအစများ - ဖန်ကွဲများ - ရေဆိုးသန့်စင်စနစ် မှ အနည်အနှစ်များ	လုပ်သားများနှင့် အနီး ပတ်ဝန်းကျင်	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	အနီးပတ်ဝန်းကျင်	နေ့စဉ် တောက်လျှောက်	ဖြစ်နိုင်ချေရှိ
ရေဆိုး	ဆိုးကိုူး	- ဆေးကြောခြင်းမှ ထွက်ရှိ လာသော ရေများ - ရေဆိုးသန့်စင်စနစ်	လုပ်သားများနှင့် အနီး ပတ်ဝန်းကျင်	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	အနီးပတ်ဝန်းကျင်	နေ့စဉ် တောက်လျှောက်	ဖြစ်နိုင်ချေရှိ
လုပ်ငန်းခွင် အန္တရာယ် ကင်းရှင်းရေး	ဆိုးကိုူး	- လေဝင်လေထွက် မကောင်းခြင်း	လုပ်သားများ	အန္တရာယ်ရှိမှု နည်းပါး	စက်ရုံ သက်တမ်း တလျှောက်	သက်ဆိုင်ရာ စက်အစိတ်အပိုင်း အနီး	နေ့စဉ် တောက်လျှောက်	ဖြစ်နိုင်ချေရှိ

သက်ရောက်မှု	ရင်းမြစ်	ကုစားခြင်း
မီးဘေးအန္တရာယ်	- ဘွိုင်လာ	- မီးသတ်ကိရိယာများ လုံလောက်စွာ
	- စက်ပစ္စည်းများအသုံးပြုခြင်း	စီစဉ်ထားရှိခြင်း
	- အရက်ပြင်းသိုလှောင်ခြင်း	- မီးသတ်အဖွဲ့ ဖွဲ့စည်းခြင်း
ရေဆိုး	- ဆေးကြောရေများ	-
	- ရေဆိုးသန့်စင်စနစ်	ရေဆိုးများကိုစနစ်တကျသန့်စင်စွန့်ပစ်ခြင်း
		- ရေဆိုးသန့်စင်မှုစနစ်အား အမြဲမပြတ်
		စစ်ဆေးခြင်း
ဆူညံသံ	- စက်ပစ္စည်းများမောင်းနှင်ခြင်း	- စက်ပစ္စည်းများအား ပုံမှန် ပြုပြင်
	- ပုလင်းများဆေးကြောခြင်း	ထိန်းသိမ်းမှုများ ပြုလုပ်ခြင်း
		- လုပ်သားများအတွက် နားကြပ်များ
		စီစဉ်ပေးခြင်း
		- လုပ်သားများ နားကြပ်တပ်ဆင်မှုရှိ ၊ မရှိ
		စစ်ဆေးခြင်း
အစိုင်အခဲစွန့်ပစ်ပစ္စည်း	-	- YCDC မှခွင့်ပြုချက်ရရှိထားသော
	ဝက်သစ်ချစည်အပိုင်းအစများ	အမှိုက်ပုံတွင် စနစ်တကျစွန့်ပစ်ခြင်း
	- ဖန်ကွဲများ	- ပြန်လည်အသုံးပြု၍ ရသောစွန့်ပစ်ပစ္စည်း
	- ရေဆိုးသန့်စင်စနစ်မှ	များအား ပြန်လည်ရောင်းချခြင်း
	အစိုင်အခဲများ	
ထိခိုက်နိုင်မှု	- ကားပေါ်မှ ချခြင်း	- လုပ်သားများအတွက် လိုအပ်သည့်
	- အလေးအပင်မခြင်း	လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်ရေး
	- အမြင့်မှပြုတ်ကျ၊ ချော်ကျနိုင်	ပစ္စည်းများ စီစဉ်ပေးခြင်း
	ခြင်း	
	- ပုလင်းကွဲများနှင့် ထိခိုက်နိုင်မှု	

ဇယား (ဂ) ကုစားရန် နည်းလမ်းများ

		- လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်ရေး
		ပစ္စည်းများ အသုံးပြုခြင်းနှင့်ပတ်သတ်၍
		ပညာပေးအစီအစဉ်များပြုလုပ်ပေးခြင်း
		- လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်ရေး
		ပစ္စည်းများ အသုံးပြုမှု ရှိ၊မရှိ စစ်ဆေးခြင်း
ဓါတုပစ္စည်းအန္တရာယ်	- အက်စစ်နှင့် ကော့စတစ်	- ဓါတုပစ္စည်းများနှင့် ဆက်စပ်သောပစ္စည်း
	ကဲ့သို သော ဓါတုပစ္စည်း	များ၏ အန္တရာယ်ရှိပုံများကို လုပ်သားများ
	များနှင့် ထိတွေ့မှု	အား အသိပညာပေးခြင်း
ယာဉ်အန္တရာယ်	- ကားပေါ်မှ ပစ္စည်းများ တင်၊	- မော်တော်ယာဉ်များတွင် ကားနောက်ဆုတ်
	ချခြင်း	သတိပေးသံ စနစ် တပ်ဆင်ခြင်း
	- Forklift များအား မောင်းနှင်	- မော်တော်ယာဉ်များအား အမြဲမပြတ်
	ခြင်း	ထိန်းသိမ်းမှု ပြုလုပ်ခြင်း
	- အလုပ်သမားများ သွားလာရန်	- လုပ်ငန်းခွင်ဧရိယာအတွင်း တစ်နာရီ
	အတွက် သတ်မှတ်ထားသော	၁၅မိုင် နှုန်းဖြင့်မောင်းနှင်ရန်
	လမ်းမရှိခြင်း	- ကြမ်းပြင်ပေါ်တွင် forklift safety လိုင်း
		များ ဆွဲပေးခြင်း
		- အလုပ်သမားများ သွားလာရန်အတွက်
		safety လိုင်းများထားရှိခြင်း
လုပ်သားကျန်းမာရေးနှင့်	- လေဝင်လေထွက်	- လေဝင်လေထွက်ကောင်းမွန်စေရန် စီစဉ်
လုပ်ငန်းခွင်အန္တရာယ်	မကောင်းခြင်း	ပေးခြင်း
ကင်းရှင်းရေး	- လုပ်သားများအတွက်	- ရုံးခန်း အဲယားကွန်း outdoor unitအား
	နှစ်စဉ်ကျန်းမာရေး	အဆောက်အဦးအပြင်ဘက်သို့ရွှေ့ပေးခြင်း
	စောင့်ရှောက်မှုများ	- လုပ်သားများအတွက် နှစ်စဉ်ကျန်းမာရေး
	ပြုလုပ်ပေးခြင်း	စောင့်ရှောက်မှုများပြုလုပ်ပေးခြင်း

စောင့်ကြပ်ကြည့်ရှုခြင်း

ဇယား (ဃ) စောင်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

စဉ်	စောင့်ကြပ်ကြည့်ရှုရန်	စောင့်ကြပ်ကြည့်ရှုရမည့်	ကြိမ်နှုန်း	တာဝန်ရှိပုဂ္ဂိုလ်၊
		နေရာ		အဖွဲ့အစည်း
С	မီးသတ်ကိရိယာများ	Grand Royal Group	လစဉ်	Fire Safety Dept
	လုံလောက်စွာ စီစဉ် ထားရှိခြင်း	International Factory		
J	မီးသတ်ကိရိယာများကို	Grand Royal Group	နှစ်စဉ်	Fire Safety Dept
	ပုံမှန်ကြည့်ရှုစစ်ဆေးခြင်း	International Factory		
9	မီးသတ်အဖွဲ့ ဖွဲ့စည်းခြင်း	မီးသတ်တပ်ဖွဲ့	နှစ်စဉ်	Fire Safety Dept
		- admin records		
9	မီးသတ်သင်တန်းများ ပို့ချခြင်း	သင်တန်းပို့ချခြင်း	နှစ်စဉ်	Fire Safety Dept
		မှတ်တမ်း		
ງ	မီးငြှိမ်းသတ်ရေးလေ့ကျင်းခန်း	မီးသတ်တပ်ဖွဲ့	နှစ်စဉ်	Fire Safety Dept
	မျာအား ပုံမှန်လေ့ကျင့်မှုများ	- admin records		
	ပြုလုပ်ပေးခြင်း			
00	ဇီဝဆိုင်ရာ အောက်ဆီဂျင်	ရေဆိုးသန့်စင်စနစ်မှ	လစဉ်	D&D Dept
	လိုအပ်ချက်	စွန့်ထုတ်ရေ		
၁၁	ဓါတုဆိုင်ရာအောက်ဆီဂျင်	ရေဆိုးသန့်စင်စနစ်မှ	နေ့စဉ်	D&D Dept
	လိုအပ်ချက်	စွန့်ထုတ်ရေ		
၁၂	ချဉ်ဖန်ကိန်း	ရေဆိုးသန့်စင်စနစ်မှ	နေ့စဉ်	D&D Dept
		စွန့်ထုတ်ရေ		
၁၃	စုစုပေါင်းပိုးအရေအတွက်	ရေဆိုးသန့်စင်စနစ်မှ	နေ့စဉ်	D&D Dept
		စွန့်ထုတ်ရေ		
၁၄	ဆိုင်းကြွအနည်	ရေဆိုးသန့်စင်စနစ်မှ	အပတ်စဉ်	D&D Dept
		စွန့်ထုတ်ရေ		

၁၅	စုစုပေါင်းနိုက်ဒရိုဂျင်	ရေဆိုးသန့်စင်စနစ်မှ	အပတ်စဉ်	D&D Dept
		စွန့်ထုတ်ရေ		
၁၆	မီးစုန်းဓါတ်	ရေဆိုးသန့်စင်စနစ်မှ	အပတ်စဉ်	D&D Dept
		စွန့်ထုတ်ရေ		
၁၇	စက်ဆီနှင့် ချောဆီ	ရေဆိုးသန့်စင်စနစ်မှ	၆လ	D&D Dept
		စွန့်ထုတ်ရေ	တစ်ကြိမ်	
ວຄ	ဆူညံသံ	Grand Royal Group	သုံးလ	Plant Manager
		International Factory	တစ်ကြိမ်	
၁၉	ပြုပြင်ထိန်းသိမ်းမှုမှတ်တမ်း	Grand Royal Group	တစ်နှစ်	Plant Manager
		International Factory	လေးကြိမ်	
Jo	လုပ်ငန်းခွင်အားနေ့စဉ်ကြည့်ရှု	Grand Royal Group	နေ့စဉ်	Plant Manager
	စစ်ဆေးခြင်း	International Factory		
၂၁	လုပ်သားများအတွက်	ဆူညံသံမြင့်မားသော	လိုအပ်သလို	Admin Dept
	နားကြပ်များ စီစဉ်ပေးခြင်း	ဧရိယာတွင် အလုပ်လုပ်		
		သော အလုပ်သမားများ		
JJ	နားကြပ်များ ပျက်စီးမှု ရှိ၊မရှိ	အသံဆူညံသောဧရိယာ	နေ့စဉ်	Plant Manager
	ပုံမှန်စောင့်ကြပ်ကြည့်ရှုခြင်း	တွင် အလုပ်လုပ်သော		
		အလုပ်သမားများ		
J5	လုပ်သားများ နားကြပ်တပ်ဆင်မှု	အသံဆူညံသောဧရိယာ	နေ့စဉ်	Plant Manager
	ရှိ ၊ မရှိ စစ်ဆေးခြင်း	တွင် အလုပ်လုပ်သော		
		အလုပ်သမားများ		
J9	အမြင့်တွင်အလုပ်လုပ်ရသောအ	ဂိုဒေါင်တွင်အတွင်ရှိ	လစဉ်	Admin Dept
	လုပ်သမားများအားလိုအပ်သော	အလုပ်သမားများ		
	လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း			
	ရေး ပစ္စည်းများစီစဉ်ပေးခြင်း			

လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်	Grand Royal Group	နေ့စဉ်	HODs
ရေး ပစ္စည်းများ အသုံးပြုမှု ရှိ၊မရှိ	International Factory		
စစ်ဆေးခြင်း	အတွင်းရှိ အလုပ်သမား		
	များ		
လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း	သင်တန်းပို့ချခြင်း	နှစ်စဉ်	Plant Manager
ရေး သင်တန်းများပို့ချပေးခြင်း	မှတ်တမ်း		
လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း	Grand Royal Group	နေ့စဉ်	HODs
ရေး လုပ်ငန်းဆောင်တာများ	International Factory		
လုပ်ဆောင်မှု ရှိ/မရှိ စစ်ဆေးခြင်း	အတွင်းရှိ အလုပ်သမား		
	များ		
လုပ်ငန်းခွင်ဧရိယာအတွင်း	Grand Royal Group	နေ့စဉ်	Security
တစ်နာရီ ၁၅မိုင် နှုန်းဖြင့်	International Factory		Manager
မောင်းနှင်ရန် ပုံမှန်ကြည့်ရှု	အတွင်းရှိ ယာဉ်များ		
စစ်ဆေးခြင်း			
ဒရိုင်ဘာများအား လုပ်ငန်းခွင်	Grand Royal Group	တစ်ကြိမ်	Security
အန္တရာယ် ကင်းရှင်းရေး	International Factory မှ		Manager
ပညာပေး အစီအစဉ် များအား	ဒရိုင်ဘာများ		
ပြုလုပ်ပေးခြင်း			
လုပ်ငန်းခွင်ဧရိယာအတွင်း	Grand Royal Group	နေ့စဉ်	Security
တစ်နာရီ ၁၅ မိုင်နှုန်းဖြင့်	International Factory		Manager
မောင်းနှင်ရန် စည်းကမ်းများ	အတွင်းရှိ ယာဉ်များ		
ချမှတ်ခြင်း			
မော်တော်ယာဉ်များတွင်ကား	Grand Royal Group	တစ်ကြိမ်	Security
နောက်ဆုတ် သတိပေးသံ စနစ်	International Factory		Manager
တပ်ဆင်ခြင်း	အတွင်းရှိ ယာဉ်များ		
	လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ် ရေး ပစ္စည်းများ အသုံးပြုမှု ရှိ၊မရှိ စစ်ဆေးခြင်း လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း ရေး သင်တန်းများပို့ချပေးခြင်း လုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း ရေး လုပ်ငန်းဆောင်တာများ လုပ်ငန်းခွင်ဧရိယာအတွင်း တစ်နာရီ ၁၅မိုင် နှုန်းဖြင့် စောင်းနှင်ရန် ပုံမှန်ကြည့်ရှ စစ်ဆေးခြင်း ဒရိုင်ဘာများအား လုပ်ငန်းခွင် အန္တရာယ် ကင်းရှင်းရေး ပညာပေး အစီအစဉ် များအား ပြုလုပ်ပေးခြင်း သာစွနာရီ ၁၅ မိုင်နှုန်းဖြင့် တစ်နာရီ ၁၅ မိုင်နှုန်းဖြင့် တော်နာရီ ၁၅ မိုင်နှုန်းဖြင့် မောင်းနှင်ရန် စည်းကမ်းများ ချမှတ်ခြင်း	လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ် Grand Royal Group ရေး ပစ္စည်းများ အသုံးပြုမှု ရှိ၊မရှိ International Factory စစ်ဆေးခြင်း အတွင်းရှိ အလုပ်သမား ရပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်း သင်တန်းပို့ချခြင်း ရေး သင်တန်းများပို့ချပေးခြင်း မွတ်တမ်း ရေး သင်တန်းများပို့ချပေးခြင်း Grand Royal Group ရေး သင်တန်းများပို့ချပေးခြင်း Grand Royal Group ရေး လုပ်ငန်းဆောင်တာများ International Factory လုပ်ငန်းခွင်ရေယာအတွင်း Grand Royal Group လုပ်ငန်းခွင်ရေယာအတွင်း Grand Royal Group လုပ်ငန်းခွင်ရေယာအတွင်း Grand Royal Group စစ်နာရီ ၁၅မိုင် နှုန်းဖြင့် International Factory စစ်နာရီ ၁၅မိုင် နှန်းဖြင့် Grand Royal Group အန္တရာယ် ကင်းရှင်းရေး International Factory စစ်နာဆငါခွင်း International Factory အနွန်လာများ ကင်းရှင်းရေး စစ်နာဆငါခွင်း Grand Royal Group အနွန်လာများ ခရိုင်ဘာများ လုပ်ငန်းခွင် ရေယာအတွင်း Grand Royal Group လုပ်ငန်းခွင် ရေယာအတွင်း Grand Royal Group လုပ်ငန်းခွင် ရေယာအတွင်း Grand Royal Group လုပ်နေနနန်းဖြင့် စည်း	လုပ်ငန်းခွင်ခန္တရာယ်ကာကွယ်Grand Royal Groupနေ့စဉ်ရေး ပစ္စည်းများ အသုံးပြုမှု ရှိုမရှိInternational Factoryစစ်ဆေးခြင်းအတွင်းရှိ အလုပ်သမားများများလုပ်ငန်းခွင်အန္တရာယ်ကင်းရှင်းသင်တန်းပို့ချခြင်းရေး သင်တန်းများပို့ချပေးခြင်းမုတ်တမ်းရေး လုပ်ငန်းဆွင်အစ္တရာယ်ကင်းရှင်းGrand Royal Groupရေး လုပ်ငန်းဆွင်အတွေတာများInternational Factoryလုပ်ငန်းခွင်နေရိယာအတွင်းGrand Royal Groupရာလုပ်ငန်းခွင်နေရိယာအတွင်းGrand Royal Groupစစ်ဆေးခြင်းအတွင်းရှိ အလုပ်သမားလုပ်ငန်းခွင်နေရိယာအတွင်းGrand Royal Groupစစ်ဆေးခြင်းအတွင်းရှိ သာည်များစစ်ဆေးခြင်းInternational Factoryစစ်ဆေးခြင်းInternational Factoryစစ်ဆေးခြင်းအတွင်းရှိ ယာည်များစစ်ဆေးခြင်းInternational Factoryစစ်ရာရာ ၁၅မိုင် နှုန်းဖြင့်Grand Royal Groupစစ်ဆေးခြင်းခရိုင်ဘာများစစ်ဆေးခြင်း၁၅ မိုင်နှုန်းဖြင့်ပြုလုပ်ပေးခြင်းInternational Factory မှပြုလုပ်ပေးခြင်းအတွင်းရှိ ယာည်များစစ်နာရီ ၁၅ မိုင်နှုန်းဖြင့်International Factoryမျာတ်မြင်းအတွင်းရှိ ယာည်များချမှာင်မျှင်းနှင်ရန် စည်းကမ်းမျာအတွင်းရှိ ယာည်မျာ:ချမှာင်များများလုပ်ငန်းခွင်ရေရနာ စည်းကမ်းမျာရာမင်းနှင်ရန် စည်းကမ်းမျာအတွင်းရှိ ယာည်မျာ:ချမှာင်များများGrand Royal Groupစစ်နာရီ ၁၅ မိုင်နှန်းဖြင့International Factoryမောက်မှာများများအတွင်းရှိ ယာည်များရမှာင်ချန်းရာ စည်းများများလုပ်ရန်များရာ စာချမား <t< td=""></t<>

۶J	စက်ပစ္စည်းများအား ပုံမှန် ပြုပြင်	Grand Royal Group	လစဉ်	Maintenance
	ထိန်းသိမ်းမှုများ ပြုလုပ်ခြင်း	International Factory		Dept
		အတွင်းရှိ ယာဉ်များ		
65	ကြမ်းပြင်ပေါ်တွင် forklift safety	Grand Royal Group	တစ်ကြိမ်	Plant Manager
	လိုင်း များ ဆွဲပေးခြင်း	International Factory		
		စက်ရုံဝင်း		
29	အလုပ်သမားများ	Grand Royal Group	တစ်ကြိမ်	Plant Manager
	သွားလာရန်အတွက် safety	International Factory		
	လိုင်းများထားရှိခြင်း	စက်ရုံဝင်း		
62	YCDC မှခွင့်ပြုချက်ရရှိထားသော	ပုလင်းသွင်းစက်ရုံအတွင်း	နေ့စဉ်	Production
	ထိန်ပင် အမှိုက်ပုံတွင် စနစ်တကျ			Dept
	စွန့်ပစ်ခြင်း			
၃၆	စက္ကူကဲ့သို့ပြန်လည်အသုံးပြု၍	ပုလင်းသွင်းစက်ရုံအတွင်း	လစဉ်	Production
	ရသော စွန့်ပစ် ပစ္စည်းများအား			Dept
	ရောင်းချခြင်း			
55	ဓါတုပစ္စည်းများနှင့် ဆက်စပ်	မှတ်တမ်းများ	တစ်ကြိမ်	Plant Manager
	သော ပစ္စည်း များ၏ အန္တရာယ်			
	ရှိပုံများကို လုပ်သားများ အား			
	အသိပညာပေးခြင်း			
၃၈	ဓါတုပစ္စည်းကိုင်တွယ်အသုံးပြုမှု	အလုပ်သများများ	နှစ်စဉ်	Admin Dept
	အတွက် လိုအပ်သော လုပ်ငန်းခွင်	မှတ်တမ်းများ		
	အန္တရာယ် ကင်းရှင်းရေး			
	အထောက်အကူပြုပစ္စည်းများ			
	အား ထောက်ပံ့ပေးခြင်း			

୧၉	လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်	မှတ်တမ်းများ	တစ်ကြိမ်	Plant Manager
	ရေး ပစ္စည်းများ အသုံးပြုခြင်း နှင့်			
	ပတ်သတ်၍ ပညာပေး အစီ			
	အစဉ်များ ပြုလုပ်ပေးခြင်း			
90	လုပ်ငန်းခွင်အန္တရာယ်ကာကွယ်	မှတ်တမ်းများ	နေ့စဉ်	HODs
	ရေး ပစ္စည်းများ အသုံးပြုမှု ရှိ၊မရှိ			
	စစ်ဆေးခြင်း			
၄၁	လေဝင်လေထွက်ကောင်းမွန်စေရ	ပုလင်းသွင်းစက်များထား	တစ်ကြိမ်	Plant Manager
	န် စီစဉ် ပေးခြင်း	ရှိရာနေရာ		
۶J	ရုံးခန်း အဲယားကွန်း outdoor	ပုလင်းသွင်းစက်များထား	နှစ်စဉ်	HODs
	unitအား အဆောက်အဦး အပြင်	ရှိရာနေရာ		
	ဘက်သိူ့ရွှေ့ပေးခြင်း			
99	လုပ်သားများအတွက် နှစ်စဉ်	Grand Royal Group	တစ်ကြိမ်	Plant Manager
	ကျန်းမာရေး စောင့်ရှောက်မှုများ	International Factory		
	ပြုလုပ်ပေးခြင်း	အတွင်းရှိ အလုပ်		
		သမားများ		
99	စက်ရုံမှ ယာဉ်များအား ကားကြပ်	အလုပ်သမားများ	နေ့စဉ်	Driver
	နိုင်သောနေရာများအားရှောင်းရှား			
	မောင်းနှင်စေခြင်း			
99	အနီးပတ်ဝန်းကျင်ရှိကျေးရွာများ	အနီးပတ်ဝန်းကျင်	နှစ်စဉ်	HSE Dept
	အား နှစ်စဉ် ကျန်းမာရေး			
	စောင့်ရှောက်မှုပေးခြင်း			

ခန့်မှန်း ကုန်ကျစရိတ်

သက်ရောက်မှု ကုစားရန်နည်းလမ်းများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်ရမည့် အစီအစဉ် များကို EMP အစီရင်ခံစာတွင် အသေးစိတ်တင်ပြထားပါသည်။ ရန်ကုန်ပုလင်းသွပ်စက်ရုံ အနေဖြင့် တစ်လုံးတည်း ကုန်ကျစရိတ် ကျပ် ၉,၅၀၀,၀၀၀ နှင့် နှစ်စဉ်ကုန်ကျစရိတ် ၄၁,၇၀၀,၀၀၀ ကျပ်ကို EMP အကောင်အထည် ဖော်ရာတွင် အသုံးပြုရန် လျာထားပါသည်။

စဉ်	စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်	ကုန်ကျစရိတ်
С	မီးသတ်ပစ္စည်း ကိရိယာများ လုံလောက်အောင် တပ်ဆင်ခြင်း	၃၀၀၀၀၀/yr
J	မီးသတ်ပစ္စည်း ကိရိယာများ အမြဲစစ်ဆေးခြင်း	၅၀၀၀၀၀/yr
9	မီးသတ်တပ်ဖွဲ့ ဖွဲ့စည်းခြင်း	၅၀၀၀၀၀/yr
9	မီးသတ်သင်တန်းပေးခြင်း	00000/yr
ງ	မီးသတ်ပစ္စည်း အသုံးပြုမှုသင်တန်းပေးခြင်း	200000/yr
6	ရေဆိုးသန့်စင်စနစ်အား စနစ်တကျလည်ပတ်ခြင်းနှင့် အမြဲမပြတ်စစ်ဆေးခြင်း	၁၂၀၀၀၀၀၀/yr
2	ရေဆိုးများအား စနစ်တကျစွန့်ပစ်ရန်	၂၀၀၀၀၀၀/yr
ຄ	လုပ်ငန်းခွင်အတွင်း အသံဆူညံမှုကို ပုံမှန် တိုင်းတာ စစ်ဆေးခြင်း	000000
၉	စက်ပစ္စည်းများကိုအမြဲမပြတ် ပြုပြင်ထိန်းသိမ်းမှုများပြုလုပ်ခြင်း	၅၀၀၀၀၀၀/yr
00	နားကြပ်များစီစဉ်ပေးခြင်း	00000/yr
၁၁	အမြင့်တွင်အလုပ်လုပ်သောအလုပ်သမားများအတွက် လုပ်ငန်းခွင်အန္တရာယ် ကာကွယ်ရေး	00000/yr
	ပစ္စည်းများ စီစဉ်ပေးခြင်း	
၁၂	လုပ်သားများအတွက် လုပ်ငန်းခွင် အန္တရာယ် ကင်းရှင်းရေး သင်တန်းပေးခြင်း	၅၀၀၀၀၀/yr
၁၃	မော်တော်ယာဉ်များတွင် ကားနောက်ဆုတ်သတိပေးသံ စနစ် တပ်ဆင်ခြင်း	၆୦୦୦୦୦
၁၄	မော်တော်ယာဉ်များအား အမြဲမပြတ်စစ်ဆေးခြင်း	2000000/yr
၁၅	ကြမ်းပြင်ပေါ်တွင် forklift safety လိုင်း များ ဆွဲပေးခြင်း	၂၀၀၀၀၀၀
၁၆	အလုပ်သမားများ သွားလာရန်အတွက် safety လိုင်းများထားရှိခြင်း	၂၀၀၀၀၀၀

ဇယား (c) EMP အကောင်အထည်ဖော်ရန်နှင့် စောင့်ကြပ်ကြည့်ရှုရန် ခန့်မှန်း ကုန်ကျစရိတ်

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ဧရိယာဝင်း အတွင်းရှိ စက်ရုံစားသောက်ခန်းမ တွင် ပြုလုပ်ကျင်းပခဲ့ပါသည်။ အခန်းအနားကို Grand Royal Group International Co., Ltd. မှ စက်ရုံမှူး ဦးစိုးမိုး မှ အဖွင့်နှုတ်ခွန်းဆက်စကားပြောကြားခြင်းနှင့် လက်ရှိစက်ရုံ၏ လုပ်ငန်းလည်ပတ်ဆောင်ရွက်မှု အခြေအနေများကို ရှင်းလင်းတင်ပြခဲ့ပါသည်။ ထို့နောက် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး အတိုင်ပင်ခံ အသင်းမှ ဦးရန်နိုင်အောင် မှ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ရေး ဆွဲခြင်း လုပ်ငန်းဆိုင်ရာများကို ရှင်းလင်းတင်ပြပြီး၊ ကြွရောက်လာသော ဒေသခံ ပြည်သူများနှင့် အပြန်အလှန် မေးမြန်းဆွေးနွေးခြင်းများပြုလုပ်ခဲ့ပါသည်။ လူထုတွေ့ဆုံပွဲသို့ စက်ရုံပတ်ဝန်းကျင်ရှိ ကျေးရွာ များမှ ဒေသခံများ၊ စက်ရုံမှတာဝန်ရှိသူများ၊ ဝန်ထမ်းများ၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအတိုင်ပင်ခံ အင်ဂျင်နီယာ အသင်း (ရန်ကုန်) မှ တာဝန်ရှိသူများ အပါအဝင် စုစုပေါင်း (၅၀) ဦးတက်ရောက်ခဲ့ပြီး သက်ဆိုင်ရာ

ဒေသခံပြည်သူများနှင့် တိုင်ပင်ဆွေးနွေးခြင်း ကို ၂၀၁၉ခုနစ်၊ ဒီဇင်ဘာလ၊ (၈) ရက်နေ့တွင် စက်ရုံ

လူထုတွေ့ဆုံပွဲ (ဒေသခံပြည်သူများနှင့် တိုင်ပင်ဆွေးနွေးခြင်း)

၁၇	အမှိုက်များအား သတ်မှတ်ထားသောအမှိုက်ပုံတွင်စနစ်တကျစွန့်ပစ်ခြင်း	၃၂၀၀၀၀၀/yr
ວຄ	ဓါတုပစ္စည်းနှင့် ဆက်စပ်သောပစ္စည်းများ၏ အန္တရာယ်ရှိပုံကို အသိပညာပေးခြင်း	200000
၁၉	ဓါတုပစ္စည်းများကိုင်တွယ်ရသောလုပ်သားများအတွက် လိုအပ်သော လုပ်ငန်းခွင်အန္တရာယ်	200000/yr
	ကာကွယ်ရေး ပစ္စည်းများ စီစဉ်ပေးခြင်း	
၂၀	Bottling Line များတွင် ပန်ကာများ၊ air coolerများတပ်ဆင်ပေးခြင်း	2000000
J	ပန်ကာများ၊ air coolerများအား အမြဲမပြတ်စစ်ဆေးခြင်း	၅၀၀၀၀၀/yr
J5	ရုံးခန်း အဲယားကွန်း outdoor unitအား အဆောက်အဦးအပြင်ဘက်သို့ရွှေ့ပေးခြင်း	၅၀၀၀၀၀
J9	လုပ်သားများအတွက် နှစ်စဉ်ကျန်းမာရေးစစ်ဆေးမှုများပြုလုပ်ပေးခြင်း	၈୦୦୦୦୦/yr
ງງ	မော်တော်ယာဉ်များအား အဖုံး/အကာများတပ်ဆင်ခြင်း	0,000,000
၂၆	ယာဉ်မောင်းများအားသင်တန်းများပို့ချပေးခြင်း	၅၀၀,၀၀၀
J2	ဒေသခံများအားနှစ်စဉ်ကျန်းမာရေးစောင့်ရှောက်မှုများပြုလုပ်ပေးခြင်း	၅,၀၀၀,၀၀၀
	တစ်လုံးတည်းကုန်ကျငွေ	၉၅၀၀၀၀၀
	နှစ်စဉ် ကုန်ကျငွေ	၄၁၇၀၀၀၀၀
တာဝန်ရှိသူများနှင့် ဆွေးနွေးမှုများ ပြုလုပ်ခဲ့ပါသည်။ တွေ့ဆုံပွဲတွင် ဒေသခံလူထုမှ ဆွေးနွေးအကြံပြုချက်များ မရှိခဲ့ပဲ အကြံပြုစာ (၈) စောင်သာ ရရှိခဲ့ပါသည်။

ဒေသခံပြည်သူများနှင့် တိုင်ပင်ဆွေးနွေးခြင်း မှ ရရှိသည့် အကြံပြုချက်များအကျဉ်းချုပ်မှာ အောက်ဖော် ပြပါ အတိုင်း ဖြစ်ပါသည်။

- Grand Royal ၏ မီးဘေးအန္တရာယ် ကြိုတင်ကာကွယ်မှု အစီအစဉ်၊ စက်ရုံမှ ထွက်သော ရေဆိုးများ ကြောင့် သီးနှံပင်များ ပျက်စီးသွားသော လယ်သမားများအတွက် လျော်ကြေးကိစ္စ နှင့် လယ်သမားများကို ကူညီဆောင်ရွက် ပေးရန် တောင်းဆိုခြင်း။
- စက်ရုံပတ်ဝန်းကျင် လယ်မြေ (၅၀) ဧကခန့်ကို စက်ရုံမှ ဝယ်ယူပေးပါရန်။
- စက်ရုံအနေနှင့် အနံ့အသက် ထွက်ရှိမှုသက်သာစေရန် ခေတ်မီနည်းစနစ်များနှင့် ကြိုးစားလုပ်ကိုင် နေကြောင်း၊ ကျေးရွာလိုအပ်ချက်ဖြစ်သည့် လျှပ်စစ်မီး၊ သောက်ရေသန့်တို့ကို အထောက်အကူပေး၍ ဝမ်းသာကြောင်း၊ အထက်သဲကုန်ကျေးရွာတွင် ပေ ၇၅၀ ခန့်လမ်းခင်းပေးစေလိုကြောင်း၊ ဘာသာရေး ကျောင်းဆောင်သစ် အတွက် အလှူငွေထည့်ဝင်ပေးပါရန်၊ အောက်သဲကုန်ကျေးရွာကွင်း လိပ္ပုတ် ကျေးရွာ အတွက် သောက်ရေသန့်စက် တစ်လုံး လှူပေးပါရန်။
- စက်ရုံရှိကားလမ်းအား ပိတ်ဆို့မှုမရှိစေရန် ဆောင်ရွက်ပေးရန် တောင်းဆိုခြင်းတို့ဖြစ်ပါသည်။

အသေးစိတ် အကြောင်းအရာများကို အခန်း (၆) နှင့် APPENDIX A (Public Meeting) တွင်ဖော်ပြ ထားပါသည်။

နိဂုံး

နိဂုံးချုပ်အနေဖြင့် စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်သူသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် အစီအရင် ခံစာတွင်ပါရှိသည့်အဆိုပြုချက်များကိုအပြည့်အဝ လိုက်နာဆောင်ရွက် အကောင် အထည်ဖော် ဆောင်ရွက်ရမည် ဖြစ်ပြီး၊ ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင် ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်းစည်းကမ်း နှင့် ချမှတ်ထားသော မူဝါဒ လမ်းညွှန် ချက်များအတိုင်း ပတ်ဝန်းကျင် ဆိုင်ရာ စီမံခန့်ခွဲမှု အလေ့အကျင့်များ၊ လုပ်ငန်းစဉ်များ နှင့် လိုက်နာ ဆောင်ရွက်ကျင့်သုံးရန် တာဝန်များကို လည်း လိုက်နာဆောင်ရွက်ရမည်ဖြစ်ပါသည်။

EXECUTIVE SUMMARY

Introduction

Yangon Bottling Plant (GRGICL) was established in 2012 at the Hmawbi Township. Plant operation was started at 2014. The plant is located on Field No. 560 of Upper Thae Kone Village group, Hmawbi Tsp. The plant boundary is at the west of the No. (4) Main Road. The total area of the plant is (30.45) acres. Bottling Plant is located within the Yangon Distillery Plant Compound. Bottling plant operation was started at 14, Oct 2015. Maximum production capacity of the bottling plant is 588,000 litres/day and minimum production capacity is 336,000 litres/day. The permission of FDA and other approval is described in Appendix E.

Project Location

Yangon Bottling Plant (GRGICL) is located within the Yangon DistilleryPlant compound. The distillery plant is located approximately 25 km from Yangon downtown and 12 km from Hmawbi Township. The factory is located at the North of the Yangon. It is about 20 km far from Yangon International Airport. The factory site is located at the opposite side of APB Brewery Plant.

There are four villages around the factory area in close proximity as shown in figure which are Upper Thae Kone, Lower Thae Kone, Late Pote and Kwin Late Pote. Late Pote Stream started near the Factory area and flows into Hlaing River at the South-West of the factory site (approximately 7 km away from the factory).

Policies and Legal Framework Overview

The Laws, Rules and Procedures should be compliance from Yangon Bottling Plant (GRGICL) is as follows.

Automobile Law (2015)

- 1. City of Yangon Development Law (2018)
- 2. Environmental Conservation Law (2012)
- 3. Environmental Conservation Rules (2014)
- 4. EIA Procedures (2015)
- 5. Employment and Skill Development Law (2013)
- 6. Factory Act (1951)
- 7. Foreingn Investment Law (2012)

- 8. Leave and Holiday Act (1951)
- 9. Myanmar Engineering Council Law (2013)
- 10. Myanmar Fire Bridgate Law (2015)
- 11. Myanmar Investment Law (2016)
- 12. Myanmar Investment Rules (2017)
- 13. Myanmar Insurance Business Law (1993)
- 14. Myanmar Occupational Safety and Health Law (15.3.2019)
- 15. National Standards and Guidelines (2015)
- 16. The Conservation of Water Resources and River Law (2006)
- 17. Prevention of Hazard from Chemical and Related Substances Law (2013)
- 18. The Control of Smoking and Consumption of Tobacco Product Law (2006)
- 19. The Electricity Law (2014)
- 20. The Ethnic Rights Protection Law (2015)
- 21. The Export and Import Law (2012)
- 22. The Freshwater Fisheries Law (1991)
- 23. The Labour Organization Law (2011)
- 24. The Labour Dispute Settlement Law (2012)
- 25. The Law on Standardization (2014)
- 26. The Minimum Wages Law (2013)
- 27. The Myanmar Marine Fisheries Law (1990)
- 28. The Private Industrial Enterprise Law (1990)
- 29. The Prevention and Control of Communicable Diseases Law (2013)
- 30. The Petroleum and Petroleum Product Law (2017)
- 31. The Protection and Preservation of Cultural Heritage Regions Law (1998)
- 32. The Protection and Preservation of Antique Objects Law (2015)
- 33. The Protection and Preservation of Ancient Monuments Law (2015)
- 34. The Payment of Wages Act (2016)
- 35. The Public Health Law (1972)
- 36. The Prevention and Control of Communicable Disease Law (1995)
- 37. The Social Security Law (2012)
- 38. Ward or Village Tract Administration Law
- 39. Workmen Compensation Act (1923)

Moreover, Grand Royal Group International Co., Ltd. It has obtained ISO 14001-2015, ISO 9001-2015, ISO 22000-2018, ISO 45001-2018, Recommendation for Food Manufacturing Permission, Yaka / Gyi / 4242, Excise Form D1A (Temporar), D1 License, D2 License, Disaster Business License and is mentioned in APPENDIX-E.

Process and Layout of Yangon Bottloing Plant (GRGICL)

Production capacity of Yangon Bottling Plant (GRGICL) is 30000 cases/day. The plant can be mainly divided into three sections which are;

- Maturation
- Blending
- Bottling

There are other auxiliary sections such as water and waste water treatment plant. Raw material for the entire plant is barley malt. Estimated raw water usage for the bottling plant is 320,296 m³/yr, treated water usage is 97792 m³/yr, RO water usage is 49994 m³/yr and estimated electricity usage is 160,000 kWh/month. The process flow diagram of the bottling plant is shown in following figure.



Spirits from Distillation Column

Storage in the Warehouse

Figure A. Block Diagram of Yangon Bottling Plant (GRGICL)

Description of the Surrounding Environment

(a) Air Quality

The parameters for air Quality surveys were atmospheric pressure, CO₂, H₂S, CH₄, NO₂, O₃, PM₁₀, PM_{2.5}, Relative Humidity, SO₂, solar radiation, Temperature, Wind direction, and Wind speed.

The air quality survey results obtained every minute at each survey site were combined to make daily average values (24 hours or 8 hours or 1 hour or 10 minutes) for further evaluation and comparison with corresponding standard values. The result from Air Quality Survey is shown in Table 27.

(b) Water Quality

Tubewell from WTP, Inlet and outlet Wastewater from the WWTP were collected from the factory compound and analyzed. The quality of treated Wastewater could be seen in Waste water outlet column. PH, BOD, COD, TSS, Total Nitrogen, Total Phosphorus and Oil and Grease were analyzed for current Wastewater quality. All water samples were analyzed for their physiochemical properties in Golden Dowa Ecosystem Myanmar Laboratory and the result are as shown in Table 23 and Table 24.

(c) Soil Quality

According to test results as shown in Table 19 and 20, pH value of SS1 and SS2 which were collected from the collected at 20 m from the boundary of Grand Royal Plant is 4.63 and 4.95 which falls under classification of strongly acidic conditions.

(d) **Biodiversity**

Biodiversity includes two portions, which are the study of vegetation (flora) and the study of living animals (fauna). There is no natural vegetation, wildlife and deforestation in the Hmawbi Township and around the factory area.

(e) Topography

Hmawbi township is found on the north and south due to the steep hills of the lower Bago Yoma on the northeast and down to the west of the Yangon-Pyay highway. Hlaing river is located at the end of the northern boundary of the township. Hmawbi creek, Doontapae creek and Myaungtagar creek are flow into the Hlaing River. Hmawbi Township is located at an average height of 27 feet above sea level.

(f) Climate and Precipitation

Hmawbi has a wet and dry climate with an average annual temperature of 32.3 °C. April is the hottest month of the year with 37 °C and January is the coldest month of the year with 17.9 °C. The average annual precipitation is about 223.42 mm. Rainfall has its top in July with the highest number of 26.2 days. The lowest rainfall occurs during February, with an average of 2 mm.

(g) Socio Economic Component

(h) Living Condition

The factory area is located on Field No. 560 of Late Pote Village tract and Upper Thae Kone Village tract, Hmawbi Tsp and the Northern District of Yangon Region. The plant boundary is at the west of the No. (4) Main Road. The total number of households in Hmawbi is 40440 only. The following table and figure show the household numbers in the study area. The average household size in the study area is shown in the following figure. All the villages have significantly higher rate of population per household compared to that of Hmawbi Township. For the whole study area, average household size of village in Hmawbi Township is about 4147 which is remarkably higher than the household sizes of Hmawbi city (39456).

Total number of populations in the study area is depicted in Population Matrix. The matrix shows the distribution of both sexes (male and female) counted by their age (0 to 100). The total population of Hmawbi Township is 193310. According to the matrix, the highest number of populations in both sexes is young and reproductive age, 18 and the older population, under age 18, is the lowest.

(ii) Education and Infrastructure

6.9% of the population 25 years of age and older are completely out of school. Only 7.1% of the population aged 25 years and over were out of school. 4.5% of men over 25 years old and 9.1% of women are out of school. 20.7% of the population aged 25 and above had completed primary schooling, with 10.1% in university / college. Current educational attainment levels show the local community's past education condition. Hospitality and tourism business need a fair to high level of educational attainment. Background educational attainment of local community shows that the factory needs to concentrate capacity building of local community so that they could participate in the development process.

Impact Assessment and Mitigation

Rating matrix method is used to assess the significance level of the identified environmental impacts of the Yangon Bottling Plant (GRGICL) on its environment. There are five parameters considered for the activities of the factorys and the consequences resulted from the said activities. System of rating is described in detailed as follows.

Sr.	Activity List	Aspect	Impact
1	Oak cast storage	Loading to/Unloading from	Physical and vehicle
		truck	hazard
		Fall from Height	Physical hazard
		Ergonomic injury from	Physical hazard
		overweight lifting	
		Broken oak cast	Solid waste
		Washing water from oak cast	Wastewater
		Driving forklift without safety	Vehicle hazard
		line	
2	Blending	Ergonomic injury from	Physical hazard
		overweight lifting	
		Washing water from tank	Wastewater
		Storage for RS	Fire hazard
3	Bottles Storage	Loading to/Unloading from	Physical and vehicle
		truck	hazard
		Ergonomic injury from	Physical hazard
		overweight lifting	

Table A. Environmental Aspect and Impact

		Contact with moving	Physical hazard	
		machinery		
4	Bottle washing	Contact with broken glass	Physical hazard	
		Driving machine and washing	Noise	
		Glass waste	Solid waste	
		Contact with acid	Chemical hazard	
		Fall and slip	Physical hazard	
		Bottle Washing water	Waste water	
5	Bottle filling	Contact with broken glass	Physical hazard	
		Driving machines	Noise	
6	Labeling	Driving machine	Noise	
		Inadequate ventilation system	OSH	
7	Packing	Driving machines	Noise	
		Inadequate ventilation system	OSH	
8	Storage in the	Loading to/Unloading from	Physical and vehicle	
	finished goods	truck	hazard	
	warehouse	Ergonomic injury from	Physical hazard	
		overweight lifting		
		Contact with moving	Physical hazard	
		machinery		
		No isolated pathways for	Physical and vehicle	
		workers	hazard	
9	Water Treatment	Water treatment plant	Physical hazard	
	Plant	Operation	Waste water	
			Noise	
			Water quality	
10	Waste Water	WWTP Operation	Chemical hazards,	
	Treatment Plant		Physical hazards,	
			Solid waste, Water	
			quality	

Characteristics of the impacts are evaluated based on eight particular basis five of which are used in the assessment of the significance level of the impacts.

Table B. Characteristics of the Impacts

				CHA	ARACTERISTICS			
IMPACTS	Nature	Impact Source	Impact Receptor	Severity	Duration	Spatial Scope	Frequency	Probability
Physical hazard	Negative	-Unloading from truck - Ergonomic injury from overweight lifting -Fall and slip -Fall from height -Contact with broken glass	Workers	Impact severity is significant for operation workers	Physical hazard will occur in factory life	Physical hazard will occur at the factory area of activity	Activity that cause the impact occurs daily intermittently	Physical hazards are possible

		 Contact with moving machinery No isolated pathways for workers 						
Chemical hazard	Negative	 Contact with chemical reagents Contact with acid in bottle washing 	Workers	Impact severity is significant for operation workers	Chemical hazard will occur in factory life	Chemical hazard will occur at the factory area of activity	Activity that cause the impact occurs daily intermittently	Chemical hazards are possible
Vehicle hazard	Negative	-Loading to/Unloading from truck - Driving forklift without safety line	Workers	Impact severity is significant for operation workers if accident by car	Vehicle hazard will occur in factory life	Vehicle hazard will occur within right of way	Activity that cause the impact occurs daily intermittently	Vehicle hazard is possible

		- No isolated pathways for workers						
Noise	Negative	-Driving machines and bottle washing	Workers	Impact severity is potentially harmful occurs almost continuously and most of the workers are subjected to exposure	Noise hazard will occur in factory life	Noise hazard will occur within the whole factory compound	Activity that cause the impact occurs daily continuously	Noise hazard are possible
Fire hazard	Negative	- Material handling - Storage for RS	Workers and the whole plant	Impact severity is harmful	RS production will be the whole factory life	If a fire broke out, the whole factory is likely to be affected	RS storage from the plant is done daily continuously	A fire hazard is possible
Solid Waste	Negative	 Broken oak cast Glass waste Sludge from WWTP 	Workers and local environme nt	Impact severity is potentially harmful if solid wastes are discharged systematically	Impact from solid waste will occur in factory life	Local area could be affected by solid waste mismanagement	Solid waste impact occurs daily intermittently	Impact from solid wastes are possible

Waste Water	Negative	 Washing water from oak cast Washing water from tank Bottle washing water WWTP 	Workers and local environme nt	Impact severity is slightly harmful if waste water is discharged with NEQG guideline	Impact from waste water will occur in factory life	Local area could be affected by discharged waste water directly	Impact on waste water occurs daily intermittently	Impact from waste water is possible
OSH	Negative	- Inadequate ventilation system	Workers	Significant for operational workers	Bottling plant will be operated through factory life	Impacts will occur within right of way	Activity that cause the impact occurs daily continuously in operation	Bottling plant will definitely have to run as a part of the process

Impacts	Impact Source	Mitigation
	Matarial handling	1. Providing necessary equipment for fire
Fire hazard	- Material handling	fighting
	- Storage for KS	2. Organizing a fire fighting team
		1. Systematic water discharged from bottle
	Pottle weshing water	washing
Waste Water		2. Systematic operation of WWTP
	- W W I F	3. Regular monitoring and control of
		discharge water from WWTP
		1. Carrying out regular maintenance works
		so that unnecessary mechanical noise could
	Driving machines and	be prevented
Noise	bottle weshing	2. Providing ear muffs for workers at high
	bottle washing	noise area
		3. Supervising regular use of ear muffs at
		high noise area
	Broken ook cost	1. Systematic disposal of non-recycle waste
Solid Waste	- Glass waste	at disposal site
Solid Waste	-Sludge from WWTP	2. Recycle waste and animal feed waste
	-Sludge Holli W W H	collector for animal feed
	-Unloading from truck	1 Providing necessary PPE for workers
	-Ergonomic injury from	2 Regular inspection and supervision of the
	overweight lifting	use of PPF
Physical	-Fall and slip	3 Educating workers with workplace safety
hazard	-Fall from height	practices
	-Contact with moving	4 Regular inspection and supervision for
	machinery	following workplace safety practices
	-Contact with broken glass	following workplace surery practices
	- Contact with chemical	
Chemical	reagent	1. Carrying out preventive measures for
hazard	- Contact with acid in bottle	hazard from chemicals and related materials
	washing	

Table C. Mitigation and Enhancement Measures (MEMS)

		1. Setting, educating, monitoring and
Vehicle hazard	 -Loading to/Unloading from truck Driving forklift without safety line No isolated pathway for workers 	 control of a vehicle speed limit of 15 km/hr within plant compound 2. Installing and regular maintenance of back gear warning alarm in every vehicle 3. Regular maintenance of vehicles 4. Drawing forklift safety line on the floor 5. Drawing isolated safety pathway on the floor for workers
OSH	-Inadequate ventilation system	 Providing adequate ventilation and air conditioning system for workers Removing the out-door unit of office room air-conn to the outside of the building. Providing pre-employment health sreening assessment

Impact Monitoring Plan

Sr.	Parameter	Location	Frequency	Responsibility
1	Providing adequate	Plant compound	Monthly	Fire Safety
	fire extinguishers at			Dept
	necessary places			
2	Regular inspection of	Plant compound	Annually	Fire Safety
	fire hydrants			Dept
3	Organizing a	Firefighting team	Annually	Fire Safety
	firefighting team	- admin records		Dept
4	Providing firefighting	Training records	Annually	Fire Safety
	trainings			Dept
5	Conducting regular	Firefighting team	Annually	Fire Safety
	fire drill	- admin records		Dept
6	5- day Biochemical	Final discharge	Monthly	D&D Dept
	Oxygen Demand	from WWTP		

7	Chemical Oxygen	Final discharge	Daily	D&D Dept
	Demand (COD)	from WWTP		
8	рН	Final discharge	Daily	D&D Dept
		from WWTP		
9	Total Coliform	Final discharge	Monthly	D&D Dept
	bacteria	from WWTP		
10	Total Suspended solids	Final discharge	Weekly	D&D Dept
		from WWTP		
11	Total Nitrogen	Final discharge	Weekly	D&D Dept
		from WWTP		
12	Total Phosphorous	Final discharge	Weekly	D&D Dept
		from WWTP		
13	Oil and Grease	Final discharge	6 Monthly	D&D Dept
		from WWTP		
14	Noise level	12 locations	Quarterly	Plant Manager
		within plant		
		compounds		
15	Maintenance record	The whole plant	4 times per	Plant Manager
			year	
16	Checking workplace	The whole plant	Daily	Plant Manager
	daily			
17	Providing earmuffs	Workers at high	Whenever	Admin Dept
		noise area	required	
18	Regular inspection of	Workers at high	Daily	Plant Manager
	general conditions of	noise area		
	ear muffs			
19	Regular inspection and	Workers at high	Daily	Plant Manager
	supervision for	noise area		
	wearing ear muffs at			
	high noise areas			

20	Providing necessary	- Workers	Monthly	Admin Dept
	PPE for workers	working in the		
	working at height area	warehouse		
		Admin Record		
21	Regular inspection and	Workers within	Daily	HODs
	supervision of the use	the plant		
	of PPE	compound		
22	Providing necessary	Training record	Annually	Plant Manager
	OSH training			
23	Daily inspection and	Workers within	Daily	HODs
	supervision for	the plant		
	conforming workplace	compound		
	safety practices			
24	Setting vehicle speed	Vehicles within	Daily	Security
	limit of 15 km/hr	the plant		Manager
	within plant compound	compound		
25	Educating drivers for	Drivers within the	Once	Security
	safe driving practice	Plant compound		Manager
	within drive			
	compound			
26	Monitoring and control	Vehicles within	Daily	Security
	of the vehicle speed	the plant		Manager
	limit of	compound		
	15 km/hr within plant			
	compound			
27	Installing of back gear	Every vehicle at	Once	Security
	warning alarm in every	the plant		Manager
	vehicle			
28	Carrying out regular	Every vehicle at	Monthly	Maintenance
	maintenance of	the plant		Dept
	vehicles			
I	I		1	1

29	Drawing forklift safety	Within the plant	Once	Plant Manager
	line on the floor	compound		
30	Drawing isolated	Within the plant	Once	Plant Manager
	safety pathway on the	compound		
	floor for workers			
31	Systematic disposal of	Bottling Plant	Daily	Production Dept
	non-recycle waste at			
	waste disposal site			
	provided by YCDC			
32	Recycle waste such as	Bottling Plant	Monthly	Production Dept
	plastic, paper, wood			
	and aluminium are			
	collected by waste			
	contractor			
34	Sending appropriate	Admin records	Once	Plant Manager
	employers to			
	prevention of hazards			
	from chemicals and			
	related materials			
	training			
35	Providing necessary	- Workers	Annual	Admin Dept
	PPE for workers	- Records		
	handling chemicals			
36	Providing training for	Admin Record	Once	Plant Manager
	systematic use of PPE			
37	Regular inspection and	Admin Record	Daily	HODs
	supervision of the use			
	of PPE			
38	Providing adequate	Bottling lines	Once	Plant Manager
	fans and air coolers at			
	bottling lines			

39	Regular inspection of fans and air coolers	Bottling lines	annually	HODs
40	Remove air conditioner out door	Office area of bottling section	Once	Plant Manager
	units of the office area			
41	Carrying out pre- employment medical test	Clinic	Once	HSE Dept
42	Carrying out regular medical check-up	Clinic	Annually	HSE Dept
43	Providing systematic	Factory	Weekly	Maintenance
	vehicle management	compound		Dept
	for incoming and			
4.4	outgoing vehicles		0	
44	covered all	factory compound	Once	Dept
	the transportation from	Tactory compound		Dept
	all side			
45	Providing awareness	Training record	Annually	Plant Manager
	training			
46	Avoiding high hazard	Workers within	Daily	Driver
	routes and crowded	the plant		
	periods in local	compound		
	communities			
47	Provide health care	Local community	Yearly	HSE Dept
	services yearly for			
	local communities			

Projected Budgets

Projected budget for implementation of EMP management actions and monitoring requirements could be summarized from detailed particulars described in previous section of the report. Yangon Bottling Plant (GRGICL) will allocate 9,500,000 kyats total of one-time cost and 41,700,000 kyat of annual recurring cost for successful implementation and monitoring of the EMP.

Sr.	Management Actions	Budget
1	Providing adequate fire extinguishers at necessary places	300,000/yr
2	Regular inspection of fire hydrants	500,000/yr
3	Organizing a firefighting team	500,000/yr
4	Providing firefighting trainings	100,000/yr
5	Conducting regular fire drill	300,000/yr
6	Systematic Operation and maintenance of the waste water	12,000,000/yr
	treatment system so treated waste water is in compliance with	
	NEQG guidelines value	
7	Regular monitoring of waste water as shown in Table 30	2,000,000/yr
8	Regular noise level measurement at workplaces	100,000
9	Carrying out annual overall maintenance work	5,000,000/yr
10	Providing earmuffs	100,000/yr
11	Providing clothing and helmets for workers working at high	100,000/yr
	area in the warehouse	
12	Providing necessary OSH training	500,000/yr
13	Installing of back gear warning alarm in every vehicle	600,000
14	Carrying out regular maintenance of vehicles	3,000,000/yr
15	Draw forklift safety lines on the floor	2,000,000
16	Draw isolated safety pathway on the floor for worker	2,000,000
17	Systematic disposal of non-recycle waste at waste disposal	7,200,000/yr
	site provided by YCDC	
18	Sending appropriate employers to prevention of hazards from	300,000
	chemicals and related materials training provided by relevant	
	government departments	

Table D. Project Budgets for Implementation and Monitoring of EMP

19	Providing necessary PPE for workers handling chemicals	300,000/yr
20	Providing adequate fans and air coolers at bottling lines	3,000,000
21	Regular inspection of fans and air coolers	500,000/yr
22	Remove air conditioner out door units of the office area	500,000
23	Carrying out regular medical check-up	800000/yr
24	Providing systematic vehicle management for incoming and outgoing vehicles	3,000,000/yr
25	Covered all conveyors/vehicles for the transportation from all side	1,000,000
26	Providing awareness training	500,000/yr
27	Provide health care services yearly for local communities	5,000,000/yr
	Total One Time Cost	9,500,000
	Total Recurring Cost	41,700,000

Environmental Management Team

GRGICL is organized environmental management team for environmental monitoring program of EMP implementation.

Table E. Environmental Management Team

Sr.	Representative	Number
1	Plant Manager	1
2	Project Manager	1
3	HSE Manager	1
4	Head of Department (Admin Dept)	1
5	Head of Department (HR Dept)	1
6	Head of Department (Finance Dept)	1
7	Head of Department (CFD & WWT Dept)	1
8	Head of Department (Store Dept)	1
9	Head of Department (D&D Dept)	1
10	Head of Department (Maintenance Dept)	1

Public Meeting (Consultation with local people)

Consultation with local people was held on December 8th, 2019. It was held at the factory dining hall in the Grand Royal factory compound. The session was hosted by U Soe Moe, Plant Manager of Yangon Distillery Plant, Grand Royal Group International Co., Ltd. and he gave an opening speech and explained the current operation of the factory. Then, U Yan Naing Aung from Environmental Conservation Consultant Association explained about environmental management plan. After that, question and answer section with visiting local people was conducted. There were 50 people attended the public meeting including local people from villages around the factory, factory officials, employees, and officials from Environmental Conservation Consultant Association (Yangon) and held discussions with the relevant authorities. At the public meeting, there were no comments from the local community and only eight letters of recommendation were received.

The following summarizes is the recommendations obtained from consultation with local people. Details are provided in Chapter 6 and APPENDIX A (Public Meeting).

- Request to pay Compensation for farmers who have lost their crops due to factory effluents and assistance to farmers and to set Fire Prevention Program by Grand Royal.
- Request to buy by Grand Royal factory about 50 acres of farmland around the factory.
- The factory is working with modern methods to reduce odors. We are happy for providing clean drinking water and electricity that the village needed. Request to donate and construct about 750 feet of road need in the Upper Thae Gone village. Request to donate to the new religious building and to donate a drinking water purifier for Kwin Late Pote Village.
- Please arrange not to be a traffic jam in front of the factory.

Conclusion

In conclusion, the project implementer must fully implement the proposals contained in the Environmental Management Plan report, Guidelines of the Republic of the Union of Myanmar, Environmental law, Rules, and regulations of Environmental management practices in accordance with the rules and regulations, Procedures and responsibilities must be followed.

Environmental Management Plan For Yangon Bottling Plant (GRGICL)

1 Introduction

1.1 Project Background

Yangon Bottling Plant (GRGICL) was established in 2012 at the Hmawbi Township. Plant operation was started at 2014. The plant is located on Field No. 560 of Upper Thae Kone Village group, Hmawbi Tsp. The plant boundary is at the west of the No. (4) Main road. The total area of the plant is (30.45) acres. Yangon Bottling Plant (GRGICL) is located within the GRGICL Factory Compound. Bottling plant operation was started at 14, Oct 2015. Maximum production capacity of the bottling plant is 588,000 litres/day and minimum production capacity is 336,000 litres/day. GRGICL was made two of EMP for Yangon Distillery Plant and Yangon Bottling Plant. EMP of Yangon Distillery Plant was submitted to ECD in 27th February 2019. The permission of FDA and other approval is described in Appendix E.

Environmental Management Plan for the factory was prepared by Environmental Conservation and Consulting Associations of Myanmar engineering Society (MES) from September to October, 2018. The EMP was prepared in accordance with the stipulations in paragraph 76 - 82 of the EIA procedures.

1.2 Project Proponent

Grand Royal Group International Company Limited is a Private Company Limited incorporated under the Myanmar Companies Act. In grand Royal Group, 50% of shared is owned by Alliance Strategic Investments Pte Limited, 20% is owned by Aliance Asia Investment Private Limited, 5% is owned by International Beverages Holding (Singapore) Pte Limited and 25% is owned by Myanmar Winery and Distillery Co., Ltd. The company head quarter is located at No. (33), Pyay Road, 6 ½ miles, (11) Quarter, Haling Township, Yangon. The list of Directors of the factory owner is shown in following table. The estimated investment for the Grand Royal Group International Plant is US\$ 7,759,314.

Sr.	Particular	Name/ Address	
1	Company Name	Grand Royal Group International Company Limited	
		No.560, No (4) Main Road, Upper Thae Kone	
2	Location Plant	Village Group, Leik Poke Village Tract, Hmawbi	
		Township, Yangon, Myanmar	
3	Company Address	No. (33), Pyay Road, 6 ¹ / ₂ miles, (11) Quarter,	
5	Company Address	Haling Township, Yangon, Myanmar	
4	Company Ph: no/Fax; no	01-654938-654948,01-534986	
5	Website	www.grandroyal-group.com	
6	Factory Ownership	Limited Company	
7	Factory Start Date	2012	
8	Production Started Date	2015	
9	EMP Established Date	27.2.2019	

Table 1. Information of Grand Royal Group International Company Limited

Table 2. List of the Directors

Sr.	Name	Nationality, NRC No. / PP No.	Position
1.	U Aung Moe Kyaw	Myanmar 12/MaYaKa (N) 106397	Director and Co-chairman
2.	Mr. Ueychai Tantha-obhas	Thai PP N0. AA7536939	Director and Co-chairman
3.	Mr. Chew Leong Chee	Singapore PP No. E3342979E	Director
4.	Mr. Polapatr Suvarnazorn	Thai PP N0. AA3284268	Director
5.	Mr. Prapakon Thongtheppairot	Thai PP N0. AA3892107	Director
6.	Mr. Michael Chye Hin Fah	Singapore PP No. E6491786J	Director

7.	Mr. Pramote Hassamontr	Thai PP N0. AA4906311	Director
8.	Mr. Karoon Sirivichittranond	Thai PP N0. AA4275166	Director

Table 3. Factory Contact Person

Sr	Name	Contact	Email Address
		No	
1	U Phyo Wail Lwin	095179683	phyowailwin@grandroyal-group.com
2	Daw Moe Moe Kyaw	095139816	moemoekyaw@grandroyal-group.com

1.3 Presentation of the Environmental and Social Experts

Environmental Conservation and Consulting Engineers Association (ECCEA) will be the third party for EMP study and reporting for Yangon Bottling Plant. ECCEA EMP team consists of the following core team and sector-wise participants.

		Registration /		Area of
Sr.	Name	License No	Contac Detail	Expertise/
		by ECD		Responsibilities
1.	U Soe Myint	0165	N0.92, Kant Kaw Myaing	Facilitation,
			Lane 2, Block 33, Nort	Socio-Economy
			dagon Tsp, Yangon	& OSH
			(09-401600255)	
2.	Dr. Maung Maung	0191	N0. 14 (I), Y.T.U	Cultural Heritage
	Hlaing		Compound, East	Impact
			Gyogone, Insein	Assessment
			Township, Yangon	
			(09-5052179)	

Table 4. ECCEA Team Member and Responsibilities

3.	U Khin Maung	0151	N0. 660 (B), 9 th Street	Sanitation
	Htaey		South, East Gyogone Qtr,	System
			Insein Township, Yangon	
			(09-51801824)	
4.	Daw Htay Htay	0145	No. 140/7, U Wizarya	Soil Assessment
	Win		Lane, Myaynigone, San	
			chaung Township,	
			Yangon	
			(09-5301824)	
5.	Daw Mu Mu Aye	0049	No.10, Block (52), May	Biodiversity
			Flower Street, Nawaday	Assessment
			Garden Housing, Hlaing	
			Tharyar Tsp, Yangon	
			(095028189)	
6.	U Yan Naing	0107	N0. 14 (A), Y.T.U	Waste
	Aung		Compound, East	Management,
			Gyogone, Insein	Impact
			Township, Yangon	Assessment &
			(09-797508797)	Mitigation Plan
7.	Dr. Htin Lin	0214	6 (A), Staff housing,	Traffic Impact
			Y.T.U Compound, East	Analysis
			Gyogone, Insein	
			Township, Yangon	
			(09-400410533)	
8.	U Myint Maung	0159	F Hall Teachers Hostel,	Noise &
	Maung Than		Y.T.U Compound, East	Vibration
			Gyogone, Insein	Air Quality
			Township, Yangon	Assessment &
			(09-400410533)	EMP Drafting
9	U Phyo Maung	0162	No.36, Room 12, Baho	Public
	Maung		Road, Aung Chan Thar	Consultation &
			Ward, Sanchaung Tsp,	Social Survey
			Yangon	

			(09-420069013)	
10	U Lin Thura Aung	0157	N0.36, Thuta Street, Ward No.4, South Okkalapa Tsp, Yangon (09-402644319)	Pollution Control Scoping & TOR Drafting
11	U Kyae Zin Latt	0154	MES Buiding, Hlaing Universities Campus, Hlaing Township, Yangon (09-4202644319)	Geological Assessment
12	U Aung Kyaw Lin	0117	No.99, 1 st Floor, Seikkanthar Street, Kyauktata Township, Yangon (09-4505442734)	Legal Analysis

Table 5. Factory Contact Person of ECCEA

Sr	Name	Contact number	Email Address
1	U Soe Myint	(959)401600255	sm260859@gmail.com
2	U Yan Naing Aung	(959)797508797	yannaingaung123@gmail.com

2 Project's Policies, Legal Requirements and Institutional

Arrangements

2.1 Environmental Policy

Grand Royal Group International Co., Ltd. (GRGICL) is committed to sustain business excellence in quality of environment. GRGICL will take lead in the industry in providing products and services of highest quality and minimizing the impact of the activities on the environment.

The following key points of the strategy:

- Strict implementation of food safety standards based on statutory and regulatory requirements
- Ensuring total customer satisfaction in products and services
- Minimize waste by evaluating operations and ensuring as efficient as possible
- Consistency measure the impact on the environment and conduct regular management review on objectives and targets for continuous improvement
- Activity promote recycling both internally and among the customers and supplier. Source and promote a product range to minimize the environmental impact of both production and distribution
- Comply with environmental legislation that relates to the company
- Implement a training program for the staffs and support enlist in implementation continual improvement in the company's environmental performance
- Communicate to all concerned parties and allow public, knowledge of the policy by any available means in order to raise the awareness environmental performance
- Keep a documented system for both quality and environment, ensure implementation, maintained and updated accordingly

2.2 Project Commitments

Grand Royal Group International Company Limited is committed to carry out its distillery operation activities in compliance with standing laws, rules, procedures, orders, guidelines and notifications of the Republic of the Union of Myanmar.

2.2.1 Laws and Rules

The project proponent will be followed the following Laws, Rules and Procedures.

- 1. Automobile Law (2015)
- 2. City of Yangon Development Law (2018)
- 3. Environmental Conservation Law (2012)

- 4. Environmental Conservation Rules (2014)
- 5. EIA Procedures (2015)
- 6. Employment and Skill Development Law (2013)
- 7. Factory Act (1951)
- 8. Foreingn Investment Law (2012)
- 9. Leave and Holiday Act (1951)
- 10. Myanmar Engineering Council Law (2013)
- 11. Myanmar Fire Bridgate Law (2015)
- 12. Myanmar Investment Law (2016)
- 13. Myanmar Investment Rules (2017)
- 14. Myanmar Insurance Business Law (1993)
- 15. Myanmar Occupational Safety and Health Law (15.3.2019)
- 16. National Standards and Guidelines (2015)
- 17. The Conservation of Water Resources and River Law (2006)
- 18. Prevention of Hazard from Chemical and Related Substances Law (2013)
- 19. The Control of Smoking and Consumption of Tobacco Product Law (2006)
- 20. The Electricity Law (2014)
- 21. The Ethnic Rights Protection Law (2015)
- 22. The Export and Import Law (2012)
- 23. The Freshwater Fisheries Law (1991)
- 24. The Labour Organization Law (2011)
- 25. The Labour Dispute Settlement Law (2012)
- 26. The Law on Standardization (2014)
- 27. The Minimum Wages Law (2013)
- 28. The Myanmar Marine Fisheries Law (1990)
- 29. The Private Industrial Enterprise Law (1990)
- 30. The Prevention and Control of Communicable Diseases Law (2013)
- 31. The Petroleum and Petroleum Product Law (2017)
- 32. The Protection and Preservation of Cultural Heritage Regions Law (1998)
- 33. The Protection and Preservation of Antique Objects Law (2015)
- 34. The Protection and Preservation of Ancient Monuments Law (2015)
- 35. The Payment of Wages Act (2016)
- 36. The Public Health Law (1972)
- 37. The Prevention and Control of Communicable Disease Law (1995)

- 38. The Social Security Law (2012)
- 39. Ward or Village Tract Administration Law
- 40. Workmen Compensation Act (1923)

2.2.2 National Standards and Guidelines

National Environmental Quality (Emission) Guidelines (NEQG) for waste water and noise levels are referenced in this EMP report. Followings are the environmental standards and guidelines adopted by EMP team. The project proponent will be discharged the waste water from the plant by following the National Standard and Guidelines.

Sr.	Parameter	Unit	Guideline Value
1	5-day BOD	mg/l	50
2	COD	mg/l	250
3	Oil and grease	mg/l	10
4	pH	Standard unit	6-9
5	Temperature increase	°C	<3
6	Total coliform bacteria	100 ml	400
7	Total nitrogen	mg/l	10
8	Total phosphorus	mg/l	2
9	Total suspended solids	mg/l	50

Table 6. Environmental Standards for Wastewater Discharge (NEQG)

Table 7. Noise Level Standard (NEQG)

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

C-	Demonster	Awaya sing David	Guideline Value
Sr.	Parameter	Averaging Period	μg/m ³
1	Nitrogen dioxide	1-year	40
1		1-hour	200
2	Ozone	8-hour daily Maximum	100
3	PM ₁₀	1-year	20
		24 hour	50
4	DM	1-year	10
	P1M12.5	24 hour	25
5	Sulfur dioxide	24-hour	20
		10-minute	500

 Table 8. Air Quality Standard (NEQG)

2.2.3 International Standards and Guidelines

The general Environmental, Health, and Safety (EHS) Guidelines of IFC is technical reference document with general examples of Good International Industry Practice (GIIP). The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. The applicability of the EHS Guidelines is tailored for Yangon Bottling Plant (GRGICL) by taking accounts the results of the environmental assessment.

Internationally accepted environmental standards and guidelines for ambient air, waste water, noise levels and environmental monitoring parameters are referenced in this EMP report. Following is the environmental standards and guidelines adopted by EMP team.

Sr.	Standards/Guidelines	Reference
1	Environmental monitoring programmed	IFC
2	Occupational safety and health	IFC

Table 9. Environmental Standards and Guidelines Referenced in this Report

2.2.4 International Convention and Recommandation from ILO

- 1. Labor Inspection Convention, 1947 (No.81)
- 2. Employment Injury Benefits Convention, 1964 (No.121)
- Working Environment (Air Pollution, Noise and Vibration) Convention, (No.148)
- 4. Occupation Safety and Health Convention, 1981 (No.155)
- 5. Occupation Safety and Health Services Convention, 1985 (No.161)
- 6. Safety and Health in Construction Convention, 1988 (No.161)
- 7. Prevention of Major Industrial Accidents Convention, 1993 (No.174)
- 8. Labor Inspection Recommendation, 1947 (No.81)
- 9. Protection of Workers' Health Recommendation, 1953 (No.97)
- 10. Welfare Facilities Recommendation, 1956 (No.202)
- 11. Employment Injury Benefits Recommendation, 1964 (No.121)
- Working Environment (Air Pollution, Noise and Vibration) Recommendation, 1977 (No.156)
- 13. Safety and Health in Construction Recommendation, 1988 (No.175)
- 14. Prevention of Major Industrial Accidents Recommendation, 2001 (No.192)

The goal of this principles is to protect safety and health by prevention and controls of hazards. This principle can get not only to ensure the well-being of workers but also contribute positively to productivity. GRGICL will compliance with the conventation and recommendation during factory operation life.

2.3 Legal Commitment of Grand Royal Group Inernational Co., Ltd

The detail of legal commitment should be compliance from Grand Royal Group International Co., Ltd is as follow.

Sr.	Para-	Stipulation	Commitment
1	Environ	mental Conservation Law	
1.1	14	A person causing a point source of pollution shall treat,	Wherever a point source of pollution occurs in Yangon Bottling Plant,
		emit, discharge and deposit the substances which cause	GRGICL commits to treat, emit, discharge and deposit the substances
		pollution in the environment in accord with stipulated	which cause pollution in the environment in accord with stipulated
		environmental quality standards.	environmental quality standards.
1.2	15	The owner or occupier of any business, material or place	GRGICL makes a commitment to ensure the owner or occupier of any
		which causes a point source of pollution shall install or	business, material or place within Yangon Bottling Plant which causes
		use an on-site facility or controlling equipment in order	a point source of pollution shall install or use an on-site facility or
		to monitor, control, manage, reduce or eliminate	controlling equipment in order to monitor, control, manage, reduce or
		environmental pollution. If it is impracticable, it shall	eliminate environmental pollution. If it is impracticable, arrangements
		be arranged to dispose the wastes in accord with	shall be made to dispose the wastes in accord with environmentally
		environmentally sound methods.	sound methods.

Table 10. Legal Commitment of Grand Royal Group International Co., Ltd

1.4	22	The owner or occupier of the category of business,	GRGICL commits to apply for the prior permission to the Ministry of
		worksite or factory, workshop stipulated by the Ministry	Natural Resources and Environmental Conservation in accord with the
		under section 21 shall apply for the prior permission to	stipulations.
		the Ministry in accord with the stipulations.	
1.5	26	The holder of the prior permission shall effect insurance	GRGICL upon receiving the prior permission of MONREC shall effect
		according to the category of his business, worksite or	insurance according to the category of its factory for any accident that
		factory, workshop for any accident that may cause	may cause impact on the environment, in accord with the existing law.
		impact on the environment, in accord with the existing	
		law.	
1.6	28	No one shall, without the prior permission, operate	GRGICL shall never, without the prior permission, operate business,
		business, work-site or factory, workshop which is	work-site or factory, workshop which is required to obtain the prior
		required to obtain the prior permission under this Law.	permission under the Environmental Conservation Law.
1.7	29	No one shall violate any prohibition contained in the	GRGICL shall never violate any prohibition contained in the rules,
		rules, notifications, orders, directives and procedures	notifications, orders, directives and procedures issued under the
		issued under this Law.	Environmental Conservation Law.
1.8	30	No one shall, without permission of the Ministry,	GRGICL shall never, without permission of the Ministry, import,
		import, export, produce, store, carry or trade any	export, produce, store, carry or trade any material which causes impact
		material which causes impact on the environment	on the environment prohibited by the Ministry (MONREC).
		prohibited by the Ministry.	

2	Environmental Conservation Rules		
2.1	69	(a) No one shall emit, ask to emit, dispose, ask to	(a) GRGICL shall never emit, ask to emit, dispose, ask to dispose, pile
		dispose, pile and ask to pile, by any means, hazardous	and ask to pile, by any means, hazardous waste or hazardous substances
		waste or hazardous substances stipulated by notification	stipulated by notification according to any rules in the environmental
		according to any rules in this rules at any place which	conservation rules at any place which may affect the public directly or
		may affect the public directly or indirectly.	indirectly.
		(b) No one shall, except for the permission of the	(b) GRGICL shall never, except for the permission of the Ministry for
		Ministry for the interests of the people, carry out any	the interests of the people, carry out any activity which can damage the
		activity which can damage the ecosystem and	ecosystem and ecosystem services.
		ecosystem services.	
3	Environ	mental Impact Assessment Procedures	<u> </u>
3.1	3	Pursuant to Section 21 of the Law and Articles 52, 53	GRGICL makes a commitment to undertake EIA to obtain an ECC in
		and 55 of the Rules, all Projects and Project expansions	accordance with EIA Procedure.
		undertaken by any ministry, government department,	
		organization, corporation, board, development	
		committee and organization, local government or	
		authority, company, cooperative, institution, enterprise,	
		firm, partnership or individual (and/or all Projects, field	
		sites, factories and businesses including expansions of	

		such Projects, field sites, factories and businesses	
		identified by the Ministry, which may cause impact on	
		environmental quality and are required to obtain Prior	
		Permission in accordance with Section	
		21 of the Law, and Article 62 of the Rules) having the	
		potential to cause Adverse Impacts, are required to	
		undertake IEE or EIA or to develop an EMP, and to	
		obtain an ECC in accordance with this Procedure.	
3.2	84	All Projects and activities, whether categorized in	GRGICL committed as:
		Annex 1 'Categorization of Economic	(i) to obtain all required authorizations, permits, licenses and approvals
		Activities for Assessment Purposes' as requiring an	and to comply with all applicable laws, regulations, procedures,
		IEE, an EIA, nor neither: (i) are obliged	ministerial directives, zoning, planning requirements, and other
		to obtain all required authorizations, permits, licenses	governmental requirements, and
		and approvals and to comply with all	(ii) to remain subject to any environmental and/or social conditions
		applicable laws, regulations, procedures, ministerial	which the Ministry may impose as a condition to the commencement or
		directives, zoning, planning requirements, and other	continuation of construction or operation of that Project or activity.
		governmental requirements, and (ii) shall remain	
		subject to any environmental and/or social conditions	
		which the Ministry may impose as a condition to the	

		commencement or continuation of construction or	
		operation of that Project or activity.	
3.3	87	Upon receipt of the written approval from the relevant	Upon receipt of the written approval from the relevant authority,
		authority, the Project Proponent shall commence	GRGICL shall commence implementation of the Project strictly in
		implementation of the Project strictly in accordance	accordance with the conditions attached to the ECC and including the
		with the conditions attached to the ECC and including	EMP, within such time as may be prescribed by the Ministry.
		the EMP, within such time as may be prescribed by the	
		Ministry.	
3.4	102	The Project Proponent shall bear full legal and financial	GRGICL committed to bear full legal and financial responsibility for:
		responsibility for:	a) all of the Project Proponent's actions and omissions and those of its
		a) all of the Project Proponent's actions and omissions	contractors, subcontractors, officers, employees, agents,
		and those of its contractors, subcontractors, officers,	representatives, and consultants employed, hired, or authorized by the
		employees, agents, representatives, and consultants	Project acting for or on behalf of the Project, in carrying out work on
		employed, hired, or authorized by the Project acting for	the Project; and
		or on behalf of the Project, in carrying out work on the	b) PAPs until they have achieved socio-economic stability at a level not
		Project; and	lower than that in effect prior to the commencement of the Project, and
		b) PAPs until they have achieved socio-economic	shall support programs for livelihood restoration and resettlement in
		stability at a level not lower than that in effect prior to	consultation with the PAPs, related government agencies, and
		the commencement of the Project, and shall support	organizations and other concerned persons for all Adverse Impacts.
		programs for livelihood restoration and resettlement in	
-----	-----	---	--
		consultation with the PAPs, related government	
		agencies, and organizations and other concerned	
		persons for all Adverse Impacts.	
3.5	106	The Project Proponent shall, during all phases of the	GRGICL makes a commitment during all phases of the Project (pre-
		Project (pre-construction, construction, operation,	construction, construction, operation, decommissioning, closure and
		decommissioning, closure and post-closure), engage in	post-closure), engage in continuous, proactive and comprehensive self-
		continuous, proactive and comprehensive self-	monitoring of the Project and activities related thereto, all Adverse
		monitoring of the Project and activities related thereto,	Impacts, and compliance with applicable laws, the Rules, this
		all Adverse Impacts, and compliance with applicable	Procedure, standards, the ECC, and the EMP.
		laws, the Rules, this Procedure, standards, the ECC, and	
		the EMP.	
3.6	108	The Project Proponent shall submit monitoring reports	GRGICL makes a commitment to submit monitoring reports to the
		to the Ministry not less frequently than every six (6)	Ministry not less frequently than every six (6) months, as provided in a
		months, as provided in a schedule in the EMP, or	schedule in the EMP, or periodically as prescribed by the Ministry.
		periodically as prescribed by the Ministry.	
3.7	110	Within ten (10) days of completing a monitoring report	Within ten (10) days of completing a monitoring report as contemplated
		as contemplated in Article 108 and Article 109 in	in Article 108 and Article 109 in accordance with the EMP schedule,
		accordance with the EMP schedule, the Project	the GRGICL shall make such report (except as may relate to National

		Proponent shall make such report (except as may relate	Security concerns) publicly available on the Project's website, at public
		to National Security concerns) publicly available on the	meeting places (e.g. libraries, community halls) and at the Factory
		Project's website, at public meeting places (e.g.	office. Any organization or person may request a digital copy of a
		libraries, community halls) and at the Project offices.	monitoring report and the Project shall, within ten (10) days of receiving
		Any organization or person may request a digital copy	such request, submit a digital copy via email or as may otherwise be
		of a monitoring report and the Project shall, within ten	agreed upon with the requestor.
		(10) days of receiving such request, submit a digital	
		copy via email or as may otherwise be agreed upon with	
		the requestor.	
3.8	113	For purposes of monitoring and inspection, the Project	For purposes of monitoring and inspection, the GRGICL:
		Proponent:	a) shall grant to the Ministry and/or its representatives, at any time
		a) shall grant to the Ministry and/or its representatives,	during normal working hours, access to the Project's offices and to the
		at any time during normal working hours, access to the	Project site and any other location at which the Project activities or
		Project's offices and to the Project site and any other	activities related to the Project are performed; and
		location at which the Project activities or activities	b) from time to time as and when the Ministry may reasonably require,
		related to the Project are performed; and	shall grant the Ministry access to the Project's offices and to the Project
		b) from time to time as and when the Ministry may	site and any other location at which the Project activities or activities
		reasonably require, shall grant the Ministry access to the	related to the Project are performed.
		Project's offices and to the Project site and any other	

		location at which the Project activities or activities	
		related to the Project are performed.	
3.9	115	In the event of an emergency, or where, in the opinion	In the event of an emergency, or where, in the opinion of the Ministry,
		of the Ministry, there is or may exist a violation or risk	there is or may exist a violation or risk of violation of the compliance
		of violation of the compliance by the Project with all	by the Project with all applicable environmental and social
		applicable environmental and social requirements, the	requirements, the GRGICL shall grant full and immediate access to the
		Project shall grant full and immediate access to the	Ministry at any time as may be required by the Ministry.
		Ministry at any time as may be required by the Ministry.	
4	National	Environmental Quality (Emissions) Guidelines	
4.1	6	Provisions of the general and applicable industry-	The GRGICL committed to take necessary measures to avoid, minimize
		specific Guidelines shall be reflected in project	and control adverse impacts to human health and safety, and the
		environmental management plan (EMP) and	environment through reducing the total amount of emissions
		environmental compliance certificate (ECC) and	generation; to adopting process modifications, including waste
		together constitute a project's commitment to take	minimization to lower the load of pollutants requiring treatment; and as
		necessary measures to avoid, minimize and control	necessary, to apply treatment techniques to further reduce the load of
		adverse impacts to human health and safety, and the	contaminants prior to release or discharge.
		environment through reducing the total amount of	
		emissions generation; to adopting process	
		modifications, including waste minimization to lower	

		the load of pollutants requiring treatment; and as	
		necessary, to apply treatment techniques to further	
		reduce the load of contaminants prior to release or	
		discharge.	
4.2	7	Recognizing that these Guidelines are intended to	The GRGICL shall not use a dilution of air emissions and an effluent to
		prevent pollution through reducing the mass of	achieve maximum permitted values is not acceptable.
		pollutants emitted to the environment, dilution of air	
		emissions and effluents to achieve maximum permitted	
		values is not acceptable. Specified guideline values	
		should be achieved, without dilution, at least 95 percent	
		of the time that a project is operating, to be calculated	
		as a proportion of annual operating hours.	
4.3	9	As specified in the EIA Procedure, all projects are	The GRGICL complies with and refers to applicable national guidelines
		obliged to use, comply with and refer to applicable	or standards or international standards adopted by the Ministry.
		national guidelines or standards or international	
		standards adopted by the Ministry. These Guidelines	
		will henceforth be applied by the Ministry in satisfying	
		this requirement until otherwise modified or succeeded	
		by other guidelines or standards.	

4.4	12	As specified in the EIA Procedure, projects shall engage	As specified in the EIA Procedure, the GRGICL shall engage in
		in continuous, proactive and comprehensive self-	continuous, proactive and comprehensive self-monitoring of the project
		monitoring of the project and comply with applicable	and comply with applicable guidelines and standards.
		guidelines and standards. For purposes of these	
		Guidelines, projects shall be responsible for the	
		monitoring of their compliance with general and	
		applicable industry-specific Guidelines as specified in	
		the project EMP and ECC.	
4.5	13	Air emissions, noise, odor, and liquid / effluent	Air emissions, noise, odor, and liquid/effluent discharges will be
		discharges will be sampled and measured at points of	sampled and measured at points of compliance as specified in the
		compliance as specified in the project EMP and ECC.	project EMP and ECC.
5	The Eth	nic Rights Protection Law	
5.1	5	The matters of projects shall completely be informed,	GRGICL committed to completely be informed, coordinated and
		coordinated and performed with the relevant local	performed the matters of GRGICL project with the relevant local ethnic
		ethnic groups in the case of development works, major	groups.
		projects, businesses and extraction of natural resources	
		will be implemented within the area of ethnic groups.	
6	Myanma	ar Investment Law	

6.1	50	d) The investor shall register the land lease contract at	d) The GRGICL makes a commitment to register the land lease contract
		the Office of Registry of Deeds in accordance with the	at the Office of Registry of Deeds in accordance with the Registration
		Registration Act.	Act.
6.2	51	The investor:	The GRGICL committed:
		a) may appoint of any citizen who is a qualified person	a) to appoint of any citizen who is a qualified person as senior
		as senior manager, technical and operational expert, and	manager, technical and operational expert, and advisor in his
		advisor in his investment within the Union in accordance	investment within the Union in accordance with the Laws.
		with the Laws.	b) to appoint them to replace, after providing for capacity building
		b) shall appoint them to replace, after providing for	programs in order to be able to appoint citizens to different level
		capacity building programs in order to be able to	positions of management, technical and operational experts, and
		appoint citizens to different level positions of	advisors.
		management, technical and operational experts, and	c) to appoint only citizens for works which does not require skill.
		advisors.	d) to appoint skilled citizen and foreign workers, technicians, and staff
		c) shall appoint only citizens for works which does not	by signing an employment contract between employer and
		require skill.	employee in accordance with the labor laws and rules.
		d) shall appoint skilled citizen and foreign workers,	e) to ensure to obtain the entitlements and rights in the labor laws and
		technicians, and staff by signing an employment	rules, including minimum wages and salary, leave, holiday,
		contract between employer and employee in	overtime fee, damages, compensation of the workman, social
		accordance with the labor laws and rules.	welfare, and other insurance relating to workers in stipulating the

		e) shall ensure to obtain the entitlements and rights in the	rights and duties of employers and employees and occupational
		labor laws and rules, including minimum wages and	terms and conditions in the employment contract.
		salary, leave, holiday, overtime fee, damages,	f) to settle disputes arising among employers, among workers,
		compensation of the workman, social welfare, and	between employers and workers, and technicians or staff in the
		other insurance relating to workers in stipulating the	investment in accordance with the applicable laws.
		rights and duties of employers and employees and	
		occupational terms and conditions in the employment	
		contract.	
		f)shall settle disputes arising among employers, among	
		workers, between employers and workers, and	
		technicians or staff in the investment in accordance	
		with the applicable laws.	
6.3	65	The Investor:	The GRGICL committed:
		f) shall not make any significant alteration of	f) not to make any significant alteration of topography or elevation of
		topography or elevation of the land on which he is	the land on which he is entitled to lease or to use, without the approval
		entitled to lease or to use, without the approval of the	of the Commission.
		Commission.	g) to abide by applicable laws, rules, procedures and best standards
		g) shall abide by applicable laws, rules, procedures and	practiced internationally for this investment so as not to cause damage,
		best standards practiced internationally for this	

investment so as not to cause damage, pollution, and	pollution, and loss to the natural and social environment and not to
loss to the natural and social environment and not to	cause damage to cultural heritage.
cause damage to cultural heritage.	h) to list and keep proper records of books of account and annual
h) shall list and keep proper records of books of account	financial statement, and necessary financial matters relating to the
and annual financial statement, and necessary financial	investments performed by permit or endorsement in accordance with
matters relating to the investments performed by permit	internationally and locally recognized accounting standards.
or endorsement in accordance with internationally and	i) to close and discontinue the investment only after payment of
locally recognized accounting standards.	compensation to employees in accordance with applicable laws for any
i) shall close and discontinue the investment only after	breach of employment contracts, closure of investment, sale and
payment of compensation to employees in accordance	transfer of investment, discontinuation of investment, or reduction of
with applicable laws for any breach of employment	workforce.
contracts, closure of investment, sale and transfer of	j) to pay wages and salaries to employees in accordance with applicable
investment, discontinuation of investment, or reduction	laws, rules, procedures, directives and so forth during the period of
of workforce.	suspension of investment for a credible reason.
j) shall pay wages and salaries to employees in	k) to pay compensation and indemnification in accordance with
accordance with applicable laws, rules, procedures,	applicable laws to the relevant employee or his successor for injury,
directives and so forth during the period of suspension	disability, disease and death due to the work.
of investment for a credible reason.	l) to supervise foreign experts, supervisors and their families, who
k) shall pay compensation and indemnification in	employ in their investment, to abide by the applicable laws, rules, orders
accordance with applicable laws to the relevant	and directives, and the culture and traditions of Myanmar.

	employee or his successor for injury, disability, disease	m) to respect and comply with the labor laws.
	and death due to the work.	n) to have the right to sue and to be sued in accordance with the laws.
	1) shall supervise foreign experts, supervisors and their	o) to pay effective compensation for loss incurred to the victim, if there
	families, who employ in their investment, to abide by	are damage to the natural environment and socioeconomic losses caused
	the applicable laws, rules, orders and directives, and the	by logging or extraction of natural resources which are not related to the
	culture and traditions of Myanmar.	scope of the permissible investment, except from carrying out the
	m) shall respect and comply with the labor laws.	activities required to conduct investment in a permit or an endorsement.
	n) shall have the right to sue and to be sued in	p) to allow the Commission to inspect in any places, when the
	accordance with the laws.	Commission informs the prior notice to inspect the investment.
	o) shall pay effective compensation for loss incurred to	q) to take in advance permit or endorsement of the Commission for the
	the victim, if there are damage to the natural	investments which need to obtain prior approval under the
	environment and socioeconomic losses caused by	Environmental Conservation Law and the procedures of environmental
	logging or extraction of natural resources which are not	impact assessment, before undertaking the assessment, and shall submit
	related to the scope of the permissible investment,	the situation of environmental and social impact assessment to the
	except from carrying out the activities required to	Commission along the period of activities of the investments which
	conduct investment in a permit or an endorsement.	obtained permit or endorsement of the Commission.
	p) shall allow the Commission to inspect in any places,	
	when the Commission informs the prior notice to	
	inspect the investment.	

		q) shall take in advance permit or endorsement of the	
		Commission for the investments which need to obtain	
		prior approval under the Environmental Conservation	
		Law and the procedures of environmental impact	
		assessment, before undertaking the assessment, and	
		shall submit the situation of environmental and social	
		impact assessment to the Commission along the period	
		of activities of the investments which obtained permit	
		or endorsement of the Commission.	
6.4	73	The investor shall insure the types of insurance	The GRGICL shall insure the types of insurance stipulated in the
		stipulated in the provision of the rules at any insurance	provision of the rules at any insurance enterprise which is entitled to
		enterprise which is entitled to carry out insurance	carry out insurance businesses within the Union.
		businesses within the Union.	
7	Myanma	ar Engineering Council Law	
7.1	34	If, whoever has received a registration certificate, is	(a) The GRGICL distillery construction site shall not perform any
		found to have breached any rules contained in the	engineering work and technological work without an engineer who
		registration certificate or violated any prohibition	has received a registration certificate issued by the council.
		contained in a rule, order or directive enacted under this	
		law or in any stipulation of this law, the executive	

		committee may take the following administrative	
		actions-	
		(a) giving a warning;	
		(b) assessing a suitable fine;	
		(c) suspending the registration certificate	
		(d) cancelling the registration certificate.	
8	The Exp	ort and Import Law	
8.1	7	A person who obtained any license shall not violate the	The GRGICL makes a commitment not to violate the conditions
		conditions contained in the license.	contained in any Export/Import license.
9	The Lab	our Organization Law	
9.1	17	The labour organizations shall have the right to carry out	The GRGICL committed to follow the labour organizations law which
		freely in drawing up their constitution and rules, in	grant the labour organizations to have the right to carry out freely in
		electing their representatives, in organizing their	drawing up their constitution and rules, in electing their
		administration and activities or in formulating their	representatives, in organizing their administration and activities or in
		programmes. The Labour Organizations have the right to	formulating their programmes, to have the right to negotiate and settle
		negotiate and settle with the employer if the workers are	with the employer if the workers are unable to obtain and enjoy the
		unable to obtain and enjoy the rights of the workers	rights of the workers contained in the labour laws and to submit
		contained in the labour laws and to submit demands to	demands to the employer and claim in accord with the relevant law if
			the agreement cannot be reached.

		the employer and claim in accord with the relevant law	
		if the agreement cannot be reached.	
9.2	18	The labour organization has the right to demand the	The GRGICL committed to follow the labour organizations law which
		relevant employer to re-appoint a worker if such worker	grant the labour organizations the right to demand the relevant
		is dismissed by the employer and if there is cause to	employer to re-appoint a worker if such worker is dismissed by the
		believe that the reasons of such dismissal were based on	employer and if there is cause to believe that the reasons of such
		labour organization membership or activities, or were	dismissal were based on labour organization membership or activities,
		not in conformity with the labour laws.	or were not in conformity with the labour laws.
9.3	29	The employer shall recognize the labour organizations of	The GRGICL committed to recognize the labour organizations of his
		his trade as the organizations representing the workers	trade as the organizations representing the workers
9.4	30	The employer shall allow the worker who is assigned	The GRGICL committed to allow the worker who is assigned any duty
		any duty on the recommendation of the relevant	on the recommendation of the relevant executive committee to perform
		executive committee to perform such duty not exceeding	such duty not exceeding two days per month unless they have agreed
		two days per month unless they have agreed otherwise.	otherwise. Such period shall be deemed as if he is performing the
		Such period shall be deemed as if he is performing the	original duty of his work.
		original duty of his work.	
9.5	31	The employer shall assist as much as possible if the	The GRGICL committed to assist as much as possible if the labour
		labour organizations request for help for the interest of	organizations request for help for the interest of his workers. The
		his workers. However, the employer shall not exercise	GRGICL shall not exercise any acts designed to promote the

		any acts designed to promote the establishment or	establishment or functioning of labour organizations under its
		functioning of labour organizations under his	domination or control by financial or other means.
		domination or control by financial or other means.	
9.6	43	No employer shall, without permission of the relevant	The GRGICL committed never, without permission of the relevant
		conciliation body, lock-out a public utility service or	conciliation body, lock-out a public utility service or service which is
		service which is not included in public utility service.	not included in public utility service.
9.7	44	No employer shall:	The GRGICL will never:
		(a) lock-out a work due to such dispute during the	(a) lock-out a work due to such dispute during the pendency of a trade
		pendency of a trade dispute settlement;	dispute settlement;
		(b) carry out an illegal lock-out which is involved with	(b) carry out an illegal lock-out which is involved with any provision
		any provision contained in sub sections (a) and (c) of	contained in sub sections (a) and (c) of section 41; (c) dismiss a worker
		section 41;	who opposes an illegal lock-out which is involved with any provision
		(c) dismiss a worker who opposes an illegal lock-out	contained in sub-sections (a) and (c) of section 41;
		which is involved with any provision contained in sub-	(d) dismiss a worker for his membership in a labour organization for
		sections (a) and (c) of section 41;	the exercise of organizational activities or participating in a strike in
		(d) dismiss a worker for his membership in a labour	accord with this Law.
		organization for the exercise of organizational activities	
		or participating in a strike in accord with this Law.	
10	The Set	tlement of Labour Dispute Law	

10.1	38	No employer shall fail to negotiate and coordinate in	The GRGICL makes a commitment for never failing to negotiate and
		respect of the complaint within the prescribed period	coordinate in respect of the complaint within the prescribed period
		without sufficient cause.	without sufficient cause.
10.2	39	No employer shall alter the conditions of service relating	The GRGICL makes a commitment for never altering the conditions of
		to workers concerned in such dispute at the consecutive	service relating to workers concerned in such dispute at the consecutive
		period before commencing the dispute within the period	period before commencing the dispute within the period under
		under investigation of the dispute before the Arbitration	investigation of the dispute before the Arbitration Body or Tribunal, to
		Body or Tribunal, to affect the interest of such workers	affect the interest of such workers immediately.
		immediately.	
10.3	40	Any employer who violates any prohibition contained in	The GRGICL makes a commitment for never failing to negotiate and
		sections 38 and 39 shall, on conviction, be punished with	coordinate in respect of the complaint within the prescribed period
		a fine for a minimum of one lakh kyats.	without sufficient cause.
11	Employ	ment and Skill Development Law (2013)	
11.1	5	(1) If the employer has appointed the employee to work	(1) The GRGICL makes a commitment to make the employment
		for an employment, the employment agreement shall	agreement within 30 days if it has appointed the employee to work for
		be made within 30 days. But it shall not be related with	an employment.
		government department and organization for a	
		permanent employment.	

11.2	14	The employer shall carry out the training program in	The GRGICL committed to carry out workers training program in
		accord with the work requirement in line with the policy	accord with the work requirement in line with the policy of the skill
		of the skill development team to develop the skill	development team to develop the skill relating to the employment for
		relating to the employment for the workers who are	the workers who are proposed to appoint and working at present.
		proposed to appoint and working at present.	
11.3	15	The Employer:	The GRGICL committed;
		(a) shall carry out the training for each work or	a) to carry out the training for each work or compounding the work
		compounding the work individually or group-wise by	individually or group-wise by opening on-job training, training
		opening on-job training, training systematically at	systematically at worksite, sending outside training and training by
		worksite, sending outside training and training by using	using information technology system, for arranging the training
		information technology system, for arranging the	program to enhance the employment skill of the workers;
		training program to enhance the employment skill of the	(b) for appointing the youths of 16 years as apprentice, to arrange the
		workers;	training for technology relating to the employment systematically in
		(b) appointing the youths of 16 years as apprentice, shall	accord with the regulations prescribed by the skill development team.
		arrange the training for technology relating to the	
		employment systematically in accord with the	
		regulations prescribed by the skill development team.	
11.4	29	The fund management committee shall have the right to	The GRGICL committed to use the fund for any of the following matter
		use the fund for any of the following matter in accord	in accord with the regulation stipulated by the skill development team:

		with the regulation stipulated by the skill development	(a) sending to any part time or full time training for the skill
		team:	development of the employee, opening the training and supporting or
		(a) sending to any part time or full time training for the	giving loan to the employer who shall extend the training program;
		skill development of the employee, opening the training	(b) reissuing after scrutinizing in accord with the stipulations if asking
		and supporting or giving loan to the employer who shall	to pay the expenses incurred relating to the training for the said
		extend the training program;	employees;
		(b) reissuing after scrutinizing in accord with the	(c) performing other matters stipulated by the skill development team
		stipulations if asking to pay the expenses incurred	
		relating to the training for the said employees;	
		(c) performing other matters stipulated by the skill	
		development team	
11.5	30	(a) The employer of the industry and service business	(a) The GRGICL committed to put in to the fund monthly as put in fees
		shall put in to the fund monthly as put in fees without fail	without fail for the total wages of the subordinates and the supervisors'
		for the total wages of the subordinates and the	salary for not less than 0.5%;
		supervisors' salary for not less than 0.5%;	(b) Put in money paid under sub-section
		(b) Put in money paid under sub-section	(c) not to be deducted from the wage and salary of the employees.
		(c) shall not be deducted from the wage and salary of	
		the employees.	
11.6	31	The skill development team:	The GRGICL should be made to development team:

		(a) relating to the put in money which is to be paid to the	(a) relating to the put in money which is to be paid to the fund by the
		fund by the employer under section 30, sub-section	employer under section 30, sub-section
		(b) shall specify based on the work sector, type of work,	(b) shall specify based on the work sector, type of work, size of work
		size of work and number of employees;	and number of employees;
		(c) shall have the right to exempt from putting into the	(c) shall have the right to exempt from putting into the fund if any
		fund if any employer can submit secure reason.	employer can submit secure reason.
11.7	38	If any employer is convicted of committing any of the	The GRGICL should be convicted of committing any of the following
		following matters, he shall be punished with	matters, he shall be punished with imprisonment for not more than six
		imprisonment for not more than six months or with a fine	months or with a fine or with both:
		or with both:	(a) failing to sign employment agreement under section 5, sub-section
		(a) failing to sign employment agreement under section	(b) failing to pay put in money under section 30, sub-section
		5, sub-section (a);	
		(b) failing to pay put in money under section 30, sub-	
		section	
12	Minimur	n Wages Law	
12.1	12	The employer:	The GRGICL company:
		(a) shall not pay wage to the worker less than the	(a) shall not pay wage to the worker less than the minimum wage
		minimum wage stipulated under this Law;	stipulated under this Law;
			(b) may pay more than the minimum wage stipulated under this Law;

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

12.2	13	The employer:	The GRGICL committed for:
		(a) shall not pay wage to the worker less than the	(a) not paying wage to the worker less than the minimum wage
		minimum wage stipulated under this Law;	stipulated under this Law;
		(b) may pay more than the minimum wage stipulated	(b) paying more than the minimum wage stipulated under this Law;
		under this Law;	(c) not having the right to deduct any other wage except the wage for
		(c) shall not have the right to deduct any other wage	which it has the right to deduct as stipulated in the notification issued
		except the wage for which it has the right to deduct as	under this Law;
		stipulated in the notification issued under this Law;	(d) paying the minimum wage to the workers working in the
		(d) shall pay the minimum wage to the workers working	commercial, production and service business in cash. Moreover, if the
		in the commercial, production and service business in	specific benefits, interests or opportunities are to be paid, it may be
		cash. Moreover, if the specific benefits, interests or	paid in cash or partly in cash and partly in property, with prevailing
		opportunities are to be paid, it may be paid in cash or	regional price, jointly according to the desire of the worker;
		partly in cash and partly in property, with prevailing	(e) in paying minimum wage to the workers working in the
		regional price, jointly according to the desire of the	agricultural and livestock business, some cash and some property at
		worker;	prevailing regional price may be paid jointly according to local
		(e) in paying minimum wage to the workers working in	custom or desire of the majority of workers or collective agreement.
		the agricultural and livestock business, some cash and	Such payment shall be for any personal use and benefit of the worker
		some property at prevailing regional price may be paid	
		jointly according to local custom or desire of the	
		majority of workers or collective agreement. Such	

		payment shall be for any personal use and benefit of the	
		worker	
12.3	22	Any employer:	The GRGICL committed for:
		(a) shall not fail to pay the workers the minimum wage	(a) not failing to pay the workers the minimum wage stipulated under
		stipulated under this Law;	this Law;
		(b)shall not pay to the workers less than the minimum	(b) not paying to the workers less than the minimum wages and other
		wages and other benefits which is entitled by the worker	benefits which is entitled by the worker under section 14;
		under section 14;	(c) relating to the accounts, schedules, documents and lists of wage of
		(c) relating to the accounts, schedules, documents and	the workers:
		lists of wage of the workers:	(i) not making false entry, deceitful recording or false and deceitful
		(i) shall not make false entry, deceitful recording or	reporting;
		false and deceitful reporting;	(ii) not failing to report to the relevant department in accord with the
		(ii) shall not fail to report to the relevant department in	stipulations;
		accord with the stipulations;	(iii) not failing to produce when required by the inspection officer;
		(iii) shall not fail to produce when required by the	(d) not failing to go and accept inspection when summoned by the
		inspection officer;	inspection officer;
		(d) shall not fail to go and accept inspection when	(e) not obstructing or interfering with the inspection officer who
		summoned by the inspection officer;	inspects on duty.

		(e) shall not obstruct or interfere with the inspection	
		officer who inspects on duty.	
12.4	23	Any employer who violates any of the prohibitions	The GRGICL company committed for never violating any of the
		contained in section 22 shall, on conviction, be	prohibitions contained in section 22.
		punished with imprisonment for a term not exceeding	
		one year or with fine not exceeding 5 lakhs or with	
		Both.	
12.5	24	Any employer:	The GRGICL company makes a commitment for:
		(a) shall not violate any term and condition contained in	(a) not violating any term and condition contained in the minimum
		the minimum wage notification;	wage notification;
		(b) shall not fail to inform the workers relating to the	(b) not failing to inform the workers relating to the rates of minimum
		rates of minimum wage concerning to his workers	wage concerning to his workers among the rates of minimum wage
		among the rates of minimum wage stipulated under this	stipulated under this Law and announce at the place where the worker
		Law and announce at the place where the workers are	is able to see it in the work centre and workplace;
		able to see it in the work centre and workplace.	
12.6	25	Any employer who violates any prohibition contained	The GRGICL company committed for never violates any prohibition
		in section 24 shall, on conviction, be punished with	contained in section 24.
		imprisonment for a term not exceeding six months or	
		with fine not exceeding kyat 3lakhs or with both.	

13	The Payment of Wages Law		
13.1	3	The employer must	The GRGICL company must
		(a) Pay in local currency or foreign currency	(a) Pay in local currency or foreign currency recognized by the Central
		recognized by the Central Bank of Myanmar. This	Bank of Myanmar. This may be in cash, check or deposit into the bank
		may be in cash, check or deposit into the bank account	account of Employee.
		of Employee.	(b) Moreover, pay can be in the means of
		(b) Moreover, pay can be in the means of	(1) Totally in cash or half the cash and half in things set according to
		(1) Totally in cash or half the cash and half in things	the local price to those employees working in trade, manufacturing and
		set according to the local price to those employees	service sectors.
		working in trade, manufacturing and service sectors.	(2) Totally in cash or half the cash and half in things set as local price
		(2) Totally in cash or half the cash and half in things	according to local traditions or common agreement to those working
		set as local price according to local traditions or	in agriculture and livestock sectors. But, this must be for the sake of
		common agreement to those working in agriculture	the employees and their families. And, it also must be reasonable/fair.
		and livestock sectors. But, this must be for the sake of	(3) An employee shall receive the payment for 60 days when he/she is
		the employees and their families. And, it also must be	in Alternative Civil Service.
		reasonable/fair.	
		(3) An employee shall receive the payment for 60 days	
		when he/she is in Alternative Civil Service.	
13.2	4	An employer must pay for	The GRGICL company have to pay for

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

13.3	5	If the owner encounters difficulty to pay the wages	The GRGICL company is agreed encounters difficulty to pay the
		according to Section 4 sub-section (c) because of	wages according to Section 4 sub-section (c) because of significant
		significant happenings, including natural disaster, the	happenings, including natural disaster, the company must follow the
		employer must report to the Department with solid	report to the Department.
		evidence that wages will be paid at the mentioned day	
		upon the workers' agreement.	
13.4	7	The Employer	The GRGICL company
		(a) Can deduct from wages for absences except	(a) Can deduct from wages for absences except when such absence
		when such absence is during a public holiday	is during a public holiday or entitled leave, according to the
		or entitled leave, according to the law.	law.
		(b) Accommodation charges and transportation	(b) Accommodation charges and transportation charges, meal
		charges, meal allowances, charges for water	allowances, charges for water and electricity, taxes and errors
		and electricity, taxes and errors in payment	in payment shall be allowed for deduction.
		shall be allowed for deduction.	(c) Can deduct from pre-issued, expensed and saved (or)
		(c) Can deduct from pre-issued, expensed and	contributed amount according to the law upon the employee
		saved (or) contributed amount according to the	contract.
		law upon the employee contract.	(d) The Employer can deduct with the judgment of the Court of
		(d) The Employer can deduct with the judgment	Arbitrator Jury Council.
		of the Court of Arbitrator Jury Council.	

13.5	8	The Employer cannot deduct except the deduction in	The GRGICL company cannot deduct except the deduction in
		accordance with Section 7 and Section 11.	accordance with Section 7 and Section 11.
13.6	9	The total amount of other deductions, except when the	The total amount of other deductions, except when the employee fails
		employee fails to perform their duties, shall not be	to perform their duties, GRGICL company agreed not be more than
		more than 50% of the employee's wages.	50% of the employee's wages.
13.7	10	The Employer must	The GRGICL company must
		(a) According to Section 11 of this Act, get permission	(a) According to Section 11 of this Act, get permission from the
		from the Department concerning "why" and "how"	Department concerning "why" and "how" prior to making deductions
		prior to making deductions from wages.	from wages.
		(b) Permissions stated in sub-section (a) shall be	(b) Permissions stated in sub-section (a) shall be publicly posted.
		publicly posted.	(c) Fines must not exceed the value of damage caused by the action
		(c) Fines must not exceed the value of damage caused	or cost of performance failure of the employee.
		by the action or cost of performance failure of the	(d) According to Section 4 of this Act, when making a specific
		employee.	deduction
		(d) According to Section 4 of this Act, when making a	(1) Do not deduct without allowing an appeal from the Employee.
		specific deduction	(2) Do not deduct more than 5% of the monthly wages.
		(1) Do not deduct without allowing an appeal from the	(e) No deduction is allowed from a worker under 16 years old.
		Employee.	(f) The timeframe for deductions shall be set upon an agreement from
		(2) Do not deduct more than 5% of the monthly wages.	both sides.

		(e) No deduction is allowed from a worker under 16	(g) Deductions shall be carried out within the limited timeframe upon
		years old.	the agreement of the Township Arbitration Council set in accordance
		(f) The timeframe for deductions shall be set upon an	with Law.
		agreement from both sides.	(h) Every deduction must be well documented.
		(g) Deductions shall be carried out within the limited	(i) You must submit a monthly report to the Department concerning
		timeframe upon the agreement of the Township	deductions.
		Arbitration Council set in accordance with Law.	(j) Fines deducted according to Section 11 sub-section (b) must be
		(h) Every deduction must be well documented.	used for the social welfare of the employees upon discussion with a
		(i) You must submit a monthly report to the	registered labor organization
		Department concerning deductions.	
		(j) Fines deducted according to Section 11 sub-section	
		(b) must be used for the social welfare of the	
		employees upon discussion with a registered labor	
		organization	
13.8	11	Employers shall fine for the following actions or	The GRGICL company will fine for the following actions or
		performance failure by the employees	performance failure by the employees
		(a) Direct damage which is either intentional or due	(a)Direct damage which is either intentional or due to negligence or
		to negligence or due to the failure of the employee	due to the failure of the employee concerned with company property
			to take proper care.
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		concerned with company property to take proper	(b)A breach of the employment contract or breech of any rules for
		care.	which a fine had been previously set.
		(b) A breach of the employment contract or breech of	
		any rules for which a fine had been previously set.	
13.9	22	All Employers are not allowed to breach any terms	The GRGICL company is never committed to breach any terms stated
		stated in Sections 4,5,8,9 and 11.	in Sections 4,5,8,9 and 11.
14	The Social	Security Law	·
14.1	48	(a) The employer shall effect insurance by registering	(a) The GRGICL company shall effect insurance by registering for
		for employment injury benefit insurance system	employment injury benefit insurance system contained in section 45
		contained in section 45 at the relevant township social	at the relevant township social security office and pay contribution to
		security office and pay contribution to employment	employment injury benefit fund in accord with stipulations in order
		injury benefit fund in accord with stipulations in order	that workers applied to provisions of compulsory registration may
		that workers applied to provisions of compulsory	obtain the employment injury benefits;
		registration may obtain the employment injury	(b) The GRGICL may effect insurance by registering voluntarily for
		benefits;	insurance of the workers who are not applied to provisions of
		(b) The employers may effect insurance by registering	compulsory registration for employment injury benefit insurance
		voluntarily for insurance of the workers who are not	system, by paying stipulated contribution to employment injury
		applied to provisions of compulsory registration for	benefit insurance fund;
		employment injury benefit insurance system, by	

		paying stipulated contribution to employment injury	(c) When registering to effect insurance for employment injury
		benefit insurance fund;	benefit in accord with sub-sections (a) and (b), the worker shall
		(c) When registering to effect insurance for	submit medical certificate.
		employment injury benefit in accord with sub-sections	
		(a) and (b), the worker shall submit medical certificate.	
14.2	51	The employer:	The GRGICL Company makes a commitment for:
		(a) shall pay contribution monthly to Employment	(a) paying contribution monthly to Employment Injury Benefit Fund
		Injury Benefit Fund at the rates stipulated under	at the rates stipulated under section 50. Moreover, he shall also bear
		section 50. Moreover, he shall also bear the expenses	the expenses for paying as such;
		for paying as such;	(b) paying defaulting fee stipulated under section 88, in addition to
		(b) shall pay defaulting fee stipulated under section 88,	the contribution if fails to contribute after effecting insurance for
		in addition to the contribution if fails to contribute	employment injury benefit.
		after effecting insurance for employment injury	
		benefit.	
14.3	53	(a) The employers and workers shall co-ordinate, co-	The GRGICL company is made this following rule;
		operate and carry out with the Board or insurance	(a) The employers and workers shall co-ordinate, co-operate and
		agent departments in carrying out workers'	carry out with the Board or insurance agent departments in
		occupational safety measures and keeping health	carrying out workers' occupational safety measures and keeping
		plan in order to prevent employment accident, or	health plan in order to prevent employment accident, or

		employment injury or disease contracting and	employment injury or disease contracting and death in addition to
		death in addition to safety and educational work	safety and educational work of the workers.
		of the workers.	(b) The costs of medical care regarding employment injury resulting
		(b) The costs of medical care regarding employment	from criminal action or omission of the employer, or resulting
		injury resulting from criminal action or omission	from employer's failure to keep occupational safety plans and
		of the employer, or resulting from employer's	protections; and other benefits under this Law shall be borne
		failure to keep occupational safety plans and	without fail by the employer in accord with the stipulations.
		protections; and other benefits under this Law	
		shall be borne without fail by the employer in	
		accord with the stipulations.	
14.4	54	(a) The employer shall report to the relevant township	The GRGICL company is made this following rule;
		social security office immediately if a serious	(a) The employer shall report to the relevant township social security
		employment accident occurs to his insured worker.	office immediately if a serious employment accident occurs to his
		There shall not be any delay without sufficient cause	insured worker. There shall not be any delay without sufficient cause
		to report as such.	to report as such.
		(b) A team of officers and other staff who inspect the	(b) A team of officers and other staff who inspect the establishments,
		establishments, if it is found out the employment	if it is found out the employment injury, death, and contracting
		injury, death, and contracting disease, shall report to	disease, shall report to the relevant township social security office in
			accord with the stipulations.

		the relevant township social security office in accord	
		with the stipulations.	
14.5	55	The insured person who, by reason of employment	The GRGICL company must made the insured person who, by reason
		injury, became incapable to work which involves	of employment injury, became incapable to work which involves
		reduction or suspension of earnings; free medical care	reduction or suspension of earnings; free medical care and temporary
		and temporary disability benefit of 70 per cent of	disability benefit of 70 per cent of average wage during four months
		average wage during four months prior to employment	prior to employment accident shall be entitled, commencing from the
		accident shall be entitled, commencing from the date	date of incapacity for work, to a maximum of 12 months upon
		of incapacity for work, to a maximum of 12 months	medical certificate.
		upon medical certificate.	
14.6	56	(a) The temporary disability benefit under section 55	The GRGICL company is committed this following rule;
		shall be terminated from the date on which the insured	(a) The temporary disability benefit under section 55 shall be
		person becomes capable for work within 12 months.	terminated from the date on which the insured person becomes capable
		(b) If an insured person continues to be incapable to	for work within 12 months.
		work after the expiration of 12 months' period of	(b) If an insured person continues to be incapable to work after the
		temporary disability benefit, it shall be converted into	expiration of 12 months' period of temporary disability benefit, it shall
		permanent disability pension.	be converted into permanent disability pension.
		(c) If permanent disability for work of an insured	(c) If permanent disability for work of an insured person can be
		person can be expected by the medical certificate even	expected by the medical certificate even during 12 months while

		during 12 months while temporary disability benefit	temporary disability benefit has been enjoyed, it has the right to
		has been enjoyed, it has the right to terminate the	terminate the temporary disability benefit, convert into permanent
		temporary disability benefit, convert into permanent	disability benefit and enjoy it.
		disability benefit and enjoy it.	
14.7	57	The insured person has the right to enjoy, owing to an	The GRGICL company must be committed to make the insured person
		employment accident, permanent partial disability	has the right to enjoy, owing to an employment accident, permanent
		cash benefit if there is likely to cause partial loss of	partial disability cash benefit if there is likely to cause partial loss of
		capacity for work; or permanent total disability cash	capacity for work; or permanent total disability cash benefit if there is
		benefit if there is likely to cause total loss of capacity	likely to cause total loss of capacity for work. As regards that benefit,
		for work. As regards that benefit, fixation for a month	fixation for a month benefit which may be enjoyed in accord with
		benefit which may be enjoyed in accord with section	section 58 shall be calculated upon 70 per cent of a months' average
		58 shall be calculated upon 70 per cent of a months'	wage during four months before employment injury occurs, in relation
		average wage during four months before employment	to percentage of loss of capacity for work decided by the Medical
		injury occurs, in relation to percentage of loss of	Board.
		capacity for work decided by the Medical Board.	
14.8	58	The person who suffers loss of capacity to work may	The GRGICL company will never committed to breach section 58.
		enjoy permanent disability benefit calculated basing	
		upon 70 per cent of a months' average wage contained	

in section 57, in relation to percentage of loss	of
capacity for work, as specified hereunder:	
(a) in cases in which the degree of incapacity is le	less
than 20 per cent, the right to enjoy monthly ca	ash
benefit entitled to such person for five years in lun	ımp
sum;	
(b) in cases in which the degree of incapacity is abo	ove
20 per cent to 75 per cent, the right to enjoy month	thly
cash benefit entitled to such person for seven years	s in
installment or in lump sum, according to the desire	e of
that person;	
(c) in cases in which the degree of incapacity is abo	ove
75 per cent, the right to enjoy monthly cash bene	efit
entitled to such person for nine years in installment	t or
in lump sum or in monthly installment until deat	ath,
according to the desire of that person;	
(d) if the medical certificate is submitted th	that
permanently disabled person contained in sub-section	tion
(c) requires the constant attendance of another perso	son,
the right to enjoy the supplement of 10 per cent of h	his

		benefit in installment, or in lump sum, or in monthly	
		installment until death, according to the desire of that	
		person, in addition to the benefit contained in sub-	
		section (c).	
14.9	65	The employer:	The GRGICL company will be committed this following rule;
		(a) has the right to reimbursement out of benefits	(a) has the right to reimbursement out of benefits granted under this
		granted under this Law, for payments made as social	Law, for payments made as social obligation for an insured person in
		obligation for an insured person in cases of health care,	cases of health care, medical treatment and other matters entitled to
		medical treatment and other matters entitled to benefit;	benefit;
		(b) if the total amount of wages and cash benefit paid	(b) if the total amount of wages and cash benefit paid to the insured
		to the insured person during a period of sickness	person during a period of sickness benefit, or maternity benefit, or
		benefit, or maternity benefit, or employment injury	employment injury benefit under this Law exceeds the normal wages
		benefit under this Law exceeds the normal wages of	of that insured person; may deduct the amount in excess out of benefits
		that insured person; may deduct the amount in excess	granted under this Law. Such payment of excess amount shall be
		out of benefits granted under this Law. Such payment	informed to the relevant township social security office.
		of excess amount shall be informed to the relevant	
		township social security office.	
14.10	66	(a) The employer, subject to health care and medical	The GRGICL company will be committed this following rule;
		treatment in accord with sections 67 and 68:	

	(i) shall not remove or terminate the insured person	(a) The employer, subject to health care and medical treatment in
	from work or reduce his wage level during the period	accord with sections 67 and 68:
	during which an insured person is enjoying any of the	(i) shall not remove or terminate the insured person from work or
	sickness benefit or maternity benefit or temporary	reduce his wage level during the period during which an insured person
	disability benefit due to employment injury under this	is enjoying any of the sickness benefit or maternity benefit or
	Law;	temporary disability benefit due to employment injury under this Law;
	(ii) shall not reduce or deduct wages and fees of his	(ii) shall not reduce or deduct wages and fees of his worker because of
	worker because of liability for contribution payable	liability for contribution payable under this Law;
	under this Law;	(b) The insured person, as regards his injury due to employer's
	(b) The insured person, as regards his injury due to	violation of restrictions under sub-section (a), may submit the matter
	employer's violation of restrictions under sub-section	to the relevant township social security office for settlement in accord
	(a), may submit the matter to the relevant township	with the stipulations
	social security office for settlement in accord with the	
	stipulations.	
Factory Ac	t	
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13	(1) Every factory and the compound there of shall be	The GRGICL company makes a commitment for this following rule;
13	(1) Every factory and the compound there of shall be kept clean and kept free from effluvia arising from any	The GRGICL company makes a commitment for this following rule; (1) Every factory and the compound there of shall be kept clean and
13	(1) Every factory and the compound there of shall be kept clean and kept free from effluvia arising from any drain, privy or other nuisance, and in particular-	The GRGICL company makes a commitment for this following rule; (1) Every factory and the compound there of shall be kept clean and kept free from effluvia arising from any drain, privy or other nuisance,
	actory Ac	 (i) shall not remove or terminate the insured person from work or reduce his wage level during the period during which an insured person is enjoying any of the sickness benefit or maternity benefit or temporary disability benefit due to employment injury under this Law; (ii) shall not reduce or deduct wages and fees of his worker because of liability for contribution payable under this Law; (b) The insured person, as regards his injury due to employer's violation of restrictions under sub-section (a), may submit the matter to the relevant township social security office for settlement in accord with the stipulations.

(a) Accumulations of dirt and refuse shall be removed	(a) Accumulations of dirt and refuse shall be removed daily by
daily by sweeping or by any	sweeping or by any
other effective method from the floors, benches of	other effective method from the floors, benches of work-rooms and
work-rooms and from stair-cases and passages, and	from stair-cases and passages, and disposed of in a suitable manner;
disposed of in a suitable manner;	(b) The floor of every work-room shall be cleaned at least once a week
(b) The floor of every work-room shall be cleaned at	by washing, using disinfectant where necessary, or by some other
least once a week by washing, using disinfectant	effective method,
where necessary, or by some other effective method,	(c) When there is likelihood of water collecting on the floor in the
(c) When there is likelihood of water collecting on the	course of any manufacturing process, effective means of drainage shall
floor in the course of any manufacturing process,	be provided and maintained;
effective means of drainage shall be provided and	(d) All inside walls and partitions, all ceilings or reverse side of roof
maintained;	of work rooms, all
(d) All inside walls and partitions, all ceilings or	walls, reverse side of roof of passages and all staircases shall either: -
reverse side of roof of work rooms, all	(i) Be kept whitewashed or colourwashed and such washing shall be
walls, reverse side of roof of passages and all	repeated at least once in every twelve months; or
staircases shall either :-	(ii) Where they are painted or varnished, be repainted or revarnished
(i) Be kept whitewashed or colourwashed and such	at least
washing shall be repeated at least once in every twelve	once is every three years. In such cases where they have smooth and
months; or	unwashable surface, they shall at least once in every 12months, be

		(ii) Where they are painted or varnished, be repainted	washed with hot water and soap or other suitable detergent or cleaned
		or revarnished at least	by such other method as may be approved by the Chief Inspector.
		once is every three years. In such cases where they	(e) The dates on which white or colour washing, paintings or
		have smooth and unwashable surface, they shall at	varnishings as required by clause (d) are carried out shall be entered in
		least once in every 12months, be washed with hot	the register prescribed by the President.
		water and soap or other suitable detergent or cleaned	(2) The President may by order exempt any factory or class of factories
		by such other method as may be approved by the Chief	from any of the provisions of sub-section (1) and specify alternative
		Inspector.	methods for keeping the factory in a clean state
		(e) The dates on which white or colour washing,	
		paintings or varnishings as required by clause (d) are	
		carried out shall be entered in the register prescribed	
		by the President.	
		(2) The President may by order exempt any factory or	
		class of factories from any of the provisions of sub-	
		section (1) and specify alternative methods for	
		keeping the factory in a clean state.	
15.2	14	(1) Effective arrangements shall be made in every	The GRGICL company makes a commitment to follow the laws and
		factory for the disposal of wastes and effluences due	regulations approved in section 14.
		to the manufacturing process carried on therein.	
		(2) The President may make rules prescribing the arrangements to be made under subsection	
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		(1) requiring that the arrangements made in	
		accordance with sub-section (1) shall be approved by	
		such authority as may be prescribed.	
15.3	23	In every factory the following shall be securely fenced	The GRGICL company makes a commitment to follow the laws and
		by safe-guards of substantial construction which shall	regulations approved in section 23.
		be constantly maintained and kept in position while	
		the parts of the machinery they are fencing are in	
		motion or in use; -	
		(a) Prime movers; -	
		(i) Every moving part of a prime mover and every	
		flywheel directly connected to a prime mover whether	
		the prime mover or flywheel is in the engine house or	
		not.	
		(ii) The headrace and tailrace of every water –wheel	
		and water turbine.	
		(iii) Every part of an electric generator, motors or	
		rotary converters will not be fenced unless it is in such	

		every person employed or working in the factory as it	
		would be if securely fenced.	
		(b) Transmission machinery; -	
		Every part of transmission machinery unless it is in	
		such position or of such construction as to be as safe	
		to every person employed in the factory as it would be	
		if securely fenced.	
		(c) Other machinery; -	
		(i) Every dangerous part of any other machinery unless	
		it is in such position or of such construction as to be as	
		safe to every person employed or working in the	
		factory as it would be if securely fenced.	
		(ii) Any part of a stock-bar which projects beyond the	
		head-stock of a lathe.	
15.4	37	In respect of any such manufacturing process carried	The GRGICL company makes a commitment to follow the laws and
		on in any factory as may be prescribed, being a process	regulations approved in section 37.

		(a) Risk of injury to the eyes from particles or fragments thrown off in the course of the process, or(b) Risk to the eyes by reason of exposure to excessive light, the President may by rules require that effective screens or suitable goggles shall be provided for the	
		protection of persons employed on, or in the immediate vicinity of, the process.	
15.6	60	(1) No adult worker shall be required to work in a	The GRGICL company makes a commitment to follow the laws and
		factory on a Sunday unless-	regulations approved in section 60.
		(a) he has had or will have a full holiday on one of the	
		three days immediately before or after that Sunday,	
		and	
		(b) the manager of the factory has, before that Sunday	
		or the day substituted therefore, under clause (a),	
		whichever is earlier	
		(i) delivered at the office of the Inspector a notice of	
		his intention to require the worker to work on the	
		Sunday and of the day to be substituted	
		therefore, and	

(i	ii) displayed in the factory a notice to that effect for
no	ot less than 24hours before any of such two days
w	whichever is earlier and until the expiry of such two
da	ays whichever is later. Provided that no substitution
sł	hall be made, which will cause any worker to work
fc	or more than ten consecutive days without a full
ho	oliday.
(2	2) Notices given under sub-section (1) may be
ca	ancelled by a notice delivered at the office of the
Ir	nspector and a notice displayed close to notice of
w	vorking period put up under section67, not later than
th	he day before the Sunday or the holiday to be
ca	ancelled, whichever is earlier.
(3	3) Where in accordance with the provision of sub-
se	ection (1), any worker works on a Sunday and has had
a	holiday on one of the three days immediately before
th	he same, that Sunday shall, for the purpose of
ca	alculating his weekly hours of work, be included in
th	he preceding week.

15.7	73	(1) Where a worker in a factory works for more hours	The GRGICL company makes a commitment to follow the laws and
		than those specified in section 59 and 62,	regulations approved in section 73.
		he shall in respect of the overtime so worked be	
		entitled to be paid at the rate of twice his ordinary rate	
		of wages and shall also be entitled to C.L.A. if any at	
		the usual rate for the days he has so worked overtime.	
		(2) Where workers in a factory are paid on a piece rate-	
		basis, the Chief Inspector, in consultation with the	
		employer concerned and the representative of the	
		workers, shall fix time rates as nearly as possible,	
		equivalent to the average rate of earnings of those	
		workers, and for the purposes of this section, the	
		section, the rates so fixed shall be deemed	
		to be the ordinary rates of wages of those workers.	
		(3) The President may prescribe the registers to be	
		maintained in a factory for the purpose or securing	
		compliance with the provisions of this section.	
		Explanation: - The term "Wages" shall, for the purpose	
		of calculating wages for overtime payable under this	
		section, mean the bare wages without any allowances	

15.8	75	No child who has not completed his thirteen year shall	The GRGICL company makes a commitment to follow the laws and
		be required or allowed to work in any factory	regulations approved in section 75.
16	The Worki	nan's Compensation Act	
16.1	3	(1) If personal injury is caused to a workman by	The GRGICL company makes a commitment to follow the laws and
		accident arising out of and in the course of his	regulations approved in section 3.
		employment, his employer shall be liable to pay	
		compensation in accordance with the provisions of	
		this Chapter : 3 Provided that the employer shall	
		not be so liable in respect of any injury, not	
		resulting in death, caused by an accident which is	
		directly attributable to (i) the workman having	
		been at the time thereof under the influence of	
		drink or drugs, or (ii) the willful disobedience of	
		the workman to an order expressly given, or to a	
		rule expressly framed, for the purpose of securing	
		the safety of workmen, or (iii) the willful removal	
		or disregard by the workman of any safety guard or	
		other device which he knew to have been provided	
		for the purpose of securing the safety of workmen	

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	(2)	If a workman, whilst in the service of an employer	
		in whose service he has been employed for a	
		continuous period of not less than six months in	
		any employment specified in [List A of] 1 2 3	
		Schedule III. contracts any disease specified	
		therein as an occupational disease peculiar to that	
		employment, the contracting of the disease shall be	
		deemed to be an injury by accident within the	
		meaning of this section and, unless the employer	
		proves the contrary, the accident shall be deemed	
		to have arisen out of and in the course of the	
		employment.	
	(3)	If a workman contracts any disease specified in	
		List B of Schedule III. and it is certified by a	
		qualified medical practitioner that the disease is	
		directly due to the nature of any employment in	
		which the workman was employed at any time	
		within the twelve months previous to the date of	
		disablement, the contracting of the disease shall be	
		deemed to be on injury by accident within the	
		uceffied to be an injury by accident within the	

meaning of this section, and unless the employer
proves the contrary the accident shall be deemed to
have arisen out of and in the course of the
employment aforesaid : Provided that the
compensation shall be recoverable front the
employer who last employed the workman during
the said twelve months in the employment to the
nature of which the disease was due.

(4) The President of the Union, after giving, by notification in the Gazette, not less than three months' notice of his intention so to do, may, by a like notification, add any description of employment to the employments specified in [List A of] 2 Schedule III, and shall specify in the case of the employments so added the diseases which shall be deemed for the purposes of this section to be occupational diseases peculiar to those employments respectively, and the provisions of sub-section (2) shall thereupon apply as if such diseases had been declared by this Act to be

	occupational diseases peculiar to those
	employments.
(5)	The President of the Union, after giving, by
	notification, not less than three months' notice of
	his intention to do so. may. by a like notification
	add any diseases to the occupational diseases
	specified in List B of Schedule III. and the
	provisions of sub-section (i) shall thereupon apply
	as if such diseases had been declared by this Act to
	be occupational diseases.
(6)	Save as provided by sub-sections (2) and (i), no
	compensation shall be payable to a workman in
	respect of any disease unless the disease is directly
	attributable to a specific injury by accident arising
	out of and in the course of his employment.
(7)	Nothing herein contained shall be deemed to
	confer any right to compensation on a workman in
	respect of any injury if he has instituted in a civil
	Court a suit for damages in respect of the injury
	against the employer or any other person ; and no

		suit for damages shall be maintainable by a	
		workman in any Court of law in respect of any	
		injury (a) if he has instituted a claim to	
		compensation in respect of the injury before a	
		Commissioner ; or (b) if an agreement has been	
		come to between the workman and his employer	
		providing for the payment of compensation in	
		respect of the injury in accordance with the	
		provisions of. this Act.	
16.2	8	(1) No payment of compensation in respect of a	The GRGICL company makes a commitment to follow the laws and
		workman whose injury has resulted in death, and no	regulations approved in section 8.
		payment of a lump sum as compensation to a woman	
		or a person under a legal disability, shall be made	
		otherwise than by deposit with the Commissioner, and	
		no such payment made directly by an employer shall	
		be deemed to be a payment of compensation :	
		Provided that, in the case of a deceased workman, an	
		employer may make to any depandant advances on	
		account of compensation not exceeding an aggregate	

of one hundred rupees, and so much of such aggregate
as does not exceed the compensation payable to that
depandant shall be deducted by the Commissioner
from such compensation and repaid to the employer.
(2) Any other sum amounting to not less than ten
rupees which is payable as compensation may be
deposited with the Commissioner on behalf of the
person entitled thereto.
(3) The receipt of the Commissioner shall be a
sufficient discharge in respect of any compensation
deposited with him.
(4) On the deposit of any money under sub-section (1)
as compensation in respect of a deceased workman the
Commissioner shall deduct therefrom the actual cost
of the workman's funeral expenses, to an amount not
exceeding twenty-five rupees, and pay the same to
person by whom such expenses were incurred, and
shall, if he thinks necessary. cause notice to be
published or to be served on each depandant in such
manner as he thinks fit. calling upon the depandants to

	appear before him on such date as he may fix for	date as	as he ma	nay fix	for
	determining the distribution of the compensation. If	of the	e comper	ensation.	. If
	the Commissioner is satisfied after any inquiry which	d after a	any inqu	quiry whi	ich
	he may deem necessary, that no depandant exists, he	it no dep	epandant	nt exists,	, he
	shall repay the balance of the money to the employer	ne money	ey to the	e employ	yer
	by whom it was paid. The Commissioner shall, on	Commi	nissioner	er shall,	on
	application by the employer, furnish a statement	ver, furr	rnish a	stateme	ent
	showing in detail all disbursements made.	ements r	s made.		
	(5) Compensation deposited in respect of a deceased	l in respo	pect of a	a deceas	sed
	workman shall, subject to any deduction made under	ny deduc	uction ma	nade und	der
	sub-section (4). be apportioned among the dependants	ned amor	ong the de	dependa	ants
	of the deceased workman or any of them in such	or any	of then	em in su	uch
	proportion as the Commissioner thinks fit, or may, in	oner thin	inks fit, c	, or may,	, in
	the discretion of the Commissioner, be allotted to any	ssioner,	r, be allot	otted to a	any
	one dependant.				
	(6) Where any compensation deposited with the	tion dep	eposited	d with t	the
	Commissioner is payable to any person, the	e to a	any per	erson, 1	the
	Commissioner shall, if the person to whom	the per	person to	to who	om
	compensation is payable is not a woman or a person	not a wo	woman or	or a pers	son

under a legal disability, and may in other cases, pay	
the money to the person entitled thereto.	
(7) Where any lump sum deposited with the	
Commissioner is payable to a woman or a person	
under a legal disability, such sum may be invested,	
applied or otherwise dealt with for the benefit of the	
woman, or of such person during his disability, in such	
manner as the Commissioner may direct: and where a	
half-monthly payment is payable to any person under	
a legal disability, the Commissioner may. of his own	
motion or on an application made to him in this behalf,	
order that the payment be made during the disability	
to any dependant of the workman or to any other	
person whom the Commissioner thinks best fitted to	
provide for the welfare of the workman(fl) Where, on	
application made to him in this behalf or otherwise, the	
Commissioner is satisfied that, on account of neglect	
of children on the part of a parent or on account of the	
variation of the circumstances of any dependant or for	
any other sufficient cause, an order of the	

	Commissioner as to the distribution of any sum paid	
	as compensation, or as to the manner in which any sum	
	payable to any such dependant is to be invested,	
	applied or otherwise dealt with, ought to be varied, the	
	Commissioner may make such orders for the variation	
	of the former order as he thinks just in the	
	circumstances of the case : Provided that no such order	
	prejudicial to any person shall be made unless such	
	person has been given an opportunity of showing	
	cause why the order should not be made, or shall be	
	made in any case in which it would invohe the	
	repayment by a dependant of any sum already paid to	
	him.	
	(9) Where the Commissioner varies any order under	
	sub-section (<s) by="" fact="" of="" of<="" payment="" reason="" td="" that="" the=""><td></td></s)>	
	compensation to any person has been obtained by	
	fraud, impersonation or other improper means, any	
	amount so paid to or on behalf of such person may be	
	recovered in the manner hereinafter provided in	
	section 31.	

17	The Leave and Holidays Act			
17.1	3	(1) Every employee shall be granted by his employer	GRGICL shall be granted by his employer the following public	
		the following public holidays with full wages or pay.	holidays with full wages or pay.	
		(2) If any public falls on any weekly day of rest or on		
		any other holiday, an alternative holiday shall not be		
		allowed, but that weekly day of rest or holiday (as the		
		case may be) on which the public holiday		
18	Public Hea	lth Law		
18.1	10	Any person referred to in section 9(1) under the law	The GRGICL company makes a commitment to follow the laws and	
		to any health and related provisions	regulations approved in section 10.	
		- Failure to comply or		
		- If a violation occurs or		
		- If an attempt is made to commit a crime or		
		- Whether it is knowable or not, there are good		
		reasons- either to violate that law or to violate		
		it.		
		The person to break the law while the company is a		
		corporation. Each person in charge of the company		

		shall be deemed to have committed the offense.	
		Accordingly, such prosecution.	
19	Prevention	and Control of Communicable Diseases Law	
19.1	3	In order to prevent the outbreak of Communicable	In order to prevent the outbreak of Communicable Diseases, the
		Diseases, the Department of Health shall implement	GRGICL makes a commitment to implement the following project
		the following project activities: -	activities: -
		(a) immunization of children by injection or orally	(a) immunization of children by injection or orally
19.2	4	When a Principal Epidemic Disease of a Notifiable	When a Principal Epidemic Disease of a Notifiable Disease occurs; -
		Disease occurs; -	(a) GRGICL shall be undertaken by the Department of Health, in order
		(a) immunization and other necessary measures shall	to control the spread there of;
		be undertaken by the Department of Health, in order	(b) GRGICL shall abide by the measures undertaken by the
		to control the spread there of;	Department of Health under sub-section (a).
		(b) the public shall abide by the measures undertaken	
		by the Department of Health under sub-section (a).	
19.3	11	In order to prevent and control the spread of a	In order to prevent and control the spread of a Principal Epidemic
		Principal Epidemic Disease, the Health Officer may	Disease, the Health Officer may undertake the following measures; -
		undertake the following measures; -	(a) investigation of a patient or any other person required;
		(a) investigation of a patient or any other person	(b) medical examination;
		required;	(c)causing laboratory investigation of stool, urine, sputum and

		(b) medical examination;	blood samples to be carried out;
		(c)causing laboratory investigation of stool, urine,	(d)causing investigation by injection to be carried out;
		sputum and blood samples to be carried out;	(e)carrying out other necessary investigations;
		(d)causing investigation by injection to be carried out;	
		(e) carrying out other necessary investigations;	
20	The Contro	ol of Smoking and Consumption of Tobacco Product Law	W
20.1	9	The person-in-charge shall:	The GRGICL makes a commitment to:
		(a) keep the caption and mark referring that it is a non-	(a) keep the caption and mark referring that it is a non-smoking area at
		smoking area at the place mentioned in section 6 in	the place mentioned in section 6.
		accordance with the stipulations.	(b) arrange the specific place where smoking is allowed as mentioned
		(b) arrange the specific place where smoking is	in section 7, and keep the caption and mark also referring that it is a
		allowed as mentioned in section 7, and keep the	specific place where smoking is allowed.
		caption and mark also referring that it is a specific	(c) supervise and carry out measures so that shall never smoke at the
		place where smoking is allowed, in accordance with	non-smoking area.
		the stipulations.	(d) accept the inspection when the supervisory body comes to the place
		(c) supervise and carry out measures so that no one	for which he is responsible
		shall smoke at the non-smoking area.	
		(d) accept the inspection when the supervisory body	
		comes to the place for which he is responsible	

21	Yangon City Development Committee Laws (2018)			
21.1	322	Prohibition of the cleaning and its operations	Prohibition of the cleaning and its operations	
		(D) Construction work in the city boundaries; business	(D) GRGICL makes a commitment, not to neglect the responsibility of	
		and factories whether own a workshop or not. Do not	taking necessary measures so as not to pollute the environment as a	
		neglect the responsibility of taking necessary	result of our activities.	
		measures so as not to pollute the environment as a	(G) GRGICL shall obey the environmental regulations.	
		result of our activities.		
		(G) Business within the city boundaries; factory who		
		wants to set up the workshop it complies with		
		environmental regulations business, not factory		
		establishment shall be established.		
22	Freshwater	Fisheries Law		
22.1	33	No one shall operate a fishery without a lease license	GRGICL will never operate a fishery without a lease license or	
		or permission issued under this Law	permission issued under this Law	
22.2	34	No one shall do the following in any freshwater	GRGICL will never do the following in any freshwater fisheries	
		fisheries waters: -	waters: -	
		(a) catching fish or causing mischief with explosive	(a) catching fish or causing mischief with explosive substance, poison,	
		substance, poison, chemicals and dangerous material	chemicals and dangerous material of a like nature;	
		of a like nature;	(b) catching fish by a prohibited method and fishing implement;	

		(b) catching fish by a prohibited method and fishing	(c) catching fish of a prohibited species and size;
		implement;	(d) catching fish during a prohibited period and at a prohibited place.
		(c) catching fish of a prohibited species and size;	
		(d) catching fish during a prohibited period and at a	
		prohibited place.	
22.3	35	No one shall, after purchasing by fishery auction or	GRGICL will never, after purchasing by fishery auction or after being
		after being granted tender license fail to pay within the	granted tender license fail to pay within the prescribed period fishery
		prescribed period fishery rent, tender fee, license fee	rent, tender fee, license fee and fines due, without the permission of the
		and fines due, without the permission of the	Department.
		Department.	
22.4	36	No one shall erect, construct, place, maintain or use	GRGICL will never erect, construct, place, maintain or use any
		any obstruction such as a dam, bank or weir in a fresh	obstruction such as a dam, bank or weir in a fresh water fisheries waters
		water fisheries waters without the permission of the	without the permission of the Department.
		Department.	
22.5	37	A person who has obtained permission to operate a	GRGICL who has obtained permission to operate a fishery will not
		fishery shall not violate any condition contained in a	violate any condition contained in a lease, tender license or fishing
		lease, tender license or fishing implement license.	implement license.
22.6	38	No one shall do the following within the boundary of	GRGICL will never do the following within the boundary of a fishery
		a fishery or fishery creek: -	or fishery creek: -

		(a) cutting undergrowth or setting on fire habitate of	(a) cutting undergrowth or setting on fire habitate of fish;
		fish;	(b) impairing the natural condition of a fishery so as to disrupt the flow
		(b) impairing the natural condition of a fishery so as to	of water in the main fishery.
		disrupt the flow of water in the main fishery.	
22.7	39	No one shall cultivate agricultural crops within the	GRGICL will never cultivate agricultural crops within the boundary of
		boundary of a fishery creek.	a fishery creek.
22.8	40	No one shall cause harassment of fish and other	GRGICL will never cause harassment of fish and other aquatic
		aquatic organisms or pollution of the water in a	organisms or pollution of the water in a freshwater fisheries water.
		freshwater fisheries water.	
22.9	41	No one shall alter the quality of water, volume of water	GRGICL will never alter the quality of water, volume of water or the
		or the water-course in a leasable fishery, reserved	water-course in a leasable fishery, reserved fishery and creeks
		fishery and creeks contiguous thereto or in water-	contiguous thereto or in water-courses.
		courses.	
23	The Conse	rvation of Water Resources and Rivers Law	
23.1	8	No person shall:	GRGICL will never:
		(a) carry out any act or channel shifting with the aim	(a) carry out any act or channel shifting with the aim to ruin the water
		to ruin the water resources and rivers and creeks.	resources and rivers and creeks.
23.2	11	No person shall:	GRGICL will never:

		(a) dispose of engine oil, chemical, poisonous	(a) dispose of engine oil, chemical, poisonous material and other
		material and other materials which may cause	materials which may cause environmental damage, or dispose of
		environmental damage, or dispose of explosives from	explosives from the bank or from a vessel which is plying, vessel which
		the bank or from a vessel which is plying, vessel which	has berthed, anchored, stranded or sunk.
		has berthed, anchored, stranded or sunk.	(b) catch aquatic creatures within river-creek boundary, bank
		(b) catch aquatic creatures within river-creek	boundary or waterfront boundary with poisonous materials or
		boundary, bank boundary or waterfront boundary with	explosives.
		poisonous materials or explosives.	(c) dispose of disposal soil and other materials from panning for gold,
		(c) dispose of disposal soil and other materials from	gold mineral dredging or resource production in the river and creek,
		panning for gold, gold mineral dredging or resource	into the river and creek or into the water outlet gully which can flow
		production in the river and creek, into the river and	into the river and creek
		creek or into the water outlet gully which can flow into	
		the river and creek.	
23.3	19	No one shall dispose of any substance into the river-	GRGICL makes a commitment to never dispose of any substance into
		creek that may cause damage to waterway or change	the river-creek that may cause damage to waterway or change of
		of watercourse from the bank or vessel which is	watercourse from the bank or vessel which is plying, vessel which has
		plying, vessel which has berthed, anchored, stranded	berthed, anchored, stranded or sunk.
		or sunk.	
23.4	21	No one shall:	GRGICL will never:

		(b) drill well or pond or dig earth without the	(b) drill well or pond or dig earth without the permission of the
		permission of the Directorate.	Directorate.
23.5	22	No one shall, without the permission of the	GRGICL will never, without the permission of the Directorate, pile
		Directorate, pile sand, shingle and other heavy	sand, shingle and other heavy materials for business purposes in the
		materials for business purposes in the bank area and	bank area and waterfront area.
		waterfront area.	
23.6	24	No one shall:	GRGICL will never:
		(b) violate the conditions prescribed by the Directorate	(b) violate the conditions prescribed by the Directorate so as not to
		so as not to cause water pollution and change of	cause water pollution and change of watercourse in rivers and creeks.
		watercourse in rivers and creeks.	
24	Boiler Act		
24.1	12	The owner shall:	GRGICL makes a commitment to:
		(a) apply to the respective inspector to obtain	(a) apply to the respective inspector to obtain certificate in accord with
		certificate in accord with the prescribed manner;	the prescribed manner;
		(b) apply to register only for the boiler constructed in	(b) apply to register only for the boiler constructed in accord with
		accord with Myanmar standards or international	Myanmar standards or international standards;
		standards;	(c) the prescribed fee shall be paid when the application is made
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		(c) the prescribed fee shall be paid when the	under sub-section (a).

24.2	13	The owner shall:	GRGICL makes a commitment to:
		(a) apply to the respective inspector to renew	(a) apply to the respective inspector to renew certificate in accord with
		certificate in accord with the prescribed manner for a	the prescribed manner for a boiler of which the use certificate is void;
		boiler of which the use certificate is void;	(b) The prescribed fee shall be paid when application is made under
		(b) The prescribed fee shall be paid when application	sub section (a).
		is made under sub section (a).	
24.3	14	The owner shall apply to the respective inspector in	GRGICL makes a commitment to apply to the respective inspector in
		advance in order to obtain permission though he or she	advance in order to obtain permission though he or she has obtained
		has obtained the certificate or the provisional order if	the certificate or the provisional order if desirous to carry out any of
		desirous to carry out any of the following matters:	the following matters:
		(a) using of the boiler at more than allowable	(a) using of the boiler at more than allowable pressure;
		pressure;	(b) repairing, altering, adding or renewing any steam-pipe, feed-pipe
		(b) repairing, altering, adding or renewing any	or any mounting or other fitting attached to such steam pipe, feed-
		steam-pipe, feed-pipe or any mounting or other	pipe or mounting or other fitting attached to the boiler.
		fitting attached to such steam pipe, feed-pipe or	
		mounting or other fitting attached to the boiler.	
24.4	18	The owner shall inform immediately to the inspector	GRGICL will inform immediately to the inspector if any accident
		if any accident occurs	occurs
24.5	19	The owner shall not:	GRGICL makes a commitment not to:

		(a) use a boiler at a pressure higher than allowable	(a) use a boiler at a pressure higher than allowable pressure;
		pressure;	(b) repair and alter or force to repair and alter the safety valve to
		(b) repair and alter or force to repair and alter the	exceed allowable pressure;
		safety valve to exceed allowable pressure;	(c) do any act contained in sub-section (b) of section 14 without
		(c) do any act contained in sub-section (b) of section	permission
		14 without permission.	
24.6	20	The owner shall not use the following boiler:	GRGICL will not use the following boiler:
		(a) boiler without certificate or provisional order;	(a) boiler without certificate or provisional order;
		(b) boiler of which certificate or provisional order is	(b) boiler of which certificate or provisional order is void;
		void;	(c) boiler of which certificate or provisional order is revoked.
		(c) boiler of which certificate or provisional order is	
		revoked.	
24.7	21	The owner shall engrave the register number	GRGICL will engrave the register number specified by the chief
		specified by the chief inspector in accord with the	inspector in accord with the prescribed manner
		prescribed manner.	
24.8	22	The owner:	GRGICL
		(a) has the right to use a boiler in accord with the	(a) has the right to use a boiler in accord with the prescribed manner if
		prescribed manner if he or she obtains certificate or	he or she obtains certificate or provisional order;
		provisional order;	

		(b) may, if desirous to alter the term of the certificate	(b) may, if desirous to alter the term of the certificate or provisional
		or provisional order, apply in advance for inspection	order, apply in advance for inspection before the expiry of the term of
		before the expiry of the term of such certificate or	such certificate or provisional order.
		provisional order	
24.9	24	The owner shall not:	GRGICL will not:
		(a) carry out with the person who has not boiler	(a) carry out with the person who has not boiler repairer certificate on
		repairer certificate on the receipt of notice to repair,	the receipt of notice to repair, alter, add or renew any boiler, steam-
		alter, add or renew any boiler, steam-pipe, feed-pipe	pipe, feed-pipe or any mounting or other fitting attached to such boiler,
		or any mounting or other fitting attached to such	steam-pipe and feed-pipe;
		boiler, steam-pipe and feed-pipe;	(b) assign any person to charge the boiler used in the work except the
		(b) assign any person to charge the boiler used in the	person who operates and maintains the boiler.
		work except the person who operates and maintains	
		the boiler.	
24.10	64	The owner who fails to comply with any provision	GRGICL would be complied with any provision contained in sub-
		contained in sub-section (a) of section 19 and section	section (a) of section 19 and section 20 shall, on conviction, be
		20 shall, on conviction, be punished with a fine from	punished with a fine from a minimum of five hundred thousand kyats
		a minimum of five hundred thousand kyats to a	to a maximum of ten hundred thousand kyats.
		maximum of ten hundred thousand kyats.	
1	1		

24.11	65	The owner who fails to comply with any provision	GRGICL would be complied with any provision contained in section
		contained in section 18,	18, sub-sections (b) and (c) of section 19, section 21 and sub-section
		sub-sections (b) and (c) of section 19, section 21 and	(a) of section 24 shall, on conviction, be punished with a fine from a
		sub-section (a) of section 24 shall, on conviction, be	minimum of five hundred thousand kyats to a maximum of ten hundred
		punished with a fine from a minimum of five hundred	thousand kyats.
		thousand kyats to a maximum of ten hundred	
		thousand kyats.	
24.12	66	The owner who fails to comply with the provision	GRGICL would be complied with the provision contained in sub-
		contained in sub-section	section (b) of section 24 shall, on conviction, be punished with a fine
		(b) of section 24 shall, on conviction, be punished	from a minimum of one hundred thousand kyats to a maximum of two
		with a fine from a minimum of one hundred thousand	hundred thousand kyats
		kyats to a maximum of two hundred thousand kyats	
25	Electricity	law	
25.1	46	No person shall operate the electrical installation and	The GRGICL wouldn't operate the electrical installation and repair
		repair without obtaining the electrical professional	without obtaining the electrical professional certificate
		certificate.	
25.2	47	No person shall operate the generation, transmission,	The GRGICL wouldn't operate the generation, transmission,
		connection of electric power without obtaining the	connection of electric power without obtaining the electrical safety
		electrical safety certificate.	certificate

25.3	50	No permit holder shall sell, mortgage, lease, exchange or transfer by any other means the permit the whole or any part of the business contained in the permit without the approval of the relevant Government department or Government organization which has issued the permit.	The GRGICL company shouldn't be committed to breach section 50.
25.4	56	Whoever violates the prohibition contained in section 46 shall, on conviction, be punished with fine from a minimum of fifty thousand kyats to a maximum of three hundred thousand kyats.	The GRGICL company wouldn't be committed to breach section 56
25.5	57	Whoever violates the prohibition contained in section 47 shall, on conviction, be punished with fine from a minimum of three hundred thousand kyats to a maximum of one million kyats	The GRGICL company wouldn't be committed to breach section57
25.6	60	Any permit holder who violates the prohibition contained in section 50 shall, on conviction, be punished with fine from a minimum of one hundred thousand kyats to a maximum of five hundred thousand kyats. If he violates subsequently such	The GRGICL company wouldn't committed to breach section 60

		offence, he shall be punished with imprisonment	
		from a minimum of one year to a maximum of three	
		years and shall also be liable to a fine	
26	Fire Bridge	e Law	
26.1	24	No person shall fail to abide by the directives of fire	GRGICL wouldn't fail to abide by the directives of fire safety issued
		safety issued under section 16 by the head of the	under section 16 by the head of the relevant Township Department of
		relevant Township Department of Fire Services.	Fire Services.
26.2	25	The owner or manager of the factory, workshop, bus	GRGICL will, in accord with the directive of the Department of Fire
		terminal, airport, port, hotel, motel, lodgings,	Services:
		condominium, market, department, organization or	(a) not fail to form the Reserve Fire Brigade;
		business exposed to fire hazard shall, in accord with	(b) not fail to provide fire safety equipment.
		the directive of the Department of Fire Services:	
		(a) not fail to form the Reserve Fire Brigade;	
		(b) not fail to provide fire safety equipment.	
26.3	30	No person shall remove, clear or transfer the evidence	GRGICL wouldn't remove, clear or transfer the evidence from the
		from the specified area of the place razed by fire	specified area of the place razed by fire before the place of starting fire
		before the place of starting fire on and cause of fire are	on and cause of fire are inspected confirmed by whom it concerns
		inspected confirmed by whom it concerns	

26.4	31	No person shall form, reorganize or dissolve the	GRGICL wouldn't form, reorganize or dissolve the Auxiliary Fire
		Auxiliary Fire Brigade without the direction or	Brigade without the direction or permission of the Department of Fire
		permission of the Department of Fire Services.	Services.
26.5	32	No person shall form or dissolve the Reserve Fire	GRGICL wouldn't form or dissolve the Reserve Fire Brigade without
		Brigade without the direction or permission of the	the direction or permission of the Department of Fire Services.
		Department of Fire Services.	
27	Prevention	of Hazard from Chemical and Related Substances Law	
27.1	33	No one shall produce, treat and formulate, use,	GRGICL will never produce, treat and formulate, use, possess, store,
		possess, store, distribute, sell, transport, import or	distribute, sell, transport, import or export the chemical or related
		export the chemical or related substances prohibited	substances prohibited by the Central Leading Board.
		by the Central Leading Board.	
27.2	34	No one shall operate the chemical and related	GRGICL will never operate the chemical and related substances
		substances business without licence.	business without licence.
27.3	35	No one shall use the chemical or the related substances	GRGICL will never use the chemical or the related substances which
		which are unregistered or annulled from the registered	are unregistered or annulled from the registered list or not met to the
		list or not met to the quality and norm in the chemical	quality and norm in the chemical and related substance business.
		and related substance business.	
28	Automobil	e Law	

28.1	45	No one is allowed to drive, request someone to drive,	GRGICL will not be allowed to drive, request someone to drive, or
		or park, motor vehicles in public places under the	park, motor vehicles in public places under the following conditions:
		following conditions:	(a) The motor vehicle is not registered.
		(a) The motor vehicle is not registered.	(b) The registration has been suspended, revoked or expired; the
		(b) The registration has been suspended, revoked or	registration card is not displayed.
		expired; the registration card is not displayed	(c) The registration card has been revoked or is expired.
		(c) The registration card has been revoked or is	
		expired.	
28.2	46	No one is allowed to drive, or allow to drive, motor	GRGICL will not be allowed to drive, or allow to drive, motor vehicles
		vehicles in public places without risk insurance for	in public places without risk insurance for others. This prohibition does
		others. This prohibition does not extend to passengers.	not extend to passengers.
28.3	47	(a) No one is allowed to drive a motor vehicle in public	The GRGICL will comply the section 47.
		places without carrying the driving license with	
		him/her.	
		(b) No one is allowed to drive a motor vehicle in public	
		places without a driving license.	
		(c) The owner of, and the person responsible for, a	
		motor vehicle is not allowed to give permission to	
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		someone without a driving license to drive in public	
		places.	
28.4	48	No one is allowed to drive, or allow to drive, a motor	The GRGICL is not allowed to drive, or allow to drive, a motor vehicle
		vehicle in public places if the vehicle does not match	in public places if the vehicle does not match with the drivable types
		with the drivable types as recorded in the driving	as recorded in the driving license.
		license.	
28.5	49	No one is allowed to do the following in public places:	The GRGICL is not allowed to do the following in public places:
		(a) Driving above the speed limit or below the	(a) Driving above the speed limit or below the minimum speed.
		minimum speed.	(b) Driving a motor vehicle which endangers others.
		(b) Driving a motor vehicle which endangers others.	(c) Driving a motor vehicle after the consumption of narcotic drugs or
		(c) Driving a motor vehicle after the consumption of	alcohol.
		narcotic drugs or alcohol.	
28.6	50	No one is allowed:	The GRGICL is not allowed:
		(a)To operate a business of manufacturing, selling or	(a)To operate a business of manufacturing, selling or equipping motor
		equipping motor vehicles without a business license.	vehicles without a business license.
		(b)To operate a business of maintaining or repairing	(b)To operate a business of maintaining or repairing motor vehicles
		motor vehicles without a business license	without a business license.
28.7	51	No one is allowed to offer motor vehicle driving	The GRGICL is not allowed to offer motor vehicle driving training
		training without business driving license.	without business driving license

28.8	52	No one is allowed to operate a private business of	The GRGICL isn't allowed to operate a private business of inspecting
		inspecting motor vehicles without a business license	motor vehicles without a business license.
28.9	53	No one is allowed to do the following:	The GRGICL company will be complied described in section 53
		(a) Making a motor vehicle registration number plate	
		undistinguishable.	
		(b) [Altering] a motor vehicle registration number	
		plate so that it can be confused [with others].	
		(c) Using a fake motor vehicle registration number	
		plate on the vehicle.	
28.10	54	No one is allowed to do the following:	The GRGICL company will be complied described in section 54
		(a)Working as a motor vehicle assistant without	
		assistant permit.	
		(b)Driving a motor vehicle while in an inappropriate	
		mental or physical state.	
		(c)Driving a motor vehicle loaded above the loading	
		capacity.	
		(d)Failing to wear a helmet while driving a motor-	
		cycle.	

		(e)Failing to wear a safety belt while driving vehicles;	
		this includes passengers.	
		(f)Driving a motor vehicle in places reserved for	
		pedestrians.	
		(g)Changing, without legal permission or reasons	
		backed up by evidence, the original type of a vehicle,	
		its main parts, or the facts in a motor vehicle inspection	
		certificate.	
		(h)Driving a motor-cycle without back mirror or	
		silencer over the shock absorber.	
28.11	55	The law prohibits anyone who has motor vehicle from	The GRGICL company will be complied described in section 54
		doing the following:	
		(a) Failing to request to change the name of the	
		registered person within 30 days starting from the date	
		of selling or transferring the motor vehicle from one	
		owner to another.	
		(b) Failing to request to change the name of the	
		registered person within 30 days starting from the date	

		of the inheritance if the motor vehicle has been	
		inherited.	
		(c) Describing wrong facts, changing or excluding the	
		real facts in a motor vehicle sale and transfer contract	
		when applying to change the registered person.	
28.12	56	No one is allowed to use, or request to use, an official	The GRGICL will not be allowed to use, or request to use, an official
		document for one motor vehicle if this document was	document for one motor vehicle if this document was given by the
		given by the administration department for another	administration department for another vehicle.
		vehicle.	
28.13	57	No one is allowed to drive, or work as an assistant, by	The GRGICL will not be allowed to drive, or work as an assistant, by
		using the driving license or assistant permit of another	using the driving license or assistant permit of another person.
		person.	
29	Foreign Inv	vestment Law	
29.1	17	The duties of investor are as follows:	The GRGICL will be complied described in section 17 of the Foreign
		(a) To abide by the existing law of the Republic of the	Investment Law.
		Union of Myanmar.	
		(b) To form the company and do business as per the	
		existing law.	

(c) To follow the law rules, procedures, notification,	
order, directive and condition of the permit.	
(d) To utilize the land rented or granted by the	
commission as per designated conditions and the	
condition of the contract.	
(e) To sublet mortgage, transfer share and transfer of	
business to the other individual, during the term of	
business, for the invested activities, the land and	
buildings allowed by the approval, with the approval	
of the commission.	
(f) Not to change the significant topography and the	
formation of the land permitted to utilize without the	
approval of commission.	
(g) To report to the commission at once when the	
mineral resources or antique material or treasure trove	
not permitted in the contract on and the underground	
of the land permitted to utilize, if permitted by the	
commission work may continue on the said land,	
otherwise move to a substituted land that may request	
by the investor.	

(h) To perform not to affect environmental pollution
and spoilage as per existing law in connection with the
investment activities.
(i) If all share of foreign investment company is
transferred to citizen or a foreigner outright, the prior
permit shall be taken from the commission and the
approval permit is returned only then the share transfer
shall be registered as per existing law.
(j) If some share of foreign investment company is
transferred to citizen or a foreigner outright, the prior
permit shall be taken from the commission and the
approval permit is returned only then the share transfer
shall be registered as per existing law.
(k) To transfer the high-tech competency technology
functioned by him to the concerning works department
or organization systematically as per the provision of
the contract.
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		(d) When recruiting labour, it may be exercised from	
		the government labour exchange or internal labour	
		agencies at the discretion of the investor.	
		(e) When appointing citizen skilled workers,	
		technicians and employee the appointment contract	
		shall be signed between employer and employee as per	
		the existing the labour law and rules.	
		(f) Shall arrange salary standard without segregation	
		the citizen employee shall be provided the same as	
		foreigner employee as proportionate division of	
		professional level.	
29.5	25	The foreigner working at the investment activities	The GRGICL will be complied described in section 25 of the Foreign
		with approval shall apply to the commission for the	Investment Law.
		work permit and stay permit issued by the state.	
29.6	26	The investor –	The GRGICL will be complied described in section 26 of the Foreign
		(a) Shall sign the appointment agreement as	Investment Law.
		designated when employing staff and labour.	
		(b) Shall perform to get the right as per existing labour	
		law and rules including minimum wages in salary,	
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	leave, holiday, overtime charges, grievances,	
	compensation, social security and other labour related	
	insurance, when defining rights in duties of the	
	employer and employee under the appointment	
	agreement and conditions of works.	
	(c) The disputes arising amount employer, employee,	
	employer and employee, workers and technicians or	
	among the staff shall be settled according to existing	
	law.	
39	The investor has the right to remit abroad, through the	The GRGICL will be complied described in section 39 of the Foreign
	foreign bank in the country according to the exchange	Investment Law.
	rate of the concerning foreign currency –	
	(a) The foreign currency entitled by the investor of	
	foreign currency.	
	(b) The foreign currency approved by the commission	
	to with draw by the foreign capital carrier.	
	(c) The net profit after deducting taxes and funds from	
	39	leave, holiday, overtime charges, grievances, compensation, social security and other labour related insurance, when defining rights in duties of the employer and employee under the appointment agreement and conditions of works. (c) The disputes arising amount employer, employee, employer and employee, workers and technicians or among the staff shall be settled according to existing law.39The investor has the right to remit abroad, through the foreign bank in the country according to the exchange rate of the concerning foreign currency – (a) The foreign currency entitled by the investor of foreign currency. (b) The foreign currency approved by the commission to with draw by the foreign capital carrier. (c) The net profit after deducting taxes and funds from

		(d) Due remaining money after deducting taxes and	
		reserving living expenses from the salary and	
		allowance received by the foreign employee.	
29.8	40	The investor –	The GRGICL will be complied described in section 40 of the Foreign
		(a) Can remit abroad through any foreign bank	Investment Law.
		according to exchange rate of the concerning currency.	
		(b) Shall exercise the monetary matters of works by	
		opening foreign currency bank account or kyat	
		currency bank account and the currency accepted by	
		the foreign bank and Myanmar.	
29.9	43	If any dispute arises out of investment activities	The GRGICL will be complied described in section 43 of the Foreign
		(a) The disputes among personal shall be amicably	Investment Law.
		settled.	
		(b) Unless settled by subsection (a)	
		(1) Unless method of solution is included in the	
		contract, the existing laws of the country shall be	
		followed. (2) If method of solution is stipulated in the	
		contract, the said method of solution shall be followed.	

30.1	7	The investor does not require applying for a permit	The GRGICL will be complied described in section 7 of the Myanmar
		under subsection (d) of section 36 of the Law in the	Investment Rule.
		following circumstances:	
		(a) leasing or receiving a license for the land or	
		building for a term of 5 years or less;	
		(b) sub-leasing such state-owned land or building by	
		the investor from any of the following persons in a	
		manner permitted under lease agreement, agreement	
		or other agreement:	
		(i) a person who has previously obtained the right to	
		use the stateowned land or buildings from the	
		government department and government organization	
		in accordance with the laws of the Union, including	
		the Law; and	
		(ii) a person authorized to sub-lease or sub-license the	
		state-owned land or building in accordance with the	
		approval of the government department and	
		government organization.	

30.2	28	A person who desires to invest may submit an	The GRGICL will be complied described in section 28 of the Myanmar
		investment screening application to the Commission	Investment Rule.
		for non-binding guidance on the kinds of the following	
		proposed investments:	
		(a) businesses required to submit a proposal to the	
		Commission under section 36 of the Law;	
		(b) businesses likely to be submitted to the Pyidaungsu	
		Hluttaw for approval under section 46 of the Law;	
		(c) investment activities restricted under section 42 of	
		the Law and its related notification;	
		(d) investment activities involved in investment	
		promoted sectors; or	
		(e) investment activities prohibited under section 41 of	
		the Law.	
30.3	29	In the investment screening application, the investor	The GRGICL will be complied described in section 29 of the Myanmar
		shall:	Investment Rule.
		(a) fully disclose the nature of the investment;	

		(b) disclose all information which appropriate person	
		may consider in the assessment of the Commission;	
		and	
		(c) right fully disclose information	
30.4	96	Where the investor makes investment in more than one	The GRGICL will be complied described in section 96 of the Myanmar
		zone;	Investment Rule.
		(a) the zone in which more than 65% of the value of	
		the investment is invested shall be deemed as the	
		location of investment.	
		(b) if more than 65% of the total value of the	
		investment is invested in:	
		(1) zone 1 and zone 2, the investment shall be deemed	
		to be in zone 2;	
		(2) zone 2 and zone 3, the investment shall be deemed	
		to be in zone 3; and	
		(3) zone 1 and zone 3, the investment shall be deemed	
		to be in zone 3.	
30.5	113	Before to the investor enjoys benefits of any tax	The GRGICL will be complied described in section 113 of the
		exemption or relief under sections 75 and 78 of the	Myanmar Investment Rule.

		Law, the investor shall apply the Internal Revenue	
		Department to accept the tax assessment for the	
		relevant assessment year.	
30.6	116	The investor who is in the application process or has	The GRGICL will be complied described in section 116 of the
		already obtained the permit or endorsement may	Myanmar Investment Rule.
		submit the land use application for investment.	
30.7	117	The following facts shall be included at least in the	The GRGICL will be complied described in section 117 of the
		land use application and the Commission may request	Myanmar Investment Rule.
		the other necessary facts from the investor;	
		(a) area, type and location of the land or buildings;	
		(b) the facts relating to the owners of the land or	
		buildings;	
		(c) recommendation or similar document or	
		permission obtained from Region or State	
		Government, the government department or	
		government organization to approve the change of	
		land use to perform investment;	
		(d) whether investors require to make significantly	
		alteration of topography or elevation of the proposed	

		land according to the subsection (f) of section 65 or	
		not;	
		(e) the period for right to use the proposed land; and	
		(f) the land or buildings lease agreements (draft).	
30.8	157	The investor may also submit an endorsement	The GRGICL will be complied described in section 157 of the
		application to the Commission as well as Region or	Myanmar Investment Rule.
		State Committee for investments that the Region or	
		State Committees can be issued endorsement under	
		rule 155.	
30.9	170	The investor shall deliver the notice to the Investment	The GRGICL will be complied described in section 170 of the
		Assistance Committee if he has a grievance or dispute	Myanmar Investment Rule.
		matters relating to the following facts:	
		(a) a decision made incorrectly by the government	
		department and government organization relating to	
		the investment;	
		(b) wrongfully refusal on the application to obtain the	
		permit and license, to register or to obtain approval, by	
		the government department and government	
		organization; or	
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		(c) causing any legal right, protection or approval	
		void.	
31	Occupation	hal Safety and Health Law	
31.1	26	The Employer shall be responsible to: -	GRGICL will be followed to: -
		(a) arrange as required to assess the risks of	(a) arrange as required to assess the risks of Workplace, Process and
		Workplace, Process and machines and materials used	machines and materials used thereat;
		thereat;	(b) arrange as required to assess the likelihood of occurrence of hazards
		(b) arrange as required to assess the likelihood of	at the Workplace and to the environment;
		occurrence of hazards at the Workplace and to the	(c) arrange to have Workers medical checked-up by the Recognized
		environment;	Doctor in accordance with stipulations whether they suffer from any
		(c) arrange to have Workers medical checked-up by	Occupational Disease;
		the Recognized Doctor in accordance with stipulations	(d) arrange to improve the Workplace until it is safe and good for health
		whether they suffer from any Occupational Disease;	based on the findings as per sub-sections (a), (b) and (c);
		(d) arrange to improve the Workplace until it is safe	(e) provide Workers with sufficient number of personal protective
		and good for health based on the findings as per sub-	clothing, materials and facilities prescribed and approved by the
		sections (a), (b) and (c);	Department on free of charge basis and cause Workers to wear them
		(e) provide Workers with sufficient number of	while working;
		personal protective clothing, materials and facilities	(f) prescribe precautionary plans and plans for emergency;
		prescribed and approved by the Department on free of	
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charge basis and cause Workers to wear them while	(g) provide a clinic, appoint the Registered Doctors and nurses and
working;	provide medicines and supporting equipment for any
(f) prescribe precautionary plans and plans for	Industry/Business where the number of Workers is not less than the
emergency;	number determined by the Ministry;
(g) provide a clinic, appoint the Registered Doctors	(h) make necessary arrangements for managers, Workers and members
and nurses and provide medicines and supporting	of the Occupational Safety and Health Committee including
equipment for any Industry/Business where the	(Employer) himself/herself to attend Occupational Safety and Health
number of Workers is not less than the number	training courses stipulated by the Ministry in accordance with their
determined by the Ministry;	departments or types of work;
(h) make necessary arrangements for managers,	(i) make necessary arrangements to enable immediate reporting to the
Workers and members of the Occupational Safety and	Person In-charge for Occupational Safety and Health or manager in
Health Committee including (Employer)	case where a Worker suffers an Occupational Accident or his/her life
himself/herself to attend Occupational Safety and	or health is likely to be in danger;
Health training courses stipulated by the Ministry in	(j) arrange to prevent any persons in the Workplace from Occupational
accordance with their departments or types of work;	Safety and Health risks occurred due to materials, machines or wastes
(i) make necessary arrangements to enable immediate	used in the Workplace or Process;
reporting to the Person In-charge for Occupational	(k) immediately stop the Process, evacuate Workers and conduct
Safety and Health or manager in case where a Worker	necessary rescue plans if any Occupational Accident is about to occur.
suffers an Occupational Accident or his/her life or	If possible, Workers will be relocated to another appropriate safe
health is likely to be in danger;	Workplaces;

(j) arrange to prevent any persons in the Workplace	(1) display Occupational Safety and Health instructions, danger signs,
from Occupational Safety and Health risks occurred	notices, posters and signage for directions in accordance with
due to materials, machines or wastes used in the	stipulations;
Workplace or Process;	(m) arrange to be complied with precautions when entering restricted
(k) immediately stop the Process, evacuate Workers	hazardous Workplaces;
and conduct necessary rescue plans if any	(n) arrange to disseminate Occupational Safety and Health manuals
Occupational Accident is about to occur. If possible,	and guidelines issued by the relevant Ministries for knowledge,
Workers will be relocated to another appropriate safe	technology, information and skills not only to Workers but also to
Workplaces;	related persons or raise their awareness or knowledge thereof;
(1) display Occupational Safety and Health	(o) lay down the fire safety plan, perform fire drilling and train
instructions, danger signs, notices, posters and signage	Workers to use fire extinguishers systematically;
for directions in accordance with stipulations;	(p) allow the Chief Inspection Officer and Inspection Officers to enter
(m) arrange to be complied with precautions when	Workplaces, inquire, request documents and information or seize
entering restricted hazardous Workplaces;	exhibits;
(n) arrange to disseminate Occupational Safety and	(q) cause Workers to work only for the specified working hours if they
Health manuals and guidelines issued by the relevant	have to work in Hazardous Industry/Business and Workplace; and
Ministries for knowledge, technology, information	(r) Incur the expenses for Occupational Safety and Health matters.
and skills not only to Workers but also to related	
persons or raise their awareness or knowledge thereof;	

		(o) lay down the fire safety plan, perform fire drilling	
		and train Workers to use fire extinguishers	
		systematically;	
		(p) allow the Chief Inspection Officer and Inspection	
		Officers to enter Workplaces, inquire, request	
		documents and information or seize exhibits;	
		(q) cause Workers to work only for the specified	
		working hours if they have to work in Hazardous	
		Industry/Business and Workplace; and	
		(r) Incur the expenses for Occupational Safety and	
		Health matters.	
31.2	27	No Employer shall dismiss or demote a Worker: -	GRGICL will never dismiss or demote a Worker: -
		(a) during any period before a medical certificate is	(a) during any period before a medical certificate is issued by the
		issued by the Registered Doctor for occupational	Registered Doctor for occupational injury or by the Recognized Doctor
		injury or by the Recognized Doctor for contact with	for contact with Occupational Disease;
		Occupational Disease;	(b) because the said Worker has addressed a complaint for hazardous
		(b) because the said Worker has addressed a complaint	or health detrimental condition;
		for hazardous or health detrimental condition;	(c) because the said Worker has conducted the responsibilities of
			Occupational Safety and Health Committee; or

		(c) because the said Worker has conducted the	(d) because the said Worker has refused to work in any condition where
		responsibilities of Occupational Safety and Health	an Occupational Accident or Occupational Disease is about to occur.
		Committee; or	
		(d) because the said Worker has refused to work in any	
		condition where an Occupational Accident or	
		Occupational Disease is about to occur.	
31.3	28	If any Worker who has been injured due to an	If any Worker who has been injured due to an Occupational Accident
		Occupational Accident or contacted with	or contacted with Occupational Disease is not covered under the Social
		Occupational Disease is not covered under the Social	Security Law 2012, GRGICL must pay for medical expenses to check
		Security Law 2012, the Employer must pay for	the extent of capacity reduction and class of disability of such Worker
	medical expenses to check the extent of capacity		
		reduction and class of disability of such Worker	
31.4	29	The Employer: -	The GRGICL: -
		(a) can prohibit or restrict any Worker to work if	(a) will prohibit or restrict any Worker to work if he/she does not meet
		he/she does not meet the health standards due to	the health standards due to medical check-up results done by the
		medical check-up results done by the Registered	Registered Doctor in accordance with the needs and nature of the
		Doctor in accordance with the needs and nature of the	Industry/Business;
		Industry/Business;	(b) will, without delay, employ any Worker who has been prohibited
			or restricted to work subject to sub-section (a) in his/her original

		(b) must, without delay, employ any Worker who has	position or at the relevant Workplace upon his/her submission of health	
		been prohibited or restricted to work subject to sub-	improvement evidence; and	
		section (a) in his/her original position or at the relevant	(c) will make necessary arrangements in the Workplace in order not to	
		Workplace upon his/her submission of health	damage health of female Workers who are pregnant or breast-feed.	
		improvement evidence; and		
		(c) must make necessary arrangements in the		
		Workplace in order not to damage health of female		
		Workers who are pregnant or breast-feed.		
32	The Private	e Industrial Enterprise Law		
32.1	26	No one shall conduct a private industrial enterprise	GRGICL will conduct a private industrial enterprise contained in	
		contained in section 4. Without obtaining registration	section 4. Without obtaining registration under this Law.	
		under this Law.		
32.2	27	An entrepreneur:	GRGICL	
		(a) in distributing and selling the goods he has	(a) in distributing and selling the goods that has produced will not sell	
		produced shall not sell without a trade mark;	without a trade mark;	
		(b) shall not violate any provision of section 13;	(b) will not violate any provision of section 13;	
		(c) shall not fail to comply with any order or decision	(c) will not fail to comply with any order or decision passed by the	
		passed by the Minister and the Director General	Minister and the Director General	
33	The Prevention and Control of Communicable Diseases Law			

33.1	11	In order to prevent and control the spread of a	In order to prevent and control the spread of a Principal Epidemic	
		Principal Epidemic Disease, the Health Officer may	Disease, GRGICL Health Officer may undertake the following	
		undertake the following measures; -	measures; -	
		(a) investigation of a patient or any other person	(a) investigation of a patient or any other person required;	
		required;	(b) medical examination;	
		(b) medical examination;	(c)causing laboratory investigation of stool, urine, sputum and blood	
		(c)causing laboratory investigation of stool, urine,	samples to be carried out;	
		sputum and blood samples to be carried out;	(d)causing investigation by injection to be carried out;	
		(d)causing investigation by injection to be carried out;	(e)carrying out other necessary investigations	
		(e)carrying out other necessary investigations		
33.2	12	The Health Officer has the right to do laboratory	GRGICL Health Officer will be done laboratory investigation of any	
		investigation of any food, water and their necessary	food, water and their necessary materials.	
		materials.		
33.3	13	The Health Officer shall report immediately the source	GRGICL Health Officer will report immediately the source to the	
		to the relevant Department of Health, of the Principal	relevant Department of Health, of the Principal Epidemic Disease	
		Epidemic Disease		
34	The Petrole	eum and Petroleum Product Law		

34.1	30	Any person shall, without the relevant licence, not	GRGICL will, without the relevant licence, not carry out any business	
		carry out any business activities or measures required	activities or measures required to obtain licence under this law	
		to obtain licence under this law		
34.2	31	Any licensee:	GRGICL:	
		a. shall not violate any prohibition contained in the	a. will not violate any prohibition contained in the rules, regulations,	
		rules, regulations, bye-laws, notifications, orders,	bye-laws, notifications, orders, directives, procedures and conditions	
		directives, procedures and conditions or fail the duty	or fail the duty to implement;	
		to implement;	b. will not use a receptacle and transport vehicles and pipelines that	
		b. shall not use a receptacle and transport vehicles and	contains any dangerous petroleum and petroleum product without	
		pipelines that contains any dangerous petroleum and	saliently mentioning in writing of warning signs;	
		petroleum product without saliently mentioning in	c. will not import, transport, store and sell and distribute the dangerous	
		writing of warning signs;	petroleum and petroleum product, or non-dangerous petroleum and	
		c. shall not import, transport, store and sell and	petroleum product except by the means stipulated in this law;	
		distribute the dangerous petroleum and petroleum	d. will not have the right to carry out without undertaking the	
		product, or non-dangerous petroleum and petroleum	environmental impacts, in operating petroleum and petroleum product	
		product except by the means stipulated in this law;	business activities;	
		d. shall not have the right to carry out without	e. will not distribute and sell petroleum and petroleum products which	
		undertaking the environmental impacts, in operating	do not fulfill or are not in conformity with the standard, quality and	
		petroleum and petroleum product business activities;	measurement	

		e. shall not distribute and sell petroleum and petroleum	
		products which do not fulfill or are not in conformity	
		with the standard, quality and measurement	
34.3	32	Any person who carries out a petroleum and petroleum	GRGICL will be carried out a petroleum and petroleum product
		product business activities shall not refuse if an	business activities will not refuse if an authorized officer or
		authorized officer or organization asks to provide	organization asks to provide suitable help, to inspect the petroleum and
		suitable help, to inspect the petroleum and petroleum	petroleum product, receptacle, and machine-powered vehicle,
		product, receptacle, and machine-powered vehicle,	machinery, vessel or pipeline that transports and to take sample of
		machinery, vessel or pipeline that transports and to	petroleum and petroleum product at any place of import, export,
		take sample of petroleum and petroleum product at	storage, refining, sale and distribution of any petroleum and petroleum
		any place of import, export, storage, refining, sale and	product, or at the time of transport.
		distribution of any petroleum and petroleum product,	
		or at the time of transport.	
34.4	33	Any person who manages a petroleum and petroleum	GRGICL will be managed a petroleum and petroleum product business
		product business activities shall not fail to report	activities will not fail to report immediately to the nearest authority
		immediately to the nearest authority concerned and	concerned and provide information relating to any accident if an
		provide information relating to any accident if an	explosion or fire occurs due to any petroleum and petroleum product
		explosion or fire occurs due to any petroleum and	business activities, or it is likely to cause fire at or near to the place
		petroleum product business activities, or it is likely to	where petroleum and petroleum product is stored

		cause fire at or near to the place where petroleum and		
		petroleum product is stored		
35	The Protec	tion and Preservation of Cultural Heritage Regions Law.		
35.1	22	No person shall construct a building which is not in GRGICL will never construct a building which is not in		
		conformity with the conditions prescribed region wise	with the conditions prescribed region wise by the Ministry of Culture	
		by the Ministry of Culture in the cultural heritage	in the cultural heritage region.	
		region.		
35.2	23	No person shall plough and cultivate or carry out any	GRGICL will never plough and cultivate or carry out any activity	
	activity which may cause damage to the cultural		which may cause damage to the cultural heritage within the boundary	
		heritage within the boundary notified by the	notified by the Department in the cultural heritage region	
		Department in the cultural heritage region		
36	The Protec	tion and Preservation of Antique Objects Law		
36.1	12	The person who finds any object which has no owner	GRGICL will prompt to inform the relevant Ward or Village-Tract	
		or custodian, he shall promptly inform the relevant	Administrator in findinding any object which has no owner or	
		Ward or Village-Tract Administrator if he knows or it	custodian, he if he/she knows or it seems reasonable to assume that the	
		seems reasonable to assume that the said object is an	said object is an antique object	
		antique object		
37	The Protec	tion and Preservation of Ancient Monuments Law	·	

37.1	18	No one shall carry out any performance in Sections 14	GRGICL will never carry out any performance in Sections 14 and 15	
		and 15 without permission of the Department.	without permission of the Department.	
37.2	20	No one shall carry out any of the following acts which	GRGICL will never carry out any of the following acts which is	
	is assumed to cause damage to an ancient monument		assumed to cause damage to an ancient monument within the specified	
		within the specified area of an ancient monument or of	area of an ancient monument or of a listed ancient monument without	
		a listed ancient monument without a written prior	a written prior permission:	
		permission:	(b) using machines which causes vibration within the specified place	
		(b) using machines which causes vibration within the	of an ancient monument and running various types of vehicles;	
		specified place of an ancient monument and running	(d) emission of gas such as hot-air balloon which can affect an ancient	
	various types of vehicles;		monument;	
	(d) emission of gas such as hot-air balloon which can		(f) discarding chemical substance and rubbish which can affect an	
	affect an ancient monument;		ancient monument and the environment	
	(f) discarding chemical substance and rubbish which			
		can affect an ancient monument and the environment.		
38	The Law o	n Standardization		
38.1	17	A person desirous of obtaining certificate of	GRGICL will be complied section 17 of the law on standardization	
		certification shall apply to the department and		
		organization which has obtained the accreditation.		
38.2	18	The department and organization which has obtained	GRGICL will be complied section 18 of the law on standardization	
		the accreditation is entitled to issue the following		

		categories of certificate of certification, after	
		examining in accordance with stipulations:	
		(a) product certificate of certification;	
		(b) production process certificate of certification;	
		(c) service certificate of certification;	
39	Myanmar l	Insurance Business Law	
39.1	8.	A company desirous of writing one or more of the	GRGICL will follow the rules described in section 8 of Myanmar
		following insurance classes shall apply for business	Insurance Business Law
		licence to the Supervisory Board in accordance with	
		the stipulations: (a) Life Assurance;(b) Fire	
		Insurance;(c) Comprehensive Motor Insurance;(d)	
		Cash-in-transit Insurance;(e) Cash-in-safe	
		Insurance;(f) Fidelity Insurance;(g) Classes of	
		insurance permitted by the Ministry from time to time,	
		by notification, with the approval of the Government.	
39.2	9	A company desirous of acting as an underwriting	GRGICL will follow the rules described in section 9 of Myanmar
		agent or insurance broker shall apply for business	Insurance Business Law
		licence to the Supervisory Board in accordance with	
		the stipulations.	

3 Project Description

3.1 Introduction

Yangon Bottling Plant (GRGICL) was established in 2012 at the Hmawbi Township. Plant operation was started at 2015. The plant is located on Field No. 560 of Upper Thae Kone Village group, Hmawbi Tsp. The plant boundary is at the west of the No. (4) Main road. The total area of the plant is (30.45) acres. Yangon Bottling Plant (GRGICL) is located within the Grand Royal Group International Factory Compound. Bottling plant operation was started at 14, Oct 2015. Maximum production capacity of the bottling plant is 588,000 litres/day and minimum production capacity is 336,000 litres/day.

3.2 Profile of GRGICL

The Grand Royal Group was founded in 1995 and its relentless emphasis on quality driven by its founder has earned a reputation of quality among consumers and a leading position in the alcoholic beverage market with Grand Royal Brand with market leadership in the various segaments in the market with its portfolio of International Award-winning Brands (Prestigious Monde Selection Awards, World Whisky Awards).

The group is committed to being coporate responsible citizens, sensitive to the needs of environment and contributing to the development of economy. The objective of Grand Royal Grop International Company Limited is to manufacturing and marketing of alcoholic beverages and related products as per MIC Permit No. 554/13.

3.3 Project Location

Yangon Bottling Plant (GRGICL) is approximately 25 km from Yangon downtown and 12 km from Hmawbi Township which located within Yangon DistilleryPlant Compound. The factory is located at the North of the Yangon. It is about 20 km from Yangon International Airport. The factory site is located at the opposite side of APB Brewery Plant.

There are four villages around the factory area in close proximity as shown in figure which are Upper Thae Kone, Lower Thae Kone, Late Pote and Kwin Late Pote. Late Pote Stream started near the Factory area and flows into Hlaing River at the South-West of the factory site (approximately 7 km away from the factory). The plant is located on Field No. 560 of Upper Thae Kone Village group, Hmawbi Tsp. The plant boundary is at the west of the No. (4) Main Road. The total area of the plant is (30.45) acres. Yangon Bottling Plant (GRGICL) is located within the Grand Royal Group International Factory Compound.

Sr	Point	Coordinate		
		Lattitude	Longtitude	
1	А	17° 1'21.47"N	96° 4'23.96"E	
2	В	17° 1'17.17"N	96° 4'35.04"E	
3	С	17° 1'20.53"N	96° 4'44.08"E	
4	D	17° 1'29.35"N	96° 4'42.01"E	
5	E	17°1' 27.20″N	96°4' 33.40″E	

Table 11. Coordinate Points of GRGICL Factory Boundary

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Figure 1. Location of Yangon Bottling Plant (GRGICL)

3.4 Process and Layout of Yangon Bottling Plant (GRGICL)

Production capacity of Yangon Bottling Plant (GRGICL) is 30000 cases/day. The plant can be mainly divided into three sections which are;

- Maturation
- Blending
- Bottling

There are other auxiliary sections such as water and wastewater treatment plant. Raw material for the entire plant is barley malt. Estimated raw water usage for the bottling plant is 320,296 m³/yr, treated water usage is 97792 m³/yr, RO water usage is 49994 m³/yr and estimated electricity usage is 160,000 kWh/month. The process flow diagram of the bottling plant is shown in following figure.





Storage in the Warehouse

Figure 2. Block Diagram of Yangon Bottling Plant (GRGICL)



Figure 3. Material Supply Flowchart of Yangon Bottling Plant (GRGICL)

Bottle Warehouse



Empty Bottle Washing & Rinsing





Empty bottle Inspection





Final Rinsing















Capping





Date Coding





Figure 4. Production Process of Yangon Bottling Plant (GRGICL)



Figure 5. Process Flow Chart of Yangon Bottling Line



Figure 6. Layout Plan with Emergency Escape Way of Yangon Bottling Plant (GRGICL)

EMP FOR YANGON BOTTLING PLANT (GRGICL)

Sr.	Particular	Sr.	Particular
1	Finished Goods Warehouse Area	14	Main Office
2	Raw Warehouse	15	Canteen
3	Bottling Line (1-4)	16	M & E Building
4	Bottling Line (5-9)	17	Water Treatment Plant
5	Bottle Warehouse Area	18	Boiler Building
6	Blending Area	19	Coal Storage
7	Extension Area	20	Broken Rice Warehouse
8	Truck Car Parking	21	Distillery Building
9	Empty Bottle Storage Buildings	22	Proposed Common Waste Tank
10	Oak Cask Warehouse	23	R/S Storage Tank
11	Oak Cask Warehouse	24	WWTP
12	New Oak Cask Warehouse	25	Decanter Building
13	Oak Cask Factory	26	New Cooling Tower Area

Table 12. Indications for the Layout Plan

3.5 Land Use

Total area of the Yangon DistilleryPlant is 30.45 acres and Yangon Bottling Plant (GRGICL). Factory footprint area is about 26.5 acres, 4.27 acres for bottling and blending area, 1.27 acres for future finished goods warehouse area, 0.22 acre for main office area, 0.26 acre for new oak cask warehouse area, 0.89 acre for oak cask warehouse area, 0.26 acre for oak cask factory and 0.17 acre for water treatment plant area. The remaining area is distillery plant area and green area.

3.6 Raw Materials Description

The primary raw materials used in Yangon Bottling Plant (GRGICL) are Reticified Spirits, Aged Spirits and Empty Bottles.

Sr.	Raw Material Name	Unit	Total Requirement/Year	Total Requirement /Month
1	Rectified Spirit	Lit	25,358,307	2,113,192
2	Aged Rs	Lit	2,406,418	200,535

Table 13. Raw Materials List of Yangon Bottling Plant (GRGICL)

3	Malt	Lit	2,200,242	183,354
4	Caramel	Lit	61,112	5,093
5	Flavour	Lit	1,278,128	106,511
6	New Bottle	Pcs	98,783,451	8,231,954
7	Recycle Bottle	Pcs	91,390,793	7,615,899
8	Closure	Pcs	190,969,421	15,914,118
9	Label	Pcs	368,345,063	30,695,422
10	Carton Box	Pcs	8,558,330	713,194
11	Gift Box	Pcs	4,466,128	372,177

Table 14. Supply and Storage of Raw Materials from	Yangon Bottling Plant (GRGICL)
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Sr.	Raw Ma	terial Name	Supply	Transfer	Storage Area	Process
	Rectified	Own R.S	Local	Piping	Storage Tank	Blending
1	Spirit (R.S)	Other R.S	Local	Drum	Drum Yard	Blending
2	Aged R.S	Own Aged R.S	Local	Drum	Oak Cast Warehouse	Blending
		Other Aged R.S	Local	Drum	Cold Room	Blending
3	Malt		Oversea	Drum	Storage at Cold Room	Blending
4	Caramel		Oversea	Pail	Storage at Cold Room	Blending
5	Flavour		Oversea	Pail	Storage at Cold Room	Blending
6	New Bottle Oversea		Oversea	Palletized	Bottle	Bottle
Ŭ			0 verbeu		Warehouse	Washing
7 Recy		cle Bottle	Local	Palletized	Bottle	Bottle
,	Recycle Bottle				Warehouse	Washing
8	Closure		Oversea	Packing	Packing	Material
0					Warehouse	Requirement
9	Label		Oversea	Packing	Packing	Material
2					Warehouse	Requirement

10	Carton Box	Local	Palletized	Packing Warehouse	Material Requirement
11	Gift Box	Oversea	Packing	Packing Warehouse	Material Requirement







Figure 7. Empty Bottle Storage Area



Figure 8. Label and Gift Box Packing Storage Area



Figure 9. Closure and Carton Box Storage Area



Figure 10. Chemical Storage Area

3.7 Production Process of Yangon Bottling Plant (GRGICL)

3.7.1 Maturation

At the end of distillation, the distilled spirits are filled into the oak cast, about 68% alcohol. The final quality, colour and flavour of whiskey are influenced by;

- Type of wood – usually European and American oak
- How many times the cask has been used and previous contents
- Style of warehouse and climate

Minimum maturation is 3 years in order to be called scotch whiskey. In Yangon Bottling Plant (GRGICL), the maturation time is 3 years and kept in the oak cast ware house at appropriate temperature and humidity. The plant usually uses American oak to acquire good flavour. The process flow diagram for the maturation process is shown in the aged spirit production process flow chart.

3.7.2 Blending

After 3 years, the alcohol is transported to the blending section for colouring and flavourings. Blending is another method of obtaining a balanced product with precise flavour characteristics. Blended products are composed of one or more highly flavoured components, a high-proof component with a low congener content, colour adjustment ingredients, and perhaps an additional flavouring material. The process for the blending process is shown in the blending process flow chart.



Figure 11. Blending Process Flow Chart



Figure 12. Aged Spirit Production Process Flow Chart

3.7.3 Bottling

3.7.3.1 Bottles Washing and Control

In Yangon Bottling Plant (GRGICL), bottles are import from China, Malaysia and Thailand. Returned bottles are sorted from bottle collector. Foreign bottles are returned to their respective manufacturers or crushed and sent to recycling. After sorting, bottles are sent to a bottle washer to remove impurities from all internal and external. Bottle washer operations typically include soaking, washing and rinsing. Large quantities of energy, water, and acid have been used for bottle washer operations. At the discharge of the machine the bottles must be ready for filling.

3.7.3.2 Bottling

Bottling process consists of bottling, filling, capping, sealing, labelling and placing in the box. The bottles are transported from the bottle washer to the filling machine by using conveyer belts. There are nine bottle filling lines. They are filled under pressure. The bottles are sealed immediately after filling and the filling volume is checked. The sealed bottles are then conveyed to the labeler. Noise level from the bottling line after filling is about 78 dB and bottling line during filling noise level is highest about 91 dB. Yangon Bottling Plant (GRGICL) provide ear muffs for all workers. After labelling, the bottles are placed in the box. Government tax is labelled on the box. And then fully packing and checking process was made.

3.7.3.3 Storage in the Finished Good Warehouse

After packing and checking, the final products are storage in the finished goods warehouse. The warehouse area is 1.39 acres.

Sr	Machine Name	Model	Machine	Location
			Identity No	
1	Hefei Zhongchen Auto	RCG2828A	HZ-01-05	Line -1
	Rinsing & Filling Machine			
2	Meyer Bottle Filler &	M-FC 40-10	MBF-01-01	Line-2
	Capper Machine			

3.8 Equipment and Machinery List of Yangon Bottling Plant (GRGICL)

3	PROMAC Rinser Machine	ROTONECK	PRM-01-01	Line-2
		1R.10.40.113.129		
4	Rotary Labelling Machine 2	FLEXA	RLM-01-05	Line-2
	Position (700ml)(Kosme)	UNICOL 600-		
		10-2		
5	Empty Bottle Inspection	miho DAVID2	EBI - 01-03	Line-2
	Machine			
6	Four Head Rotary Capping	CRR 320-4	RCM-01-04	Line-2
	Machine			
7	Compact 600 Tax Machine	Compact 600	CTM-02-08	Line-2
8	Video Jet Printer		VJ-01-02	Line-2
9	Bottle Washing Machine		BWM-01-	Line-2
			05	
10	Carton Sealer Mchine	MH-FJ-3A	CM-01-09	Line-2
11	Rotary Automatic Labelling	D18-5-4	RLM-02-05	Line-3
	Machine (750ml OR			
	700ml)(Delong)			
12	Case Holder Filler	CHF-20-RQF	CHF-01-01	Line -3
	Machine(20 Heads)			
13	Semi Auto Cap Seaming	SSC1-4NB	SAM-01-05	Line -3
	Machine			
14	Semi Auto Cap Seaming	SSC1-4NB	SAM-02-05	Line -3
	Machine			
15	Semi Auto Cap Seaming	SSC1-4NB	SAM-03-05	Line -3
	Machine			
16	Semi Auto Cap Seaming	SSC1-4NB	SAM-04-05	Line -3
	Machine			
17	Semi Auto Cap Seaming	SSC1-4NB	SAM-05-05	Line -3
	Machine			
18	Hitachi IJ Printer	PB	IP-02-07	Line-3
19	Carton Sealer Mchine	MH-FJ-3A	CM-02-09	Line-3
20	Super Monobloc 24-24-8H	SR-993-228 GV	SM-02-03	Line-4
	(350ml)(Delmax)			
21	Rotary Labelling Machine 2	FLEXA	RLM-03-05	Line-4
	Position (350ml)(Kosme)	UNICOL 600-		
		10-2		

22	Empty Bottle Inspection	miho DAVID2	EBI - 02-03	Line-4
	Machine			
23	Compact 600 Tax Machine	Compact 600	CTM-03-08	Line-4
24	Hitachi IJ Printer	PB	IP-03-07	Line-4
25	Water Drop Removal		WDR-01-06	Line-4
	Machine			
26	Bottle Washing Machine		BWM-02-	Line-4
			05	
27	Carton Sealer Mchine	MH-FJ-3A	CM-03-09	Line-4
28	Rotary Automatic Labelling	D18-5-4	RLM-04-05	Line-5
	Machine (175ml OR			
	350ml)(Delong)			
29	Four Head Rotary Capping	CRR 320-4	RCM-02-04	Line-5
	Machine			
30	Compact 900 / F-B Sticker	Compact 900	CM-01-04	Line-5
	Machine			
31	Compact 600 Tax Machine	Compact 600	CTM-04-08	Line-5
32	Hefei Zhongchen Auto	RCG2828A	HZ-02-05	Line -5
	Rinser & Filler Machine			
33	Water Drop Removal		WDR-02-06	Line -5
	Machine			
34	Hitachi IJ Printer	PB	IP-04-07	Line-5
35	Bottle Washing Machine		BWM-03-	Line-5
			05	
36	Carton Sealer Mchine	MH-FJ-3A	CM-04-09	Line-5
37	Super Monobloc 24-24-8H	SR-993-228 GV	SM-03-03	Line-6
	(175ml)(Delmax)			
38	Rotary Labelling Machine 2	LR 800-4-4-140-	RLM-05-05	Line-6
	Position (175ml) (Delmax)	2		
40	Empty Bottle Inspection	miho DAVID2	EBI - 03-03	Line-6
	Machine			
41	Compact 600 Tax Machine	Compact 600	CTM-05-08	Line-6
42	Hitachi IJ Printer	PB	IP-05-07	Line-6
43	Blower Machine		BM-01-01	Line-6
44	Bottle Washing Machine		BWM-02-	Line-6
			05	

45	Carton Sealer Mchine	XT553RL	CM-05-09	Line-6
46	Four Head Rotary Capping Machine	CRR 320-4	RCM-03-04	Line-7
47	Compact 900 / F-B Sticker Machine	Compact 900	CM-02-04	Line-7
50	Compact 600 Tax Machine	Compact 600	CTM-06-08	Line-7
51	Hefei Zhongchen Auto Rinser & Filler Machine	RCG2828A	HZ-03-05	Line -7
52	Water Drop Removal Machine		WDR-03-06	Line -7
53	Hitachi IJ Printer	PB	IP-06-07	Line-7
54	Bottle Washing Machine		BWM-05- 05	Line-7
55	Carton Sealer Mchine	MH-FJ-3A	CM-06-09	Line-7
56	Four Head Rotary Capping Machine	CRR 320-4	RCM-04-04	Line-8
57	Hitachi IJ Printer	PB	IP-07-07	Line-8
58	Water Drop Removal Machine		WDR-04-06	Line-8
59	Carton Sealer Mchine	MH-FJ-3A	CM-07-09	Line-8
60	Compact 600 Tax Machine	Compact 600	CTM-08-08	Line-9
61	Compact 900 / F-B Sticker Machine	Compact 900	CM-04-04	Line-9
62	Hefei Zhongchen Auto Rinsing & Filling Machine	RCG2828A	HZ-05-05	Line -9
63	Video Jet Printer		VJ-02-02	Line-9
64	Water Drop Removal Machine		WDR-05-06	Line-9
65	Carton Sealer Mchine	MH-FJ-3A	CM-08-09	Line-9
66	Super Monobloc 24-24-8H (90ml)(Delmax)	SR-993-228 GV	SM-01-03	Line-10
67	Compact 900F Sticker Machine (One Position)	Compact 900	CSM-01-01	Line-10
68	Compact 600 Tax Machine	Compact 600	CTM-01-08	Line-10
69	Hitachi IJ Printer	PB	IP-01-07	Line-10
70	Carton Sealer Mchine	MH-FJ-3A	CM-09-09	Line-10

71	Laser Coding Machine		LCM-01-01	Laser Coding
				Room
72	50 Hp Screw Compressor	ZLS-50	SC-01-03	Compressor
				Room
73	50 Hp Screw Compressor	EAS-50	SC-02-03	Compressor
				Room
74	100 Hp Screw Compressor	ZL S100	SC-03-03	Compressor
				Room
75	Refrigerated Air Driver	ED-100HF	RAD-01-01	Compressor
				Room
76	Generator (500KVA)	OLYMPIAN	G-01-02	Generator
		GEP 550-1		Room
77	Generator (500KVA)	OLYMPIAN	G-02-02	Generator
		GEP 550-1		Room

3.9 Product and Production List of Yangon Bottling Plant (GRGICL)

Sr	Product Name	Unit	Total Produce/year	Total Produce/month
1	Grand Royal Whisky	Case	2,123,435	176,953
2	Grand Royal Smooth Whisky	Case	3,469,554	289,130
3	Grand Royal Signature Whisky	Case	2,175,603	181,300
4	Grand Royal Special Reserve Whisky	Case	599,438	49,953
5	Grand Royal Double Gold Whisky	Case	3,051	254
6	Royal Dry Gin Whisky	Case	87,680	7,307
7	Cask7 Whisky	Case	6,062	505
8	Egal Whisky	Case	67,797	5,650

3.10 Water Resources and Requirement of Yangon Bottling Plant (GRGICL)

The raw water source for the entire plant is tube well water. Estimated raw water usage for the bottling plant is 320,296 m³/yr, treated water usage is 97792 m³/yr, RO water usage is 49994 m³/yr. Yangon Bottling Plant installed water treatment plant for

treated water and RO water. The water treatment plant is located in the Yangon Distillery Plant boundary. 10% of treated water is used for CFD and the remaining 90% is used for Oak Cask, Bottling and Blending. Water Treatment Process of Yangon Bottling Plant was shown in the following figure.



Figure 13. Flow Chart for Water Treatment Plant and Water Distribution

3.11 Waste Generation and Management Plan of GRGICL

Table 15 describes the the waste management system of Yangon Bottling Plant.

Was	Wastes of YGN Bottling Plant and Reducing Methods			
Sr. No.	Non-Hazardous Waste	Average Waste/month (kg)	Reduction methods	Implementation Status
1	Bottle Damage	66,384.00	Collected by licensed wastes collector to reuse in other	Implemented
2	Empty Drum	3,104.00	Collected by licensed wastes collector to reuse in other	Implemented
3	Empty Flavor Pail	1,777.00	Collected by licensed wastes collector to reuse in other	Implemented
4	Carton Box	4,076.00	Collected by licensed wastes collector to reuse in other	Implemented
5	Wood Card (Pallet)	3,399.00	Collected by licensed wastes collector to reuse in other	Implemented
6	Plastic Basket Damage	102.00	Collected by licensed wastes collector to reuse in other	Implemented
7	Paper Card	195.00	Collected by licensed wastes collector to reuse in other	Implemented
8	Plastic Card	448.00	Collected by licensed wastes collector to reuse in other	Implemented
9	Pet Bottle	58.00	Collected by licensed wastes collector to reuse in other	Implemented
10	Other non- hazardous compound wastes	6,112.00	Systematic disposal at waste disposal site provided by YCDC	Implemented
	Remarks Innovation activities will emphasize continuously to improve process and reduce waste from operation			usly to improve ration

	Table 15. W	aste Management	System of Y	Yangon E	Bottling Plant
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The Records and Photos of Wastes Collection, Storage, Transportation, Treatment, Disposal of Yangon Bottling Plant are described in APPENDIX-C. And spillage control system is provided in APPENDIX-I.

Reducing methods of generating solids waste from Process

To reduce generating solids waste from Process. Plant will implement based on the following matter.

- Make a priority to use good quality of raw material and packaging material. Using good quality that can reduce generating waste from process
- 2. Some types of waste are sold as by product and Some types of waste are reused in process to minimize additional new materials usage
- 3. Set up norm for incoming raw material to control quality stability that can be reducing solid waste.
- 4. To innovate efficient process to reduce waste from process

5. To follow the good manufacturing practice and ISO, QMS and safety Factory cannot eliminate the solid waste from process but will be reduced by the following above Criteria.

	% per Year	% per Month
700ml	47%	47%
350ml	56%	56%
175ml	57%	57%
750ml	6%	6%
Cask 7700ml	100%	100%
GRS 700ml	27%	27%
Bottle Total	47%	47%

Table 16. Recycle Bottle Usage



Note: Orange Anows are wastes.

Figure 14. Waste Generation from Yangon Bottling Plant (GRGICL)



Figure 15. Waste Management Flowchart of Yangon Bottling Plant (GRGICL)



Yangon Bottling Plant (GRGICL) have no solid waste recycling. But GRGICL

reuse Recycle Bottles as shown in following flow diagram



Figure 16. Recycle Bottle Usage of Yangon Bottling Plant (GRGICL)

3.12 Electricity Supply and Usage

Yangon Bottling Plant purchase electricity from government power source. The plant installed 1500 kVA Transformer and 3 nos of 500 kVA generators. The electrical power consumption for the bottling plant is as follows.

Sr.	Equipment/Process	Location	Capacity(kW)
1	Compressor 1	Compressor Room	37
2	Compressor 2	Compressor Room	75
3	Bottling Line-1	Bottling Area	23.95
4	Bottling Line-2	Bottling Area	25.43
5	Bottling Line-3	Bottling Area	11.96
6	Bottling Line-4	Bottling Area	31.07
7	Bottling Line-5	Bottling Area	30.64
8	Bottling Line-6	Bottling Area	26.71
9	Bottling Line-7	Bottling Area	26.4
10	Bottling Line-8	Bottling Area	23.95
11	Bottling Line-9	Bottling Area	24.63
12	Bottling Line-10	Bottling Area	7.15
13	Waste Water Pump	Bottling Area	3
14	Waste Water Pump	Bottling Area	4
15	Fire Fighting	Bottling Area	7.5
16	Dilution Pump	Blending Area	3
17	Dilution Pump	Blending Area	11
18	Circulation Pump	Blending Area	1.5
19	Circulation Pump	Blending Area	7.5
20	Circulation Pump	Blending Area	3
21	FG Transfer Pump	Blending Area	2.2
22	FG Transfer Pump	Blending Area	7.5
23	Submersible Pump	RO	5.50
24	Raw Water Pump	RO	15.00
25	PAC Pump	RO	5.20

Table 17. Electrical Power Consumption of Yangon Bottling Plant

26	NaOH Pump	RO	5.20
27	Antiscalant Pump	RO	0.12
28	Feed Pump	RO	7.50
29	Feed Pump	RO	3.00
30	Supply Pump	RO	5.50
31	Back Wash Pump	RO	5.50
32	Blower Pump	RO	5.50
33	Treated Supply Pump	RO	3.00
34	Raw Pump (Utility)	RO	3.00
35	Booster Pump	RO	3.00
36	Back Wash Pump (Utility)	RO	1.50
37	Ro Supply pump (Blending)	RO	3.00
38	RO Pump (Kitchen & D&D)	RO	0.75
39	RO High Pump	RO	30.00
40	Air Compressor	RO	7.50
41	Evaporative Cooler	Oak Cask	1.10
42	Circulation Pump	Oak Cask	3
43	Air - Compressor	Oak Cask	22
44	DG Charging Machine	Oak Cask	1.5
45	Churring Machine	Oak Cask	2.7
46	Hoop Drive Machine	Oak Cask	15
47	Riveting Machine	Oak Cask	5.5
48	Side Planner	Oak Cask	2.2
49	Hoop Puller	Oak Cask	11
50	Cooler Compressor	Oak Cask	1.5
51	Drilling Machine	Oak Cask	550
52	Treated Water Pump	Oak Cask	1.5
53	Exhaust Fan	Oak Cask	0.75
54	Old Compressor	Oak Cask	15
55	Loading Pump	Oak Cask	1.5

56	Bent Boric Machine	Oak Cask	1.5
57	Blower Motor	Oak Cask	0.75
58	High Bay	Oak Cask	0.085
59	Ex-proof Light	Oak Cask	0.2
60	Security Flood Light	Oak Cask	0.085

3.13 Diesel Usage and Storage of Yangon Bottling Plant (GRGICL)

The plant installed 1500 kVA transformer and 3 nos of 500 kVA generators. Yangon Bottling Plant (GRGICL) is used diesel as generator fuel. GRGICL was storage (800-1000) gal diesel with steel storage tank. The diesel was transported by truck from local.

		Diesel usage		
<u>2018-2019</u>		Year	Month	
Genset -1	Lit	28069	2339	
Genset -2	Lit	25337	2111	
Genset -3	Lit	24666	2056	
Total	Lit	78072	6506	





Figure 17. Generators of Yagon Bottling Plant (GRGICL)



Figure 18. Diesel Storage Tank of Yangon Bottling Plant (GRGICL)

3.14 Storm Water and Drainage System of Yangon Bottling Plant

Rain water or storm water collected from the buildings through roof gutter are directed into systematically built storm water drainage system. The rain water from the surface of the ground and the building during heavy rain will be carried into fresh water ponds located inside the plant compound. The two ponds have water gates into the nearby water drain adjacent to the fence.



EMP FOR YANGON BOTTLING PLANT (GRGICL)

3.15 Liquid Waste Management System of Yangon Bottling Plant

The liquid waste of Yangon Bottling Palnt will be treated in Yangon Distillery Plant Wastewater Traetment Plant. The wastewater treatment system of Yangon Dislittery Plant was shown in the following figure.



Figure 20. Wastewater Treatment Process of GRGICL

Table 18. Effluent Wastewater Generation and Management System

Sr.no	Description	Installed Nos	Total Design Feeding	bottling inlet feed(m3/day)	Inlet COD (mg/l)	Outlet COD (mg/l)	Remark
			capacity 9m3/day)				
4	Aeration	1	2500	600-800	1500- 2,000	800-1000	Used together wit
5	clarification	1	1000	600-800	800-1000	500 -800	Used together wit
6	Polishing process with air	15	3000	600-800	500 -800	150-180	15 polishing pond

EMP FOR YANGON BOTTLING PLANT (GRGICL)

th Distillery waste th Distillery waste ds use 12 acres

3.16 Key Environmental Emission and Management System

In Bottling Plant, there is no emission from the production process steps. Therefore, the smissions to the air can be mainely emitted from Yangon Distillery Plant and the management system of environmental emission system from Yangon Distillery Plant is as follow.



Figure 21. Key Emissons and Management of Yangon Distillery Plant (GRGICL)

3.17 Operational Workforce and Machines

The work force during operation for the Yangon Bottling Plant (GRGICL) is 809 members including plant manager, assistant plant manager, permanent workers (281) members and daily wages (600) members. The plant operates in three shifts per day and the workers work 8 hrs per shift. The workers are working 26 days per month and 312 days per year. The plant operates the machine in 24 hr per day, 28 days per month and 300 days per year. The employment list for the Yangon Bottling Plant (GRGICL) is shown in following table.

No.	Position	No. of Employee
1.	Plant Manager	1
2.	Assistant Plant Manager	1
3.	Production Dept	621
4.	Bottle Pallet Type & Old Bottle receive Dept	50
5.	Process Engineering Dept	20
6.	Production Planning Dept	73
7.	Admin Dept	43
8.	Oak Cask Warehouse	28
	Total	837

Table 19. Labour Plan for the Entire Plant

4 Description of the Surrounding Environment

4.1 Setting the Study Limits

The EMP study focusing the factory area and its vicinity within the range 1 km around the factory from the centerline of the factory area that can be directly affected by factory construction, operation and decommissioning activities which includes Late Pote village is 0.58 km distance in the north-east of the factory, Kwin Late Pote village is 0.68 km distance in the west of the factory, Upper Thae Kone is 0.37 km distance and Lower Thae Kone Village is 0.84 km distance in the northern west from the factory.



Figure 22. EMP Study Area for Yangon Bottling Plant

4.2 Methodology and Objectives

The EMP study for the project includes analysis on baseline data from local, government organization, MIC proposal of the Grand Royal Group International Company Limited, and the master plan and other documents obtained from the project proponent. Primary data collections include direct observation, interview, individual/target group consultation, public meeting, sampling and laboratory analysis on physicochemical parameters of water from the project area, listing biological resources such as flora and fauna, secondary data collection on demography, socioeconomics, occupation, education, and health from MIMU.

4.3 Stakeholder Analysis

Stakeholders are categorized in four groups who can be affected directly or indirectly by project construction, operation and decommissioning activities such as local people, government organizations, project proponent and other interested groups such as NGOs. Analysis was based on primary impact factors such as involvement in land acquisition, vicinity to the project, common use of utilities such as water and infrastructures.

Sr	Stakeholder	Stakabaldar	Interest Level		Intorost
51.	Group	Stakenolder	Level	Reason	Interest
1	Local People	Upper Thae Kone village	High	Close Vicinity	- Pollution - Nearby
		Lower Thae Kone village	High	Close Vicinity	farmlands - Job opportunity
		Kwin Leike Poke village	High	Close Vicinity	- CSR
		Leik Poke village	High	Close Vicinity	
2	Government	General		- For	- Administration
	Organization	Administration Office Department	Medium	administrative relation	CoordinationCSR
		Department of	Iliah	- Storm water	
		Irrigation	nigii	issue	
		Township Educational Office	Low	- Only relevant for CSR	
		Land Records Department	Low	- No land related issue	
		Township Health	Low	- Only relevant	
		Department	LOW	for CSR	
		Township			
		Environmental	Not yet	-	
		Conservation	estd:		
		Department			
		Township Firebrigate	Low	-	
3	Proponent	Project management	High	- Project Owner	- Operation and Management

Table 20. Stakeholders of Yangon Bottling Plant

		Project construction			- Construction
		contractor			- EMP
4	Other	None			-
	Interested		-	-	
	Party				

4.4 Project Affected Area

Project affected area is demarcated based on the results of stakeholder analysis. Affected human settlements, noise environment, biological environment, hydrological regime and land environment are shown in the following table. From the description of GRGICL Project Operation Activities, the environmental impact for GRGICL can be affected within 1 km of the project centerline except the activities of waste water discharging. If waste water discharge directly to the Leik Pote Stream, the impact of waste water can be affected to the local people along the leik Pote Stream but GRGICL is constructed the waste water treatment plant and discharge the waste water by compliance with NEQG guidelines. The detail of waste water quality and GRGICL's waste water treatment plant will be described in section 4.5.

Sr.	Category	Location	Distance from Factory	Factor
1	Human Settlements	Late Pote Thae Kone	0.58 km 0.37 km	- Access road
2	Land Environment	Adjacent farmlands Plant compound	Within 1 km around the Project	WasteIrrigation channelsSoil
3	Biological Environment	Within 1 km around the Project Late Pote Stream	Within 1 km around the Project	 Pollution Loss of fauna that living in the Lake Pote Stream
4	Air and Noise Environment	Within plant compound and	Within 1 km around the	- Noise levels

		nearby community	Project	
5	Water Environment	Within plant compound and nearby community	Within 1 km around the Project	Water usagesWater qualityWaste water
6	Others	To be studied in EIA	To be studied in EIA	To be studied in EIA



Figure 23. Project Affected Area of Grand Royal Extension Bottling Plant

4.5 Meteorology

The study area is located on Field No. 560 of Upper Thae Kone Village group, No.4 Main Road, Hmawbi Township, Yangon Region, Myanmar. The proposed site is currently occupied by near villages, cultivated land. Therefore, the topography is no major differences in altitude. The climate of project area is located in tropical wet and dry climate. The references of the information is from weather and climate.com (average monthy weather), Myanmar Burmar, climate in Yangon.

4.5.1 Topography and Climate

The study area is located on Field No. 560 of Upper Thae Kone Village group, No.4 Main Road, Hmawbi Township, Yangon Region, Myanma. The proposed factory is currently occupied by near villages, cultivated land. Therefore, the topography is no major differences in altitude. The climate of factory area is located in tropical wet and dry climate.

4.5.2 Temperature

Yangon has a tropical monsoon climate with very wet summers due to the southwest monsoon which starts from mid-May and lasts until mid-October. The warmest month with the highest average high temperature is April (37 °C) and the month with the lowest average high temperature is August (29.6 °C). The month with the highest average low temperature is May (25 °C) and the coldest month with the lowest average low temperature is January (17.9 °C).

Sr	Month	Average High	Average Low
		Temperature	Temperature
1	January	32.2°C	17.9°C
2	February	34.5°C	19.3°C
3	March	36°C	21.6°C
4	April	37°C	24.3°C
5	May	33.4°C	25°C
6	June	30.2°C	24.5°C
7	July	29.7°C	24.1°C
8	August	29.6°C	24.1°C
9	September	30.4°C	24.2°C
10	October	31.5°C	24.2°C
11	November	32°C	22.4°C

Table 22. Average Temperature of Yangon



Figure 24. Temperature Graph of Yangon

4.5.3 Rainfall

A lot of rain falls in the months of May, June, July, August, September and October. Yangon has dry periods in December January, February, March and April. The wettest month with the highest rainfall is August (602 mm) and the driest month with the lowest rainfall is February (2 mm). The month with the highest number of rainy days is July (26.2 days) and the months with the lowest number of rainy days are January, February and December (0.2 days).

Table 23. Average Rainfall and Rainfall Days of Yangon	
--	--

Sr	Month	Average Rainfall	Average Rainfall Days
1	January	5 mm	0.2 days
2	February	2 mm	0.2 days
3	March	7 mm	0.4 days
4	April	15 mm	1.6 days

5	May	303 mm	12.6 days
6	June	547 mm	25.3 days
7	July	559 mm	26.2 days
8	August	602 mm	26.1 days
9	September	368 mm	19.5 days
10	October	206 mm	12.2 days
11	November	60 mm	4.8 days
12	December	7 mm	0.2 days



Figure 25. Rainfall Graph of Yangon



Figure 26. Rainfall Days Graph of Yangon

4.5.4 Humidity

In 2019, August is the most humid and January is the least humid month in Yangon. The month with the highest relative humidity is August (87%) and the lowest relative humidity is January (62%).

Sr	Month	Average Relative Humidity
1	January	62%
2	February	66%
3	March	69%
4	April	66%
5	May	73%
6	June	85%
7	July	86%
8	August	87%
9	September	85%
10	October	78%
11	November	71%
12	December	65%

Table 24. Average Humidity of Yangon



Figure 27. Humidity Graph of Yangon

4.5.5 Daylight/ Sunshine

Sunshine hours of Yangon is range from 2:29 daily in July to 9:44 to each day in January. The longest day of the year is 13:10 hr and the shortest day is 11:1 hr long. The longest day is 2:00 longer than the shortest day. The month with the longest day in June (average daylight: 13.1 h) and the month with the shortest day in December (average daylight: 11.1 h). Months with the most sunshine are January, February and April (average sunshine: 9.7 h) and the month with the least sunshine is July (average sunshine: 2.5 h).

Sr	Month	Average Daylight	Average Sunshine
1	January	11.3 hr	9.7 hr
2	February	11.6 hr	9.7 hr
3	March	12.1 hr	9.4 hr
4	April	12.5 hr	9.7 hr
5	May	12.9 hr	5.8 hr
6	June	13.1 hr	2.7 hr
7	July	13 hr	2.5 hr
8	August	12.7 hr	3 hr
9	September	12.2 hr	3.2 hr
10	October	11.8 hr	6.5 hr
11	November	11.3 hr	9.3 hr
12	December	11.1 hr	9.3 hr

Table 25. Average Davight and Sunshine Hours of Yangon



Figure 28. Day Light and Sunshine Hours graph of Yangon

4.5.6 UV Index

Months with the highest UV index of Yangon are March, April, May, June, July, August and September (UV index 12) and the month with the lowest UV index is December (UV index 8).

Sr	Month	Average UV Index				
1	January	9				
2	February	11				
3	March	12				
4	April	12				
5	May	12				
6	June	12				
7	July	12				
8	August	12				
9	September	12				
10	October	11				

Table 26. Average UV Index of Yangon

11	November	9
12	December	8



Figure 29. UV Index Graph of Yangon

4.5.7 Earthquakes

Two times of earthquakes are occurred in Yangon within 2018. The following table shows the detail description of earthquake occurring in Yangon.

Date	Magnitude	Depth	Distance	Location
Monday, June 18,	4.3	67.29	48km	39 km on the southeast of
2018 3:56 PM				Yangon District, Burma
Wednesday, April	4.2	20	35km	12km on the northwest of
18, 2018 9:55 AM				Twante, Burma

Table 27. Earquakes in Yangon

4.6 Land Use of Hmawbi Township

The scope of land use in Hmawbi Township is as follows.

Table 28. The scope of land Use in Hmawbi Township

Sr	Land Type	Area (Acre)
1	Total net land area	66970

Farmland	47872
Land	-
Land / Island	379
Garden land	18729
2 Allotment of land	2684
Farmland	2596
Land	-
Land / Island	-
Garden land	88
Grazing land	5659
Industrial Land	4089
Towns and other land	96
Forest area	630
Wild land	79
Cultivated area	37376
Total	117619

4.7 Soil Quality

Two samples of soil were collected around the Yangon Bottling plant to record the current condition of soil. The samples were analyzed for their physiochemical properties in Soil Laboratory, Land Use Department of Ministry of Agriculture and Irrigation.

According to test results, pH value of SS 1 which was collected at 20 m from the boundary of Yangon bottling plant is 5.3 which falls under classification of strongly acidic conditions. Under this condition, following phenomena would occurs:

- Possible Aluminum toxicity and excess availability of Cobalt, Cupper, Iron, Manganese, and Zinc
- Deficient in Calcium, Potassium, Nitrogen, Magnesium, Phosphorous, and Sulphur
- Molybdenum becomes more available with decreasing pH
- Bacterial and actinomycete activity is reduced along with a predominance of fungi
- Mineralization of organic matter and nitrification are restricted

pН	Soil	Impact interpretation							
value	classification	• Possible Aluminum toxicity and excess availability of							
≤ 5.5	Strongly	• Possible Aluminum toxicity and excess availability of							
	acidic	Cobalt, Cupper, Iron, Manganese, and Zinc							
		• Deficient in Calcium, Potassium, Nitrogen, Magnesium,							
		Phosphorous, and Sulphur							
		• Boron deficiency below pH of 5							
		• Molybdenum becomes more available with decreasing pH							
		• Bacterial and actinomycete activity is reduced along with							
		a predominance of fungi							
		• Mineralization of organic matter and nitrification are							
		restricted							
		• Below a pH of 3, functioning of cell membranes is							
		impaired, resulting in leakage of elements							
5.5	Moderately	• Preferred pH range for most crops, lower end of range may							
-	acidic,	be too acidic for some							
7.3	slightly	• pH between the range of 6.0 and 7.0 hampers phosphorous							
	acidic, and	fixation							
	neutral soils	• Neutral pH favors the fixation of molecular Nitrogen by							
		free living soil microorganisms and by symbiotic							
		microorganisms							
		• Above a pH value of 7.0 the availability of Iron,							
		Manganese, Zinc, Cobalt, and Cupper declines							
7.3	Slightly	• Above a pH of 7.0 there is an increase in the availability							
-	alkaline	of Iron, Manganese, Zinc, Cobalt, and Copper							
8.5	and	 Increased risk of ammonia volatilization 							
	Moderately	• First increasing availability of Phosphorus and Boron, but							
	alkaline soils	deficiencies may occur at higher pH values							
		• Insoluble Calcium-Phosphates may be formed at higher							
		рН							

Table 29. Soil pH and Associated Impacts

		• Electric conductivity is generally high at higher pH values
≥ 8.5	Strongly to	• Calcium and magnesium are liable to become unavailable
	very	to most crops
	strongly	• Often high sodium levels lead to toxicity and structural
	alkaline	damage
		• Toxicity of bicarbonates and other anions
		• Possible Boron toxicity common in saline and or sodic
		soils
		• Availability of most micronutrients and of Iron,
		Manganese, Zinc, Copper, and Cobalt is reduced, except for
		Molybdenum
		• Decreased

Sample	Moist-	pH Soil:	Texture				Organic	Humus	Total	Exchangeable cations			Available Nutrients	
	ure Wa % 1:2	Water 1:2:5	Sand	Silt	Clay %	Total	Organic Carbon	%	N	Ca	Mg	K	Р	K ₂ O
SS-1	5.47	4.63	65.48	27.00	7.52	100.00	1.59	2.74	0.13	1.41	1.41	0.11	16.54	5.08
SS-2	1.94	4.95	37.48	30.00	32.52	100.00	1.21	2.09	0.27	5.44	0.68	0.13	3.63	6.12

Table 30. Results of Soil Quality Analysis

Table 31. Interpretation of Soil Quality Results

Sample	pH Soil: Water	Texture	Organic Carbon	Total N	Exchangeable cations			Available Nutrients	
					Ca	Mg	K	Р	K ₂ O
SS-1	Strongly Acidic	Loam	Low	Low	Very Low	Low	Low	Medium	Low
SS-2	Strongly Acidic	Clay Loam	Low	Medium	Low	Very Low	Low	Low	Low

4.8 Water Quality

For analysis of Physiochemical properties of tube well water, inlet wastewater and outlet wastewater of Yangon Bottling Plant (GRGICL), water were sampling from three points. The wastewater from Bottling Plant will combined to the YDP Water Treatment Plant.Water and wastewater test results are provided in APPENDIX-J.

Sr.	Sample	Coord	inates	Location	Sampling	
	Name	Latitude(N) Longitude(E		Location	Date	
1	TW	17° 1'24.72"N	96° 4'31.64"E	Tube Well	24.7.2018	
2	WWS1	17° 1'22.05"N	96° 4'29.95"E	Wastewater Inlet	24.7.2018	
3	WWS2	17° 1'25.22"N	96° 4'29.84"E	Wastewater Outlet	24.7.2018	
4	WS3	17° 1'36.7"N	96° 4'30.61"E	Thae Kone Village	9.11.2020	

Table 32. Location of Water Sampling Point



Figure 30. Water Sampling Point

4.8.1 Tube Well Water

Water supply for Yangon Bottling Plant (GRGICL) is obtained from the groundwater (5 tube wells). Water quality is important for whiskey. The plant has a water treatment unit.

To analyze current conditions of water environment and water quality, 8 samples were collected and analyzed. All these samples were collected from the tube
well. The pH of the water is 6.46 and other parameter results are as the following Table 33. The sample is analyzed by Myonmar Innotndon Group ol Co., Ltd.

No.	Parameter	Tube Well Water Result	Unit	WHO STD 2018	Method
I	Alkalinity	106	mg/L	NA	Hanna (HI 97104) - Alkalinity Photometer
2	Calcium Hardness	41.16	mg/L	NA	EDTA Titrimetric Method
3	Chloride	28.19	mg/L	250 mg/L	Argentometric Method
4	Conductivity	388	μS/cm	2500 μS/cm	Hanna (HI 991300) - pH, EC, TDS, and Temperature Meter
5	Iron	5.84	mg/L	0.3 mg/L	Phenanthroline Method
6	Magnesium Hardness	49.00	mg/L	NA	EDTA Titrimetric Method
7	рН	6.46	-	6.5-8.5	Hanna (HI 2211) - pH & Temperature Meter
8	Total Dissolved Solids	262	ppm	1000 mg/L_	Hanna (HI 991300) - pH, EC, TDS, and Temperature Meter
9	Total Hardness	90.16	mg/L	500 mg/L	EDTA Titrimetric Method

Table 33. Water Analysis Results



Figure 31. Water Collection from the Tube Well



Figure 32. Water Storage Tank and Tube well Location

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4.8.2 Wastewater Quality

The quality of treated wastewater could be seen in wastewater effluent column. In first column, NEQG guideline values for distillery wastewater could be seen. The second column is bottling wastewater and the third column is discharged wastewater from wastewater treatment plant of Grand Royal Group International Factory. The water quality difference could be seen influent and effluent of wastewater treatment plant. The BOD and COD result of bottling wastewater is about 64.65 and 885 mg/l. Respectively BOD and COD value of discharge wastewater from wastewater treatment plant is in the range of NEQG about 13.05 mg/l and 58 mg/l. From the following table, the discharge water is within the range of NEQG guideline value. In Yangon Bottling Plant (GRGICL), the wastewater from the plant is discharged to wastewater discharged point which is situated the outside of the plant.

Sr.	Particular	Unit	NEQG	Bottling Wastewater	Discharge Wastewater	Lain Kone Stream Water
1	5-day Biochemical oxygen demand	mg/l	50	64.65	13.05	1.05
2	Chemical oxygen demand	mg/l	250	885	58	20.16
3	Oil and grease	mg/l	10	<3.1	<3.1	2.2
4	рН	S.U ^a	6-9	3.79	8.01	7.8
5	Total coliform bacteria	100ml	400	800	80	18
6	Total nitrogen	mg/l	10	1.5	5.7	5
7	Total phosphorous	mg/l	2	< 0.05	2.64	9
8	Total suspended solids	mg/l	50	20	6	15

Table 34. Wastewa	er Quality	Analysis	Results
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Sr	Dorticular	Unit	NEQG Guideline	Thae Kone
51.	i ai uculai	Unit	Value	Water
1	рН	S.U	6-9	7
2	Colour	HU	NG	40
3	Turbidity	FAU	NG	12
4	Conductivity	microS/cm	NG	264
5	Total Alkalinity	mg/l	NG	120
6	Total Suspended	mg/l	50	10
	Solid			
7	Salinity	mg/l	NG	0.1

Table 35.	Environmental	Water (Quality	y Analy	sis Result
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Figure 33. Collection of Wastewater from Yangon Bottling Plant (GRGICL)



Figure 34. Combined Wastewater Treatment Process Flow chart



The liquid waste of Yangon Bottling Plant will be treated in Yangon Distillery Plant Wastewater Traetment Plant. The wastewater treatment system of Yangon Distillery Plant was shown in the following figure.



Figure 35. Wastewater Treatment Process of GRGICL

,				1		F	F	i .
	Sr.no	Description	Installed Nos	Total Design Feeding	bottling inlet feed(m3/day)	Inlet COD (mg/l)	Outlet COD (mg/l)	Remark
				capacity 9m3/day)				
	4	Aeration	1	2500	600-800	1500- 2,000	800-1000	Used together wit
	5	clarification	1	1000	600-800	800-1000	500 -800	Used together wit
	6	Polishing process with air	15	3000	600-800	500 -800	150-180	15 polishing pond

Table 36. Effluent Wastewater Generation and Management System

EMP FOR YANGON BOTTLING PLANT (GRGICL)

ith Distillery waste ith Distillery waste

ds use 12 acres



Figure 36. Water Sampling from the Residental Area

4.9 Air Quality

4.9.1 Survey Item

The parameters for air Quality surveys were atmospheric pressure, CO₂, H₂S, CH₄, NO₂, O₃, PM₁₀, PM_{2.5}, Relative Humidity, SO₂, Solar radiation, Temperature, Wind direction, Wind speed and Power.

Air Monitoring was measured in one location in the Factory Campus. Location one is near treatment plant area.

Sr.	Sample	Coord	Location	
	Name	Latitude(N)	Longitude(E)	
1	AS-1	17° 1'23.60"N	96° 4'34.28"E	Plant Area
2	AS-2	17° 1'13.51"N	96° 4'13.79"E	(Leik Poke Village)
3	AS-3	17° 1'34.42"N	96° 4'23.78"E	(Near Upper Thae
				Kone)

Table 37. Location of Air Sample (AS) of the Project



Figure 37. Air Monitoring Point



Figure 38. Air Quality Monitoring

4.9.2 Survey Methodology

Sampling and analysis of ambient air quality were conducted by referring to the recommendation of the United States Environmental Protection Agency (U.S. EPA). The Haz-Scanner Environmental Perimeter Air Station (EPAS) was used to collect

ambient air survey data. Sampling rate or air quality data were measured automatically every one minute and directly read and recorded onsite for measured parameters (SO₂, NO₂, CO₂, CO, H₂S, O₃, CH₄, PM₁₀, PM_{2.5}), as shown in following table. Sampling pump was operated at 2 L/min. Different analysis methods are integrated in the instrument, such as Particulates 90° Infrared Light Scattering for particulate matters (PM₁₀, PM_{2.5}), electrochemical sensors for toxic gases (SO₂, NO₂, CO, H₂S), NDIR (optional sensor) for (CO₂, CH₄) and Gas Sensing Semiconductor- GSS technology (optional sensor) for O₃. For the datalogging capabilities of Haz Scanner (EPAS), it can be captured optional wireless data transmission up to 5 miles.

No	Parameter	Analysis Method
1	Atmospheric pressure	On site reading
2	Carbon Dioxide (CO ₂)	On site reading
3	Hydrogen Sulfide(H ₂ S)	On site reading
4	Methane (CH ₄)	On site reading
5	Nitrogen Dioxide (NO ₂)	On site reading
6	Ozone (O ₃)	On site reading
7	PM (2.5)	On site reading
8	PM (10)	On site reading
9	Relative Humidity	On site reading
10	Sulphur Dioxide (SO ₂)	On site reading
11	Solar Radiation	On site reading
12	Temperature	On site reading
13	Wind Direction	On site reading
14	Wind Speed	On site reading

Table 38. Sampling and Analysis Method for Air Quality

4.9.3 Identification of Air Pollutants and Its Impacts

The proposed Grand Royal Group International is operating the machines by the time monitoring the air quality. Therefore, the air station is set on to collect data of the current air quality impacted by operational works and moving vehicles for the transportation of loads. Therefore, the site has to measure the surrounding air quality to know whether SO₂, NO₂, CO₂, CO, H₂S, PM_{2.5} and PM₁₀ are exceeding the limiting

amount of National Environmental Quality Emission Guideline or not. The impacts of pollutants are defined below.

Carbon Monoxide (**CO**) is a toxic gas that cannot be seen or smelled. All people are at risk for CO poisoning. Unborn babies, infants, the elderly, and people with chronic heart disease, anemia, or respiratory problems are generally more at risk than others. Breathing CO can cause headache, dizziness and vomiting nausea. If CO levels are high enough, unconscious or death may be become. Exposure to moderate and high levels of CO over long periods of time has also been linked with increased risk of heart disease.

Carbon Dioxide (**CO**₂) is the primary greenhouse gas pollutant, accounting for nearly three-quarters of global greenhouse gas emissions. Carbon pollution leads to long lasting changes in our climate, such as rising global temperatures, rising sea level, changes in weather and precipitation patterns and changes in ecosystems, habitats and species diversity. Children, older adults, people living in poverty may be at risk from the health impacts of climate change.

Nitrogen Dioxide (NO₂) is a nasty-smelling gas. The main effect of breathing in raised levels of nitrogen dioxide is the increased likelihood of respiratory problems. Nitrogen dioxide inflames the lining of the lungs, and it can reduce immunity to lung infections. This can cause problems such as wheezing, coughing, colds, flu and bronchitis. Increased levels of nitrogen dioxide can have significant impacts on people with asthma because it can cause more frequent and more intense attacks. Children with asthma and older people with heart disease are most at risk.

Sulfur Dioxide (**SO**₂) is an invisible gas and has a nasty, sharp smell. It reacts easily with other substances to form harmful compounds, such as sulfuric acid, sulfurous acid and sulfate particles. Sulfur dioxide affects human health when it is breathed in. It irritates the nose, throat and airways to cause coughing, wheezing, shortness of breath, or a tight feeling around the chest. The effects of sulfur dioxide are felt very quickly and most people would feel the worst symptoms in 10 or 15 minutes after breathing in. Those most at risk of developing problems if they are exposed to sulfur dioxide are people with asthma or similar conditions.

Ozone (O_3) has a strong odor. Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. It can also reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue.

Particulate matter (PM) consists of microscopically small solid particles or liquid droplets suspended in the air. The smaller the particles, the deeper they can penetrate in to the respiratory system and the more hazardous they are to breathe. Long-term exposure to current ambient PM concentrations may lead to a marked reduction in life expectancy. The reduction in life expectancy is primarily due to increase cardio-pulmonary and lung cancer mortality. Increases are likely in lower respiratory symptoms and reduced lung function in children, and chronic obstructive pulmonary disease and reduced lung function in adults.

4.9.4 Measurement of Air Quality Comparing with the Air Quality Guidelines

The regional air quality within and surrounding factory area is overwhelmingly dominated by industries and residential. As the proposed factory is located in the industrial zone. The air quality assessment with the air quality parameters including particulates (PM₁₀, PM_{2.5}), and CO₂, H₂S, CH₄, NO₂, O₃, PMA, PMB, Relative Humidity, SO₂, Solar radiation, Temperature, Wind direction, Wind speed would be monitored. The air quality impact assessment will consider air emissions in accordance with ECD's National Environmental Quality (Emission) Guidelines, WHO air quality standards and IFC air emissions standards. To assist relevant authorities to improving baseline information, simple air quality sampling was conducted at one site for 8 hours.

Parameters	NEQG (Averaging Period)	NEQG Guideline Value (µg/m3)	Average Location One	Average Location Two	Average Location Three
Nitrogen dioxid	1-hour	200	95.37	27.60	27.92
Ozone	8-hour daily maximum	100	233.78	173.60	229.80
Particulate matter PM ₁₀	24-hour	50	10.18	2.00	8.86
Particulate matter PM _{2.5}	24-hour	25	10.88	5.80	8.23
Sulfur dioxide 10-minute		500	2.66	2.66	2.79
BarM (m Bar)	NG	NG	1,008.89	981.10	987.20
CO ₂ (ppm)	NG	NG	122.89	114.80	52.30

Table 39. Air Q	Duality	Results of	Grand F	Royal	Group	International	Factory
				~			

CO (ppb)	NG	NG	86.29	87.70	101.80
H ₂ S (ppb)	NG	NG	0	0	0
CH4 (ppm)	NG	NG	-1182.50	-1416.80	-2098.90
RH (%)	NG	NG	4.81	88.40	84.78
WDir (Deg.)	NG	NG	276.06	294.25	203.20

4.9.5 Comparison with Standard and Guidelines

4.9.5.1 Average Concentration of CO₂

Following figure shows that the concentration of carbon dioxide (CO₂) measured in that sampling locations was between the ranges of 0 ppm-800 ppm. The concentration of CO₂ measured in most of the sampling times was below the World Health Organization (WHO) Guidelines, which specifies 600 ppm for the limitation of CO₂ concentration. The highest concentration of CO₂ was 903 ppm lowest concentration of CO₂ was 153 ppm.





Figure 39. Average Concentration of CO₂

4.9.5.2 Average Concentration of CO

Following shows that the concentration of carbon monoxide (CO) measured in all sampling locations was between the ranges of 0.00 ppm-0.550 ppm. The concentration of CO measured in all the sampling stations was below the National Ambient Air Quality Standards (NAAQS), which specifies 35 ppm for the limitation of CO concentration. The highest concentration of CO was 0.550 ppm and the lowest concentration of CO was 0.05 ppm.





Figure 40. Average Concentration of CO

4.9.5.3 Average Concentration of NO₂

Following figure shows that the concentration of nitrogen dioxide (NO_2) measured in all sampling locations was between the ranges of 2 ppb-147 ppb. The concentration of NO₂ measured in all the sampling stations was above the National Ambient Air Quality Standards (NAAQS) at some time, NAAQS which specifies 100ppb for the limitation of NO₂ concentration.





Figure 41. Average Concentration of NO₂

4.9.5.4 Average Concentration of Sulphur Dioxide (SO₂)

Following figure shows that the concentration of sulfur dioxide (SO₂) measured in all sampling locations was between the ranges of 1 ppb-250 ppb. The concentration of SO₂ measured in most of the sampling data was below the National Ambient Air Quality Standards (NAAQS), which specifies 75 ppb for the limitation of SO₂ concentration.





Figure 42. Average Concentration of SO₂

4.9.5.5 Concentration of Particulate Matter PM₁₀ and PM_{2.5}

Following figures show that the concentration of particulate matter (PM₁₀) measured in all sampling locations was between the ranges of 2 μ g/m³-140 μ g/m³. The concentration of PM₁₀ measured in all the sampling stations was below the National Ambient Air Quality Standards (NAAQS), which specifies 150 μ g/m³ for the limitation of PM₁₀ concentration. The highest concentration of 140 μ g/m³ was at the location one, near the building, while the lowest concentration of 2 μ g/m³ was at the location. The concentration of particulate matter (PM_{2.5}) measured in all sampling locations was between the ranges of 2 μ g/m³-115 μ g/m³. The concentration of PM_{2.5} measured in all the sampling stations was below the National Ambient Air Quality Standards (NAAQS), which specifies 35 μ g/m³ for the limitation of PM_{2.5} concentration. The highest concentration of PM_{2.5} concentration. The highest concentration of PM_{2.5} concentration. The highest concentration of PM_{2.5} was at the location. The sampling stations was below the National Ambient Air Quality Standards (NAAQS), which specifies 35 μ g/m³ for the limitation of PM_{2.5} concentration. The highest concentration of 115 μ g/m³ was at the location, while the lowest concentration of 2 μ g/m³ was at the location.











Figure 43. Average Concentration of PM₁₀ and PM_{2.5}







Figure 44. Average Humidity, Average Temperature



Figure 45. Average Wind Speed and Wind Direction

7 0 °	Wdir	WSpM	WSpM		Wdir	WSpM	WSpM
Time	(Deg.)	(kph)	(mps)	Time	(Deg.)	(kph)	(mps)
11:20:01	178	4	1.11	13:20:01	185	3.6	1.00
11:30:01	178	4.7	1.31	13:30:01	198	2.2	0.61
11:40:01	219	1.5	0.42	13:40:01	179	3.6	1.00
11:50:01	203	1.6	0.44	13:50:01	188	3.8	1.06
12:00:01	177	1.9	0.53	14:00:01	176	0.8	0.22
12:10:01	175	3	0.83	14:10:01	148	1.4	0.39
12:20:01	177	4.3	1.19	14:20:01	177	2.3	0.64
12:30:01	169	3.6	1.00	14:30:01	185	4.1	1.14
12:40:01	169	2.4	0.67	14:40:01	152	2.4	0.67
12:50:01	187	1	0.28	14:50:01	172	2.7	0.75
13:00:01	185	3.6	1.00	15:00:01	174	1.7	0.47
13:10:01	183	2.8	0.78	15:10:01	172	1.2	0.33



Figure 46. Wind Rose Diagram, 11;00am to 15:00pm

4.10 Existing Noise Environment

4.10.1 Sources of the noise

Since the place for measuring noise levels is a factory which produces beer, the noises produced are governed by the sound of the machine operated and by the workers.

4.10.2 Noise Measurement Method

Handheld quick assessment method is used for the sound level by measuring the sound pressure. A tripod is used for mounting the SLM where the SLM is mounted and pointed towards the source of the noise.

4.10.3 Noise Measurement Location

Normally, when undertaking a noise assessment, it is essential to make note of the following on a site map:

- location of noise source
- background noise measurement location
- source noise measurement location
- topography between noise source and sensitive receivers.

The location of noise measurements for the factory is shown in following figure and table.



Figure 47. Location of NSRs within Factory Compound

Sr	NSRs	Loc	cations
51.		Latitude	Longitude
1	P1	17°1'24.69"N	96°4'43.15"E
2	P2	17°1'24.65"N	96°4'43.10"E
3	P3	17°1'21.93"N	96°4'34.45"E
4	P4	17°1'23.18"N	96°4'33.90"E
5	P5	17°1'24.26"N	96°4'31.77"E
6	P6	17°1'22.26"N	96°4'26.44"E
7	P7	17°1'21.42"N	96°4'32.33"E
8	P8	17°1'21.32"N	96°4'31.35"E
9	Р9	17°1'21.71"N	96°4'31.31"E

Table 40. Location of NSRs within Factory Compound

4.10.4 Results of the noise

The result of the noise is totally governed by the factory operation and at P1 and P2, and the workers, the wind and the Lorries there as very few cars pass through. Measurements results are shown in Table. The noise level was measured on July 24 2018.

Sr.	NSRs	Location	One Hour LAeq	NEQG Guideline Vaulue (LAeq (dBA))
			(dBA)	(Industrial, commercial)
1	P1	At the gate (Normal)	65dB	70
2	P2	At the gate (Car)	53dB	70
3	P3	Main Office	55dB	70
4	P4	Canteen	53dB	70
5	P5	Water Treatment Plant	81dB	70
6	P6	Wastewater Treatment Plant	66dB	70
7	P7	Boiler	81dB	70
8	P8	Inside Milling Section	86dB	70
9	P9	Outside Milling Section	69dB	70

Table 41. Noise Measurement Results

According to the noise measurement result, noise level from milling, Water Treatment Plant and Boiler is above the limit of NEQG noise level measurement guidelines. Noise level from the plant was a littile beyond the limit because of driving equipment. GRGICL was provided the necessary PPE as ear plugs from the workers working at high noise area.



Figure 48. Noise Level Meter for Measuring Noise



Figure 49. Noise levels Measuring around Factory Area

4.11 Emission to Air of Odour

In Grand Royal Group Internation Factory, there was no odour emission from Yangon Bottling Plant. But Yangon Bottling Plant is situatued within the Grand Royal Group Internation Factory Compound. There are two main sources of odour emission from the plant: CO_2 emission from fermenters and WWTP from Yangon Distillery Plant. The odour management system of Yangon Distillery is described in following figure.



Figure 50. Odour Management System of Grand Royal Group International Factory

4.12 Biodiversity

Biodiversity includes two portions, which are the study of vegetation (flora) and the study of living animals (fauna). Technical experts conducted the field survey for the construction site within sufficient time to get reliable data of impacts on existent biodiversity.

4.12.1 Materials and Methods

4.12.1.1 Methods (Flora)

The floristic data and ecological data collection were conducted by the following methods in the study Area.

(a) Sample Ploting

The Global Positioning System was used to navigate and mark the coordinates of the sample plots. In order to obtain essential data for predicting of tree species composition in the mangrove forest, 30x30 meter quadrants were set up and tree species in the plot were collected and population of each species were also counted. The species identification was carried out by using key to families of flowering plants and appropriate literature and confirmed by matching with herbarium specimens of Department of Botany, University of Yangon.

(b) Maping

Location maps are set by the method based on the Google map and mark the GPS position of vegetation survey.

4.12.1.2 Methods (Fauna)

Biodiversity of fish, amphibians, reptiles, birds and mammals are assessed at the present study. The survey is carried out by specimen collections for the insects (dragonflies and butterflies), fish, frogs, toads, snakes (Herpetofauna), rodents (mice and rats) as voucher specimens. Butterflies, dragonflies, amphibians and reptiles were caught for the voucher specimens to identify down to species taxa level. Birds were studied by watching with the aid of field guide book and binoculars. Voucher specimens of all taxa were identified based on systematic taxonomic keys. References for the specific fauna for taxonomic for taxonomic keys are included.

4.12.2 Results and Finding

4.12.2.1 Flora

The factory area is located at Shwe Pyi Thar Township, Yangon Region. The factory area comprises main factory shop, warehouse, canteen, main office, and car parking All most all vegetations in the area was cleaned up in the past. There are some trees which were cultivated for shade on road side and fruits trees.

At presnts there are 12 tree species, 28 small tree species, 30 shrubs, 42 herbs, 28 climbers, 10 grass, 2 ferns and 7 aquatics within the study area.

No.	Common Name	Scientific Name	Family Name
1	Aw-za	Annona squamosa L.	Annonaceae
2	Bama-kokko	Albizia lebbek (L) Benth.	Mimosaceae
3	Ban-da	Terminalia catappa L.	Combretaceae
5	Baw-di-nyaung	Ficus religiosa L.	Moraceae
6	Baw-za-gaing	<i>Leucaena leucocephala</i> (L am.) De.Wit	Mimosaceae
10	Chin-paung-phyu	Hibiscus surratensis L.	Malvaceae
11	Chin-ya	Flueggea leucopyrus Willd	Euphorbiaceae
12	Dan-gywe	Senna tora (L) Roxb	Caesalpiniaceae
14	Dan-tha-lun	Moringa pterygosperma Gaertn.	Moringaceae
15	Gaw-tha-zin	Citharexylum suberratum Sw.	Verbenaceae
16	Hti-ka-yon	Mimosa pudica L.	Mimosaceae
17	Japan-hti-ka-yon	Mimosa diplotricha C.	Mimosaceae
18	Japan-zi	Muntingia calabura L.	Tiliaceae
19	Ka-du-byan	<i>Cyanthillium cinereum</i> (L) H. Robinson	Asteraceae
20	Kaing	Saccharum spontaneum L.	Poaceae
21	Kala-ma-gyi	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Mimosaceae
22	Ka-na-phaw-	Alternanthera nodiflora R Br	Amaranthaceae
	yaing	The manufactor no agrora R.DI.	
23	Ka-zaw-poke	Cassia occidentalis L.	Caesalpiniaceae

Table 42. Species and Aquatic Species Lists in Direct Impact Zone

24	Ket-si-nae-gyi	Urea lobata L.	Malvaceae
25	Ket-si-nae-thay	Triumfetta bartramia L.	Tiliaceae
26	Kha-aung	Ficus hispida L.	Moraceae
27	Kha-yan-chin	Lycopersicon esculentum Mill.	Solanaceae
28	Kha-yan-ka-zawt	Solanum torvum Swartz	Solanaceae
29	Khwe-lae-ya	Canavalia cathartica	Fabaceae
30	Khwe-thay-pan	Ageratum conyzoides L.	Asteraceae
31	Kin-pon	Coccinia grandis (L) J. Voigh.	Cucurbitaceae
32	Ko-kko	Samanea saman (Jacq.) Merr.	Mimosaceae
33	Kon-ka-zun	Ipomoea sagittata Poir.	Convolvulaceae
34	Kon-tha-phan	Ficus racemosa L.	Moraceae
35	Kyan	Saccharum officinarum L.	Poaceae
36	Kyar-hin-nwee	<i>Operculina turpethum</i> (L) Silva Mansa	Convolvulaceae
37	Kyauk-kwe	Evolvulus nummularius L.	Convolvulaceae
38	Kyaung-pan	Vitex trifolia L.	Verbenaceae
39	Kyaung-say-pin	Acalypha indica L.	Euphorbiaceae
40	Kyeik-hman	Eclipta alba (L.) Hassk.	Asteraceae
41	Kyet-gaung- chake	Anisomeles ovata R.Br.	Lamiaceae
42	Kyet-hin-kha	Momordica charantia L.	Cucurbitaceae
43	Kyet-mauk-sue- pyan	Achyranthes aspera L.	Amaranthaceae
44	Kyet-mauk-sue- pyan	Achyranthes bidentata Bl.	Amaranthaceae
45	Kyet-tha-hin	Phyllanthus niruri L.	Euphorbiaceae
47	Lay-gya-myet	Chloris barbata Sw.	Poaceae
48	Le-hmoe	Ceiba pentandra Gaertn.	Bombacaceae
49	Let-pan	Bombax ceiba L.	Bombacaceae
50	Ma-gyi	Tamarindus indica L.	Caesalpiniaceae
51	Ma-la-kar	Psidium guajava L.	Myrtaceae
52	Ma-lar	<i>Curcuma</i> sp.	Zingiberaceae
53	Myay-zi-phyu	Phyllanthus urinaria L.	Euphorbiaceae

54	Myay-zi-phyu	Phyllanthus maderaspatensis L.	Euphorbiaceae
55	Mye-na-ga	Euphorbia thymifolia L.	Euphorbiaceae
56	Myet-kyut	Commelina nudiflora L.	Commelinaceae
57	Nauk-poe-myet	<i>Chrysopogon acicularis</i> (Retz) Trin	Poaceae
58	Not known	Indigofera miniata L.	Fabaceae
59	Not known	Desmodium triflorium DC.	Fabaceae
60	Not known	Drynaria fortunei (Kunze)J.Sm.	Polypodiaceae
61	Not known	Paspalidium flavidum Retz.	Poaceae
62	Not known	Eragrostis papposa Duf.	Poaceae
63	Not known	<i>Eragrostis tremula</i> Hochst. ex. Steud.	Poaceae
64	Not known	Hedyotis diffusa Willd.	Rubiaceae
65	Not known	<i>Lindernia crustacea</i> (L.) F.Muell.	Scrophulariaceae
66	Not known	Cyperus exaltatus Retz	Cyperaceae
67	Not known	Fimbristylis ferruginea Vahl.	Cyperaceae
68	Not known	Alysicarpus ovalifolius (Schum.) J. Leonard	Fabaceae
69	Not known	Aeschynomene indica L.	Fabaceae
70	Nwa-hta-min	Smithia sensitiva Ait.	Fabaceae
71	Ohn	Cocos nucifera L.	Arecaceae
72	Pa-de-gaw-gyi	Alpinia conchigera Griff.	Zingiberaceae
73	Pauk-pan-phyu	Sesbania grandiflora (L) Poir.	Fabaceae
74	Pa-zun-sar-yaing	Alternanthera sessilis (L.) R.Br.	Amaranthaceae
75	Pein	Colocasia antiquorum Schott.	Araceae
76	Pein	Colocasia esculnta (L)Schott	Araceae
77	Pein-kyar	Caladium humboldtii	Araceae
78	Pe-le-nyin	Acmella calva (DC.) R.K. Jansen	Asteraceae
79	Pe-yin	Phaseolus calcaratus Roxb.	Fabaceae
80	Phet-ya-gyi	Urtica nivea L.	Urticaceae
81	Phet-yar-lay	Urtica dioca L.	Urticaceae

82	Phi-gyan-nget- pyaw	Musa malaccensis Ridl.	Musaceae
83	Pilaw-yaing	Corchorus olitorius L.	Tiliaceae
84	Pin-sein-yaing	Hyptis suaveolens (L.) Poit.	Lamiaceae
85	Pyaung-phu-pin	Zea mays L.	Poaceae
86	Sa-be	Jasminum sp.	Oleaceae
87	Sa-byit-yaing	Ampelocissus barbata Planch.	Vitaceae
88	Sar-tha-kwar	<i>Gymnopetalum conchinchinense</i> Kurz	Cucurbitaceae
89	Seik-noe-ma- htwet	Euphorbia hypericifolia L.	Euphorbiaceae
90	Sin-hna-maung	Heliotropium indicum L.	Boraginaceae
91	Sin-ngo-myet	Eleusine indica Gaertn.	Poaceae
92	Su-la-na-pha	Oldenlandia corymbosa L.	Rubiaceae
93	Swe-daw	Bauhinia acuminata L.	Caesalpiniaceae
94	Ta-byet-si-ywet- gyi	Sida mysorensis Wight & Arn.	Malvaceae
95	Ta-byet-si-ywet- shae	<i>Sida acuta</i> Burm f	Malvaceae
96	Ta-byet-si-ywet- wine	Sida rhombifolia L.	Malvaceae
97	Taing-lon- chantha	Portulaca grandiflora Hook.	Portulacaceae
98	Ta-ma	Azadirachta indica A.Juss.	Meliaceae
99	Taw-hin-galar	Cleome burmanii Wight & Arn.	Capparaceae
100	Taw-lay-nyin	Jussiaea suffruticosa L.	Onagraceae
101	Taw-monla	Elephantopus scaber L.	Asteraceae
102	Taw-su-ka	Passiflora foetida L.	Passifloraceae
103	Tha-but-kha	Luffa aegyptiaca Mill.	Cucurbitaceae
104	Tha-bye	Syzygium grande (Wight) Walp	Myrtaceae
105	Tha-man	Hibiscus similis Blum.	Malvaceae
106	Tha-yet	Mangifera indica L.	Anacardiaceae
107	Thit-yay-gyi	Peperomia pellucida (L.) H.B.K.	Piperaceae

108	Thone-daunt- myet	Kyllinga melanosperma Nees.	Cyperaceae
109	Wet-kyut	Commelina bengalensis L.	Commelinaceae
110	Yakhaing-nget- pyaw	Musa sapientum L.	Musaceae
111	Ye-ka-zun	Ipomoea aquatica Forssk.	Convolvulaceae
112	Yon-padi	Hibiscus esculentus L.	Malvaceae
113	Zi	Zizyphus jujuba Lam.	Rhamnaceae

Table 43. Cultivated Species in Study Area

No.	Common Name	Scientific Name	Family Name
1	Aw-za	Annona squamosa L.	Annonaceae
2	Ban-da	Terminalia catappa L.	Combretaceae
3	Baw-za-gaing	<i>Leucaena leucocephala</i> (Lam) De.Wit	Mimosaceae
4	Chan-si-yoe- kyet-su	Jatropha curcas L.	Euphorbiaceae
5	Chin-paung-ni	Hibiscus sabdariffa L.	Malvaceae
6	Chin-paung- phyu	Hibiscus surratensis L.	Malvaceae
7	Dan-gyi	Lawsonia inermis L.	Lythraceae
8	Dan-tha-lun	Moringa pterygosperma Gaertn.	Moringaceae
9	English-me-za-li	Peltophorum pterocarpum (DC.) Back.ex K.	Caesalpiniaceae
10	Gaw-tha-zin	Citharexylum suberratum Sw.	Verbenaceae
11	Gwe-dauk	Wattakaka volubilis (L. f.) Stapf.	Asclepiadaceae
12	Ka-zun-gyi	Ipomoea batatas Lam.	Convolvulaceae
13	Kha-yae	Mimusops elengi L.	Sapotaceae
14	Kha-yan-chin	Lycopersicon esculentum Mill.	Solanaceae
15	Kha-yan-ka- zawt	Solanum torvum Swartz	Solanaceae
16	Ko-kko	Samanea saman (Jacq.) Merr.	Mimosaceae
17	Kyan	Saccharum officinarum L.	Poaceae

18	Kyaung-sha	Oroxylum indicum (L.) Kurz.	Bignoniaceae
19	Kyet-hin-kha	Momordica charantia L.	Cucurbitaceae
20	Le-hmoe	Ceiba pentandra Gaertn.	Bombacaceae
21	Ma-gyi	Tamarindus indica L.	Caesalpiniaceae
22	Ma-ho-gany	Swetenia macrophylla King	Meliaceae
23	Mai-daw-gyi- gamon	Syngonium podophyllum Schott	Araceae
24	Ma-la-kar	Psidium guajava L.	Myrtaceae
25	Me-za-li	Senna siamea (Lam.) Irwin & Barneby	Caesalpiniaceae
26	Nat-pan-nyo	Justica oreophilia Clarke.	Acanthaceae
27	Ngu	Cassia fistula L.	Caesalpiniaceae
28	Ohn	Cocos nucifera L.	Arecaceae
29	Pauk-pan-phyu	Sesbania grandiflora (L) Poir.	Fabaceae
30	Pein-kyar	Caladium bicolor (L) Vent.	Araceae
31	Pein-kyar	Caladium humboldtii	Araceae
32	Pein-ne	Artocarpus heterophyllus Lam.	Moraceae
33	Pe-zaung-yar	Dolichos tetragonolobus L.	Fabaceae
34	Phi-gyan-nget- pyaw	Musa malaccensis Ridl.	Musaceae
35	Pinle-ga-bwe	Casuarina equisetifolia Forst.	Casuarinaceae
36	Pin-ma-ywet-gyi	Lagerstroemia macrocarpa Kurz	Lythraceae
37	Pon-nyet	Calophyllum inophyllum L.	Hypericaceae
38	Pwe-say-mezali	Senna alata L.	Caesalpiniaceae
39	Pwint-tu-ywet- tu	Mussaenda erythrophylla Schum. &Thonn.	Rubiaceae
40	Pyaung-phu-pin	Zea mays L.	Poaceae
41	Pyin-ma-ywet- thay	Lagerstroemia speciosa (L) Pers.	Lythraceae
42	Sa-be	Jasminum sp.	Oleaceae
43	Swe-daw	Bauhinia acuminata L.	Caesalpiniaceae

44	Taing-lon- chantha	Portulaca grandiflora Hook.	Portulacaceae
45	Taing-taung-pe	<i>Vigna peduncularis</i> (Kunth)Fawc. & Rendle	Fabaceae
46	Ta-ma	Azadirachta indica A.Juss.	Meliaceae
47	Taung-htan	Livistona sp.	Arecaceae
48	Tha-bye	Syzygium grande (Wight) Walp	Myrtaceae
49	Tha-yet	Mangifera indica L.	Anacardiaceae
50	Yakhaing-nget- pyaw	Musa sapientum L.	Musaceae
51	Ye-hmwe-pan	Angelonia cornigera Hook.	Scrophulariaceae
52	Ye-yo	Morinda angustifolia Roxb.	Rubiaceae
53	Yon-padi	Hibiscus esculentus L.	Malvaceae
54	Ywet-hla-pan	<i>Codiaeum variegatum</i> (L) Blume	Euphorbiaceae
55	Zi-za-war	Gardenia lucida Roxb.	Rubiaceae

Table 44. Species Lists in Indirect Impact Zone

No.	Common Name	Scientific Name	Family Name
1	Alo-lay	Capparis tenera Dalzell	Capparaceae
2	Alo-lay	Caesalpinia crista L.	Caesalpiniaceae
3	Aw-za	Annona squamosa L.	Annonaceae
4	Bama-kokko	Albizia lebbek (L.) Benth.	Mimosaceae
5	Ban-da	Terminalia catappa L.	Combretaceae
6	Bauk-thi-pin	Physalis minima L.	Solanaceae
7	Baw-di-nyaung	Ficus religiosa L.	Moraceae
8	Baw-za-gaing	<i>Leucaena leucocephala</i> (Lam.) De.Wit	Mimosaceae
9	Be-da	<i>Eichhornia crassipes</i> (Mart.) Solms	Pontederiaceae
10	Bi-zet	Chromolaena odorata (L.) R.M. King & H Robinson	Asteraceae
11	Bi-zet-new	Mikania micrantha H.B.K.	Asteraceae

12	Bi-zet-pho	Synedrella nodiflora (L) Gaertn.	Asteraceae
13	Chan-si-yoe- kyet-su	Jatropha curcas L.	Euphorbiaceae
14	Chin-paung-ni	Hibiscus sabdariffa L.	Malvaceae
15	Chin-paung- phyu	Hibiscus surratensis L.	Malvaceae
16	Chin-ya	Flueggea leucopyrus Willd	Euphorbiaceae
17	Dan-gyi	Lawsonia inermis L.	Lythraceae
18	Dan-gywe	Senna tora (L.) Roxb	Caesalpiniaceae
19	Da-ni	Nypa fruticans Wurmb	Arecaceae
20	Dan-na-thu-kha	Scoparia dulcis L.	Scrophulariaceae
21	Dan-tha-lun	Moringa pterygosperma Gaertn.	Moringaceae
22	Duck week	Lemna minor L.	Lemnaceae
23	English-me-za-li	Peltophorum pterocarpum (DC.) Back.ex K.	Caesalpiniaceae
24	Gwe-dauk	Wattakaka volubilis (L. f) Stapf.	Asclepiadaceae
25	Hta-ma-soke	Glochidion sp.	Euphorbiaceae
26	Hti-ka-yon	Mimosa pudica L.	Mimosaceae
27	Japan-hti-ka-yon	Mimosa diplotricha C.	Mimosaceae
28	Ka-dauk-set	Monochoria vaginalis (Presl) Kunth	Pontederiaceae
29	Ka-det	Crateva adansonii DC.	Capparaceae
30	Ka-du-byan	<i>Cyanthillium cinereum</i> (L) H. Robinson	Asteraceae
31	Kaing	Saccharum spontaneum L.	Poaceae
32	Kala-ma-gyi	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Mimosaceae
33	Ka-na-phaw- yaing	Alternanthera nodiflora R.Br.	Amaranthaceae
34	Ka-thit	Erythrina sp.	Fabaceae
35	Kat-ma-lar	Sonneratia apetala BuchHam	Sonneratiaceae
36	Ka-zaw-poke	Cassia occidentalis L.	Caesalpiniaceae

37	Ka-zun-gyi	Ipomoea batatas Lam.	Convolvulaceae
38	Ka-zun-nwee	Ipomoea pilosa Sweet	Convolvulaceae
39	Ket-si-nae-gyi	Urea lobata L.	Malvaceae
40	Ket-si-nae-thay	Triumfetta bartramia L.	Tiliaceae
41	Kha-aung	Ficus hispida L.	Moraceae
42	Kha-ru	Pluchea indica (L) Less.	Asteraceae
43	Kha-yae	Mimusops elengi L.	Sapotaceae
44	Kha-yar	Acanthus ilicifolius L.	Acanthaceae
45	Khwe-lae-ya	Canavalia cathartica	Fabaceae
46	Khwe-sha	Trema orientalis (L.) Blume	Urticaceae
47	Khwe-thay-pan	Ageratum conyzoides L.	Asteraceae
48	Kin-pon	Coccinia grandis (L) J. Voigh.	Cucurbitaceae
49	Ko-kko	Samanea saman (Jacq.) Merr.	Mimosaceae
50	Kon-ka-zun	Ipomoea sagittata Poir.	Convolvulaceae
51	Kon-tha-phan	Ficus racemosa L.	Moraceae
52	Kyar-hin-nwee	<i>Operculina turpethum</i> (L) Silva Mansa	Convolvulaceae
53	Kyar-ni	Nymphaea pubescens Willd.	Nymphaeaceae
54	Kyar-phyu	Nymphaea nouchali Byrn. f.	Nymphaeaceae
55	-		
55	Kyauk-kwe	Evolvulus nummularius L.	Convolvulaceae
56	Kyauk-kwe Kyaung-say-pin	Evolvulus nummularius L. Acalypha indica L.	Convolvulaceae Euphorbiaceae
55 56 57	Kyauk-kwe Kyaung-say-pin Kyaung-sha	Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz.	Convolvulaceae Euphorbiaceae Bignoniaceae
55 56 57 58	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman	 Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. 	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae
55 56 57 58 59	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake	Evolvulus nummularius L.Acalypha indica L.Oroxylum indicum (L.) Kurz.Eclipta alba (L.) Hassk.Anisomeles ovata R.Br.	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae Lamiaceae
55 56 57 58 59 60	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake Kyet-mauk-sue- pyan	Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. Anisomeles ovata R.Br. Achyranthes aspera L.	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae Lamiaceae Amaranthaceae
55 56 57 58 59 60 61	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan	 Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. Anisomeles ovata R.Br. Achyranthes aspera L. Achyranthes bidentata Bl. 	ConvolvulaceaeEuphorbiaceaeBignoniaceaeAsteraceaeLamiaceaeAmaranthaceaeAmaranthaceae
53 56 57 58 59 60 61 62	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan	 Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. Anisomeles ovata R.Br. Achyranthes aspera L. Achyranthes bidentata Bl. Phyllanthus niruri L. 	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae Lamiaceae Amaranthaceae Euphorbiaceae
53 56 57 58 59 60 61 62 63	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan Kyet-tha-hin	 Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. Anisomeles ovata R.Br. Achyranthes aspera L. Achyranthes bidentata Bl. Phyllanthus niruri L. Ipomoea violacea L. 	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae Lamiaceae Amaranthaceae Euphorbiaceae Convolvulaceae
53 56 57 58 59 60 61 62 63 64	Kyauk-kwe Kyaung-say-pin Kyaung-sha Kyeik-hman Kyet-gaung- chake Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan Kyet-mauk-sue- pyan Kyet-tha-hin Kyet-thon-pin Kyi-ah	 Evolvulus nummularius L. Acalypha indica L. Oroxylum indicum (L.) Kurz. Eclipta alba (L.) Hassk. Anisomeles ovata R.Br. Achyranthes aspera L. Achyranthes bidentata Bl. Phyllanthus niruri L. Ipomoea violacea L. Trichosanthes cordata Roxb. 	Convolvulaceae Euphorbiaceae Bignoniaceae Asteraceae Lamiaceae Amaranthaceae Euphorbiaceae Convolvulaceae Cucurbitaceae

66	La-tha-ka-zun	<i>Ipomoea fistulosa</i> Mart.ex Choisy	Convolvulaceae
67	Lay-gya-myet	Chloris barbata Sw.	Poaceae
68	Le-pa-dauk	Monochoria hastaefolia Presl	Pontederiaceae
69	Le-pa-du	Sphenoclea zeylanica Gaertn.	Sphenocleaceae
70	Let-pan	Bombax ceiba L.	Bombacaceae
71	Ma-gyi	Tamarindus indica L.	Caesalpiniaceae
72	Ma-ho-gany	Swetenia macrophylla King	Meliaceae
73	Mai-daw-gyi- gamon	Syngonium podophyllum Schott	Araceae
74	Ma-la-kar	Psidium guajava L.	Myrtaceae
75	Ma-lar	<i>Curcuma</i> sp.	Zingiberaceae
76	Me-za-li	Senna siamea (Lam.) Irwin & Barneby	Caesalpiniaceae
77	Mi-chaung-kun- phet	Hygrophila phlomoides Nees	Acanthaceae
78	Mi-chaung-pan	Derris trifoliata Lour.	Fabaceae
79	Myauk-kyein	Flagellaria indica L.	Flagellariaceae
80	Myauk-u	Dioscorea sativa L.	Dioscoreaceae
81	Myay-byit	Portulaca oleracea L.	Portulacaceae
82	Myay-zi-phyu	Phyllanthus urinaria L.	Euphorbiaceae
83	Myay-zi-phyu	Phyllanthus maderaspatensis L.	Euphorbiaceae
84	Myet-kyut	Commelina nudiflora L.	Commelinaceae
85	Nat-pan-nyo	Justica oreophilia Clarke.	Acanthaceae
86	Nauk-poe-myet	<i>Chrysopogon acicular is</i> (Retz) Trin	Poaceae
87	Ngu	Cassia fistula L.	Caesalpiniaceae
88	Not known	Alysicarpus ovalifolius (Schum.) J. Leonard	Fabaceae
89	Not known	Indigofera miniata L.	Fabaceae
90	Not known	Desmodium triflorium DC.	Fabaceae
91	Not known	Melanthera biflora (L.) Wild	Asteraceae
92	Not known	Drynaria fortunei (Kunze)J.Sm.	Polypodiaceae

93	Not known	Adiantum trapeziforme	Adiantaceae
94	Not known	Hedyotis diffusa Willd.	Rubiaceae
95	Not known	Tylophora flexuosa R.Br.	Asclepiadaceae
96	Not known	Utricularia sp.	Lentibulariaceae
97	Not known	Paspalidium flavidum Retz.	Poaceae
98	Not known	Aeschynomene indica L.	Fabaceae
99	Not known	Cayratia trifolia (L.) Domin	Vitaceae
100	Not known	Eragrostis papposa Duf.	Poaceae
101	Not known	<i>Eragrostis tremula</i> Hochst. ex. Steud.	Poaceae
102	Not known	Crinum sp.	Amaryllidaceae
103	Not known	Cyperus exaltatus Retz	Cyperaceae
104	Not known	Pontederia sp.	Pontederiaceae
105	Not known	Fimbristylis ferruginea Vahl.	Cyperaceae
106	Not known	Sarcolobus globosus Wall.	Asclepiadaceae
107	Not known	<i>Lindernia ciliata</i> Colsm.) Pennell	Scrophulariaceae
108	Not known	<i>Lindernia crustacea</i> (L) F.Muell.	Scrophulariaceae
109	Not known	Lindernia antipoda (L.) Alston	Scrophulariaceae
110	Not known	Dactyloctenium aegyptium	Poaceae
111	Nwa-hta-min	Smithia sensitiva Ait.	Fabaceae
112	Nyan	Sesbania paludosa Roxb.	Fabaceae
113	Ohn	Cocos nucifera L.	Arecaceae
114	Ohn-hne	Streblus asper Lour.	Moraceae
115	Pa-de-gaw-gyi	Alpinia conchigera Griff.	Zingiberaceae
116	Pa-zun-sar-yaing	Alternanthera sessilis (L.) R.Br.	Amaranthaceae
117	Pein	Colocasia antiquorum Schott.	Araceae
118	Pein	Colocasia esculnta (L) Schott	Araceae
119	Pein	<i>Alocasia macrorrhizos</i> (L) G.Don	Araceae
120	Pein-kyar	Caladium bicolor (L) Vent.	Araceae
121	Pein-ne	Artocarpus heterophyllus Lam.	Moraceae

122	Pe-le-nyin	Acmella calva (DC.) R.K. Jansen	Asteraceae
123	Pe-yin	Phaseolus calcaratus Roxb.	Fabaceae
124	Pe-zaung-yar	Dolichos tetragonolobus L.	Fabaceae
125	Pha-lan-taung- hmwe	Costus specious Sm.	Costaceae
126	Phet-ya-gyi	Urtica nivea L.	Urticaceae
127	Phet-yar-lay	Urtica dioca L.	Urticaceae
128	Phi-gyan-nget- pyaw	Musa malaccensis Ridl.	Musaceae
129	Pilaw-yaing	Corchorus olitorius L.	Tiliaceae
130	Pinle-ga-bwe	Casuarina equisetifolia Forst.	Casuarinaceae
131	Pin-ma-ywet-gyi	Lagerstroemia macrocarpa Kurz	Lythraceae
132	Pin-sein-yaing	Hyptis suaveolens (L.) Poit.	Lamiaceae
133	Pon-nyet	Calophyllum inophyllum L.	Hypericaceae
134	Pwe-say-mezali	Senna alata L.	Caesalpiniaceae
135	Pwint-tu-ywet-tu	Mussaenda erythrophylla Schum. & Thonn.	Rubiaceae
136	Pyin-ma-ywet- thay	Lagerstroemia speciosa (L) Pers.	Lythraceae
137	Sa-byit-yaing	Ampelocissus barbata Planch.	Vitaceae
138	Sar-tha-kwar	Gymnopetalum conchinchinense Kurz	Cucurbitaceae
139	Seik-noe-ma- htwet	Euphorbia hypericifolia L.	Euphorbiaceae
140	Sein-na-gyet	Phyla nodiflora	Verbenaceae
141	Shwe-nwee	Cassytha filiformis L.	Lauraceae
142	Sin-hna-maung	Heliotropium indicum L.	Boraginaceae
143	Sin-ma-hmwe- soke	Malachra capitata L.	Malvaceae
144	Sin-ngo-myet	Eleusine indica Gaertn.	Poaceae
145	Su-la-na-pha	Oldenlandia corymbosa L.	Rubiaceae
146	Swe-daw	Bauhinia acuminata L.	Caesalpiniaceae
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147	Ta-byet-si-ywet- shae	<i>Sida acuta</i> Burm f	Malvaceae
148	Ta-byet-si-ywet- wine	Sida rhombifolia L.	Malvaceae
149	Taing-taung-pe	Vigna peduncularis(Kunth)Fawc.& Rendle	Fabaceae
150	Ta-ma	Azadirachta indica A.Juss.	Meliaceae
151	Taung-htan	Livistona sp.	Arecaceae
152	Taw-hin-galar	<i>Cleome burmanii Wight & Arn.</i>	Capparaceae
153	Taw-kyaung-pan	Clerodendrum inerme Gaertn.	Verbenaceae
154	Taw-lay-nyin	Jussiaea suffruticosa L.	Onagraceae
155	Taw-monla	Elephantopus scaber L.	Asteraceae
156	Taw-paik-san	Crotalaria mucronata L.	Fabaceae
157	Taw-pe-di-sein	Atylosia crassa Prain	Fabaceae
158	Taw-su-ka	Passiflora foetida L.	Passifloraceae
159	Tha-but-kha	Luffa aegyptiaca Mill.	Cucurbitaceae
160	Tha-khut	Dolichandrone spathacea (L. f.) K. Schum.	Bignoniaceae
161	Tha-man	Hibiscus similis Blum.	Malvaceae
162	Tha-me-ywet- leit	Avicennia marina (Forsk)Vierh.	Avicenniaceae
163	Tha-me-ywet- wine	Avicennia officinalis L.	Avicenniaceae
164	Tha-nat	Cordia myxa L.	Boraginaceae
165	Than-ma-naing- kyauk-ma-naing	Alysicarpus vaginalis (L) Dc.	Fabaceae
166	Tha-yaw	Excoecaria agallocha L.	Euphorbiaceae
167	Tha-yet	Mangifera indica L.	Anacardiaceae
168	Thit-yay-gyi	Peperomia pellucida (L.) H.B.K.	Piperaceae

169	Thone-daunt- myet	Kyllinga melanosperma Nees.	Cyperaceae
170	Wet-kyut	Commelina bengalensis L.	Commelinaceae
171	win-u	Millettia sp.	Fabaceae
172	Yakhaing-nget- pyaw	Musa sapientum L.	Musaceae
173	Ye-hmwe-pan	Angelonia cornigera Hook.	Scrophulariaceae
174	Ye-ka-zun	Ipomoea aquatica Forssk.	Convolvulaceae
175	Үе-уо	Morinda angustifolia Roxb.	Rubiaceae
176	Ye-za-lat	Pistia stratiotes L.	Araceae
177	Yin-hnaung	Vitis japonica Thunb.	Vitaceae
178	Yon-padi	Hibiscus esculentus L.	Malvaceae
179	Ywet-hla-pan	Codiaeum variegatum (L) Blume	Euphorbiaceae
180	Zi	Zizyphus jujuba Lam.	Rhamnaceae
181	Zi-za-war	Gardenia lucida Roxb.	Rubiaceae

4.12.2.2 Fauna

A total of 99 species representing butterfly (13 specie), dragonfly and damselfly (15 species), fish (130 species), frog and toad (8 species), lizard and skink (4 species) and birds (22 species) are recorded. There is not included the any endangered and endemic species under IUCN Redlist category. The significance of biodiversity in an ecosystem and complex interrelations with other components determines the structure and productivity of ecosystems, as well as contributing to their functionality. All living existing organisms inhabiting in the direct zones definite will disappear after this factory. Industries based on organic raw materials are the largest contributors of organic pollution. Then industrial waste production can flow into Thaekone creek. Much of industrial wastewater is discharged without treatment to open water resources, reducing the quality of larger volumes of water. Water is critical to many industries process such as cooling, generating stream and cleaning and as a constituent part of beverages. These effects will cause aquatic habit destruction, loss of biodiversity and water pollution.

Fauna	Order	Family	Species
Butterfly	1	5	13
Dragonfly and	1	2	15
Damselfly			
Fish	3	8	13
Frog and Toad	1	4	8
Lizard and skink	1	3	4
Snake		1	2
Arthropod	6	6	12
Bird	6	13	22
Mammal	5	5	10
Total	24	47	99

Table 45. Summary of Fauna Species Recorded

Table 46. Butterfly Species (Order Lepidoptera) Collected from Survey Area

No.	Family Name	Scientific Name
1	Danaidae	Danaus genutia genutia
		Danaus limniace limniace
2	Pieridae	Eurema hecabe contubernalis
		Leptosia nina nina
		Appias lalassis lalassis
		Euremalaeta pseudolaeta
		Atrophaneura latreillei kabrua
3	Satyridae	Lethe philemon
4	Nymphalidae	Junonia atlites
		Junonia almana almanac
		Hypolimnas bolina jacintha
		Neptis hylas kamarupa
5	Papilionidae	Papilio cresphontes

Order/ Suborder	Family	Scientific Name
Order-Odonata	Coenagriidae	Ceriagrion
Sub-order Zygoptera		coromandelinum
		Ceriagrion praetermissum
		Ceriagrion nigroflavum
		Ischnura senegalensis
		Agriocnemis dabreui
Sub- order	Libebellulidae	Orthetrum Sabina
Anisoptera		Acisoma panorpoides
		Diplacodestrivalis
		Bradinopyga geminate
		Neurothemis tullia
		Brachythemis contaminate
		Rhodothemis rufa
		Trithemis kirby
		Rhyothemis phyllis
		Pantala flavesscens

Table 47 Drag	onfly & Da	mselfly of Le	epidoptera Co	ollected from	Survey	Area
Table 47. Drag	onny & Da	insting of L	pidopiera Co		i Sui vey	nica

Table 48. Systematic Position of Fish Fauna Collected from Survey Area

No.	Family Name	Scientific Name	Common Name	Local Name
1	I.Polynemisformes	Polynemus	Mango fish	Nga-pon-nar
	Polynemidae	paradiseus		
2	II.Cypriniformes	Mystus bleekeri	-	Nga-zin-yine
	Bagridae	Mystus seenghala	River catfish	Nga-jaung
		Johnius		Nga-pot-thin
		gangeticus		
3	Cyprinidae	Puntius clavatus	-	Nga-khone-
		Labeo rohita	Rohu	ma
		Amblypharyngod	-	Nga-myit-
		on mola		chin
				Nga-bae

4	Anabantidae	Anabas	Climbing perch	Nga-pya-ma
		testudineus		
5	Cobitidae	Nemachelus	-	Nga-tha-lae-
		rubidipinnis		hto
6	Exocoetidae	Exocoetus		Nga-pyan
		poecilopterus		
7	III.			
	Ophiocephaliforme	Monoptera	Eel	Nga-shint
	S	javanensis	-	Nga-khone-
	Ophiocephalidae	Puntius		ma
		gonionotus		
8	Clariidae	Clarias batracus	Cat fish	Nga-khu

Table 49. Systematic	Position	of Recorded	Herpetofauna	from Survey	Area
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Family	Scientific Name	Common	Local	Habit
		Name	Name	
Bufonidae	Bufo	Common toad	Phar-pyok	Near pond
	melanostictus	Large ear toad	Hpar pyok	On the
	Bufo macrotis		thay	ground
Microhylidae	Kaloula pulchra	Common bull	Phar-	On the
	Microhyla ornate	frog	kyaung	ground
		Ber narrow	The' phar	Near pond
		mouthed frog		
Ranidae	Rana limnocharis	Paddy frog	Sar-phar	In the pond
	Rana tigerina	Khaing land	Kaing-phar	Mud
	Ocidozyga sp.	frog	Phar-han-lat	pond
		Swamp		
		floating frog		
Rhacophoridae	Polypedates	Common tree	Phar-pyan	Crevices of
	leucomystax	frog		roof

Geckkonidae	Hemidactylus	Common	Eing-	House
	frenatus	house gecko	myaung	
Agamidae	Calotes	Garden fence	Tat-too	On the trunk
	versicolor	lizard		
		Blue crested	Poat-thin-	On the trunk
	Calotes	lizard	nyo	
	mystaceus			
Scincidae	Mabuya	Common sun	Kyal-pyar-	Storage
	multifasciata	skink	kin-late-	house
			shaw	
Colubridae	Xenochrophis	Chequered	Yal-mway-	In the water
	piscstor	keel back	pyauk-ma	
	Ptyas mucosus	Banded rat	Lin-mway	pond
		snake		

Table 50. Systematic Position of Recorded Avifauna Collected from Survey Area

Order/Family	Scientific Name	Common Name	Vernacular
			Name
Anseriformes	Dendrocygna	Lesser whistling	Sit-sa-li
1.Dendrocygridae	javanica	duck	
II.Piciformes	Dendrocopos macei	Fulvous-breasted	Thit-tauk-nghet
2.Picidae		woodpecker	
III.Coraciiformes	Alcedo atthis	Common kingfisher	Pain-nyin
IV.Columbiformes	Columba livia	Rock pigeon	Kho
3.Columbidae	Streptopelia	Spotted dove	Jo-lay-pyauk
	chinensis		
V.Pelicaniformes	Phalacrocorax niger	Little cormorant	Din -kyi
4.Phalacrocoracidae			

VI.Passeriformes	Corvus splendens	House crow	Kyi-kan
6.Corvidae	Corvus	Large –billed crow	Taw-kyi-kan
	macrorhynchos		
7.Aegithinidae	Copsychus saularis	Common iora	Shwe-pyi-soe
8. Muscicapidae	Aegrithiria tiphia	Oriental magpie	Tha-paik-lwe
	Copsychus saularis	robin	
9. Sturnidae			Myo-za-yet
	Acridotheres tristis	Common myna	Taw-za-yet
10.Hirundinidae	Acridotheres fuscus	Jungle myna	Pyan-hlwar
11.Sylviidae	Hirundo striolata	Red-rumped	Hnan-pyi-soak
12.Passeridae	Orthotomus sutorius	swallow	Eain-sar
	Passer domesticus	Common tailor bird	Thit-pin-sar
	Passer montanus	House sparrow	Sar-wa-tee
	Ploceus philippinus	Eurasian tree	Sar-pa-tee
	Lonchura striata	sparrow	Sar-pa-tee
	Lonchura punctulata	Baya weaver	
13.Zosteropidae		White-rumped-	Sar –pa tee
14. Alcedines	Zosterops	munia	King fisher
	palpebrosus	Scaly-breasted	
	Coraciiformes	munia	
		Oriental white eye	

4.13 Socio-Economic Components

Socio-economic factors are lifestyle components and measurements of both financial viability and social standing. They directly influence social privilege and levels of financial independence. Factors such as health status, income, environment and education are studied by sociologists in terms of how they each affect human behaviors and circumstances.

4.13.1 Living conditions

The factory area is located in Hmawbi Township, the Northern District of Yangon Region. The total number of households in Late Pote, Upper Thae Kone and Lowe Thae Kone is only 263. Upper Thae Kone village is the smallest village in the study area with a total household of 48 when the largest village Late Pote has 129 households. The following table and figure show the household numbers in the study area.

Sr.	Village	House Hold
1	Lower Thae Kone	86
2	Upper Thae Kone	48
3	Late Pote	129
Tota		263

Table 51. Household Numbers in the Study Area



Total House Hold in Study Area

Figure 51. Household Numbers in the Study Area

The average household size in the study area is shown in the following figure. All the villages have significantly higher rate of population per household compared to that of Hmawbi Township (4.1). For the whole study area, average household size is about 4.62 people per household which is remarkably higher than the household sizes of Myanmar (4.4). Upper Thae Kone and Upper Thae Kone has higher house hold size than Late Pote with household sizes of 4.69, 4.67 and 4.52 respectively.



Average household size

Figure 52. Average Household Sizes in the Study Area



Total Households and Population

Figure 53. Total Household and Population in the Study Area

Total number of populations in the study area is depicted in Population Matrix. The matrix shows the distribution of both sexes (male and female) counted by their age (0 to 100). According to the matrix, the highest number of populations in both sexes is young and reproductive age, 20 and the older population, age 65 and above, is the lowest.



Population Matrix

Figure 54. Population Matrixes in the Study Area

4.13.2 Dependency Ratio and Occupation Distribution

Income is money that an individual or business receives in exchange for providing the goods or service or through investing capital. Income is consumed to fuel day-to-day expenditures. Most people age 65 and under receive the majority of their income from a salary or wages earned from a job.

The total dependency ratio tells the proportion of the population not in the workforce who are 'dependent' on those of working-age, it's a calculation which groups those aged under 15 with those over 65 years as the 'dependents' and classifying those aged 15-64 years as the working-age population. Dependency ratio is a measure of the portion of a population which is composed of dependents (people who are too young or too old to work). The dependency ratio is equal to the number of individuals aged below 15 or above 64 divided by the number of individuals aged 15 to 64, expressed as a percentage. The following pie chart shows age distribution of study area.

Age Distribution Chart



Figure 55. Age Distribution in the Study Area

The percentage of children = 24 % (age under 15 years)

The older population = 7 % (aged 65+) The working-age population = 69 % (age 15-64 years) Dependency ratio = $\frac{(24+7)}{69} \times 100$ = 44.93

So, in theory, roughly 55 percents of the population is of working-age and supporting the other 45 percents of the population, who are either children or retired. The higher the dependency ratio, the more people who are not of working age and the fewer the labor force is.

The following pie chart shows the distribution of occupation in the study area. Most of the workers are private employee working in companies, shops and servicing jobs with the percentages of 35. Daily wages, agriculture and running private business stand with 21, 14 and 13 percent of total occupation.



Occupation Distribution

Figure 56. Occupation Distributions in the Study Area

Table 52 is the descriptive table of occupation of entire population in the study area including dependent people, schooling children and ill-health. Table 53 shows the age groups of local community.

Children under five years are 6.45% of total population where elderly over 65 years count to 6.62%. Together these two age groups which are solely dependent on other age groups sum up more than thirteen percentage of total population in the area. More than 69% of the people living in the study area fall under the age group of 16 years to 64 years. This group is mainly consisting of workforces of local community.

Occupation	Count	Percent	Valid Percent	Cumulative
				Percent
Employee	21	1.7	1.7	1.7
(Gov)				
Employee	219	18.1	18.1	19.9
(Private)				
Agricultural	91	7.5	7.5	27.4

Table 52. Occupation Descriptive Table of Entire Population in the Study Area

Livestock	19	1.6	1.6	28.9
Breeding				
Private	84	6.9	6.9	35.9
Family	53	4.4	4.4	40.3
Business				
Dependent	329	27.2	27.2	67.5
Ill-Health	4	.3	.3	67.8
Daily Wages	134	11.1	11.1	78.9
Schooling	241	19.9	19.9	98.8
Other	14	1.2	1.2	100.0
Total	1209	100.0	100.0	

Table 53. Age group of Local Community

Sr.	Age Group	Count	Percent
1	<5 years	78	6.45%
2	5 to 15 years	214	17.70%
3	16 to 65 years	837	69.23%
4	>65 years	80	6.62%
	Total	1209	100.00%

4.13.3 Employment

Private employee is the most conspicuous living with about 35% of the people in the local area is working. Second most dominant type is daily wages with about 21% of the working force. Approximately 28% of the people in the resident area is working in agriculture and running private business. Following figures show the employment of local community.



Occupation Distribution

Figure 57. Employments in the Study Area

4.13.4 Religion Distribution

The most dominant religion in the study area is Buddhism with approximately 98 % of total population. The other religion shares the remaining two percentages with 1.3% of Christian, 0.3% and 0.4 % of Hindu and Islam respectively. Table 54 is the descriptive table of Religion distribution of local community with frequency, percentage and Cumulative percentages values.

Religion	Frequency	Percent	Valid Percent	Cumulative Percent
Buddhism	1184	97.9	97.9	97.9
Christian	Christian 16		1.3	99.3
Hindu	4	0.3	0.3	99.6
Islam	5	0.4	0.4	100.0
Total	1209	100.0	100.0	

Table 54. Religion Distributions of Local Community



Religion Distribution



The number of people per religion is described in Figure 58. Buddhism got the highest count with 1184 people and the other religions are very few compared to Buddhists.

4.13.5 Educational Attainment

Around 41.6% the people in local community attained only primary level education. Only 2.32% of the local people reach to University and 3.47% are graduated. About 24% remaining are middle and 19% are in high school levels. It could be noted that more than half (55.8%) of local population attained more than primary education. Approximately 10% of population is illiterate. Current educational attainment levels show the local community's past education condition. Hospitality and tourism business need a fair to high level of educational attainment. Background educational attainment of local community shows that the factory needs to concentrate capacity building of local community so that they could participate in the development process. Figure (59) shows the educational attainments of local community.



Educational Attainments

Figure 59. Educational Attainments of Local Community

Education level of both sexes in local community is described in Table 55 with individual frequencies, total count and in percentiles. From the Figure 60, the most obvious education level is primary, secondary and high school levels which mean most of school-age children are learning at basic education schools. University and bachelor degree holders stand around 6% of total educational attainments in the local community. Both male and female education attainment are almost in the same count.

		Ger	ıder	Total	Percent
		Male	Female		
Education	Illiterate	58	61	119	9.8
	Primary	238	265	503	41.6
	Middle	150	140	290	24.0
	High	110	115	225	18.6
	University	10	18	28	2.3
	Bachelor	21	21	42	3.5
	Post-Grad	2	0	2	0.2
Total		589	620	1209	100.0

Table 55. Educational Attainment of Both Sexes of Local Community



Educational Attainments by Gender



4.13.6 Cultural Heritage Region of Hmawbi Township

From the following table, the prominent pagodas and prominent monastery in Hmawbi Township were not situated within the factory area and within 1 km around the factory area.

Table	56.	Prominent	Pagodas
-------	-----	-----------	---------

Sr	Name of prominent pagodas	Location
1	Shwe Maw Tin pagoda	No (2) Quarter
2	Kyit Day lon pagoda	Banbaykoung

Table 57. Prominent Monastery

Sr	Name of prominent monastery	Location
1	Damaduta Zattawon Tawya monastery	Bottom Warnat Chaung
2	Aung Zatbu Tawya monastery (Dama yite thar)	Innlyat Village

4.13.7 Health Components of Hmawbi Township

There are three government hospitals in the health sectors of Hmawbi Township where the project is located. There are 40 rural health centers and rural health centers. Outbreaks in Hmawbi Township include malaria and cholera. Diarrhea was caused by diarrhea and no deaths from the disease. There were 42 HIV / AIDS cases but no deaths.

5 Impact Assessment/Mitigation and Monitoring Plan

Rating matrix method is used to assess the significance level of the identified environmental impacts of the Yangon Bottling Plant (GRGICL) on its environment. There are five parameters considered for the activities of the factorys and the consequences resulted from the said activities. System of rating is described in detailed as follows.

Severity	Value	Duration	Value	Spatial Scope	Value	Frequency	Value	Probability	Value
Insignificant/non-harmful	1	One day to one month	1	Activity specific	1	Annual or less	1	Almost impossible	1
Small/potentially harmful	2	One month to one year	2	Within right of way	2	Bi-annual	2	Highly unlikely	2
Significant/slightly harmful	3	One year to ten years	3	Local area	3	Monthly	3	Unlikely	3
Great/ harmful	4	Life of operation	4	National	4	Daily Intermittence	4	Possible	4
Disastrous/ deadly harmful	5	Permanent	5	Global	5	Daily Continuous	5	Definitely	5

Table 58. Impact Rating Table

	Consequence (Severity + Spatial Scope + Duration)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
abilit	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
Prob	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
cy +	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
uənba	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
/ (Fre	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
tivity	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
Ac	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Table 59. Rating Matrix

Table 60. Significance Levels

Sr.	Color Code	Value	Rating
1		1-25	Very Low
2		26-50	Low
3		51-75	Low-Medium
4		76-100	Medium-High
5		101-125	High
6		126-150	Very High

Table 61. Environmental Aspect and Impact

Sr.	Activity List	Aspect	Impact
1	Oak cast storage	Loading to/Unloading from	Physical and vehicle
		truck	hazard
		Fall from Height	Physical hazard
		6	5

		Ergonomic injury from	Physical hazard
		overweight lifting	
		Broken oak cast	Solid waste
		Washing water from oak cast	Wastewater
		Driving forklift without safety	Vehicle hazard
		line	
2	Blending	Ergonomic injury from	Physical hazard
		overweight lifting	
		Washing water from tank	Wastewater
		Storage for RS	Fire hazard
3	Bottles Storage	Loading to/Unloading from	Physical and vehicle
		truck	hazard
		Ergonomic injury from	Physical hazard
		overweight lifting	
		Contact with moving	Physical hazard
		machinery	
4	Bottle washing	Contact with broken glass	Physical hazard
		Driving machine and washing	Noise
		Glass waste	Solid waste
		Contact with acid	Chemical hazard
		Fall and slip	Physical hazard
		Bottle Washing water	Waste water
5	Bottle filling	Contact with broken glass	Physical hazard
		Driving machines	Noise

6	Labeling	Driving machine	Noise		
		Inadequate ventilation system	OSH		
7	Packing	Driving machines	Noise		
		Inadequate ventilation system	OSH		
8	Storage in the	Loading to/Unloading from	Physical and vehicle		
	finished goods	truck	hazard		
	warehouse	Ergonomic injury from	Physical hazard		
		overweight lifting			
		Contact with moving	Physical hazard		
		machinery			
		No isolated pathways for	Physical and vehicle		
		workers	hazard		
9	Water Treatment	Water treatment plant	Physical hazard		
	Plant	Operation	Waste water		
			Noise		
			Water quality		
10	Waste Water	WWTP Operation	Chemical hazards,		
	Treatment Plant		Physical hazards,		
			Solid waste, Water		
			quality		

Characteristics of the impacts are evaluated based on eight particular basis, five of which are used in the assessment of the significance level of the impacts.

Table 62. Characteristics of the Impacts

				CH	ARACTERISTICS			
IMPACTS	Nature	Impact Source	Impact Receptor	Severity	Duration	Spatial Scope	Frequency	Probability
Physical hazard	Negative	-Unloading from truck - Ergonomic injury from overweight lifting -Fall and slip -Fall from height -Contact with broken glass	Workers	Impact severity is significant for operation workers	Physical hazard will occur in factory life	Physical hazard will occur at the factory area of activity	Activity that cause the impact occurs daily intermittently	Physical hazards are possible

		 Contact with moving machinery No isolated pathways for workers 						
Chemical hazard	Negative	 Contact with chemical reagents Contact with acid in bottle washing 	Workers	Impact severity is significant for operation workers	Chemical hazard will occur in factory life	Chemical hazard will occur at the factory area of activity	Activity that cause the impact occurs daily intermittently	Chemical hazards are possible
Vehicle hazard	Negative	-Loading to/Unloading from truck - Driving forklift without safety line	Workers	Impact severity is significant for operation workers if accident by car	Vehicle hazard will occur in factory life	Vehicle hazard will occur within right of way	Activity that cause the impact occurs daily intermittently	Vehicle hazard is possible

		- No isolated pathways for workers						
Noise	Negative	-Driving machines and bottle washing	Workers	Impact severity is potentially harmful occurs almost continuously and most of the workers are subjected to exposure	Noise hazard will occur in factory life	Noise hazard will occur within the whole factory compound	Activity that cause the impact occurs daily continuously	Noise hazard are possible
Fire hazard	Negative	- Material handling - Storage for RS	Workers and the whole plant	Impact severity is harmful	RS production will be the whole factory life	If a fire broke out, the whole factory is likely to be affected	RS storage from the plant is done daily continuously	A fire hazard is possible
Solid Waste	Negative	 Broken oak cast Glass waste Sludge from WWTP 	Workers and local environme nt	Impact severity is potentially harmful if solid wastes are discharged systematically	Impact from solid waste will occur in factory life	Local area could be affected by solid waste mismanagement	Solid waste impact occurs daily intermittently	Impact from solid wastes are possible

Waste Water	Negative	 Washing water from oak cast Washing water from tank Bottle washing water WWTP 	Workers and local environme nt	Impact severity is slightly harmful if waste water is discharged with NEQG guideline	Impact from waste water will occur in factory life	Local area could be affected by discharged waste water directly	Impact on waste water occurs daily intermittently	Impact from waste water is possible
OSH	Negative	- Inadequate ventilation system	Workers	Significant for operational workers	Bottling plant will be operated through factory life	Impacts will occur within right of way	Activity that cause the impact occurs daily continuously in operation	Bottling plant will definitely have to run as a part of the process

Sr	Impact	Severity	Duration	Spatial Scope	Frequency	Probability	Total Rating	Significance Level
1	Noise	4	4	3	5	4	99	Medium-High
2	Fire hazard	4	4	3	5	4	99	Medium-High
3	OSH	3	4	2	5	5	90	Medium-High
4	Solid waste	4	4	3	4	4	88	Medium-High
5	Waste water	4	4	3	4	4	88	Medium-High
6	Vehicle hazard	3	4	2	4	4	72	Low-Medium
7	Physical hazard	3	4	1	4	4	64	Low-Medium
8	Chemical hazard	3	4	1	4	4	64	Low-Medium

Table 63. Assessment of the Significance of the Impacts without MEMs

5.1 Summary of Impacts and Mitigation Measures

Impacts	Impact Source	Mitigation			
Fire hazard	- Material handling - Storage for RS	 Providing necessary equipment for fire fighting Organizing a fire fighting team 			
Wastewater	- Bottle washing water -WWTP	 Systematic water discharged from bottle washing Systematic operation of WWTP Regular monitoring and control of discharge water from WWTP 			
Noise	-Driving machines and bottle washing	 Carrying out regular maintenance works so that unnecessary mechanical noise could be prevented Providing ear muffs for workers at high noise area Supervising regular use of ear muffs at high noise area 			
Solid Waste	- Broken oak cast -Glass waste -Sludge from WWTP	 Systematic disposal of non-recycle waste at disposal site Recycle waste and animal feed waste collector for animal feed 			
Physical hazard	-Unloading from truck -Ergonomic injury from overweight lifting -Fall and slip -Fall from height	 Providing necessary PPE for workers Regular inspection and supervision of the use of PPE Educating workers with workplace safety practices 			

Table 64. Mitigation and Enhancement Measures (MEMs)

	-Contact with moving	4. Regular inspection and supervision for
	machinery	following workplace safety practices
	-Contact with broken glass	
	- Contact with chemical	
Chemical	reagent	1. Carrying out preventive measures for
hazard	- Contact with acid in bottle washing	hazard from chemicals and related materials
Vehicle hazard	-Loading to/Unloading from truck - Driving Forklift without safety line - No isolated pathways for workers	 Setting, educating, monitoring and control of a vehicle speed limit of 15 km/hr within plant compound Installing and regular maintenance of back gear warning alarm in every vehicle Regular maintenance of vehicles Draw forklift safety line on the floor Draw isolated safety pathway on the floor for workers
OSH	-Inadequate ventilation system	 Providing adequate ventilation and air conditioning system for workers Removing the out-door unit of office room air-conn to the outside of the building Providing pre-employment health sreening assessment

Sr	Impact	Sovority	Duration	Spatial	Fraguanay	Probability	Total	Significance
51	Impact	Severity	Duration	Scope	riequency	Trobability	Rating	Level
1	Noise	3	4	2	5	3	72	Low-Medium
2	Fire hazard	2	4	2	5	3	64	Low-Medium
3	OSH	2	4	2	5	3	64	Low-Medium
4	Solid waste	2	4	3	4	2	54	Low-Medium
5	Waste water	2	4	3	4	2	54	Low-Medium
6	Chemical hazard	2	4	1	4	3	49	Low
7	Vehicle hazard	2	4	2	4	2	48	Low
8	Physical hazard	2	4	1	4	2	42	Low

Table 65. Assessment of the Significance of the Impacts with MEMs

5.2 Management and Monitoring Plan

Management and Monitoring Plans are to address and satisfy directly for all applicable environmental management and monitoring issues which are

- 1. Fire hazard
- 2. Waste water
- 3. Noise
- 4. Solid waste
- 5. Physical hazard
- 6. Chemical hazard
- 7. Vehicle hazard
- 8. OSH

5.2.1 Fire Hazard

Common ignition sources include improper or poorly maintained electrical equipment. Therefore, it is a source of fire hazard. GRGICL Company Limited is organized a firefighting team within the plant for the plant. Firefighting system of GRGICL is provided in APPENDIX-G.

Table 66. Objective and Legal Requirements for Fire Hazard

1	Objectives	To prevent and reduce fire hazard by the
		implementation of a systematic management and
		monitoring plan
2	Legal Requirements	1. Myanmar Fire Brigade Law Paragraph (14 C,
		25)
3	Mitigation Measure	1. Providing necessary equipment for fire fighting
		2. Organizing a fire fighting team

Table 67. Management Actions for Fire Hazard

Sr.	Mitigation Measures	Management Actions
1	Providing necessary equipment	1. Providing adequate fire extinguishers
	for fire fighting	at necessary places
		2. Regular inspection of fire hydrants

2	Organizing a firefighting team	1. Organizing a firefighting team with the		
		guidance of relevant firefighting		
		department		
		2. Providing firefighting trainings		
		3. Conducting regular fire drill		

 Table 68. Implementation Plan for Fire Hazard

Sr.	Management Action	Frequency	Duration	Responsibility
1	Providing adequate fire	Once/ annual	Factory life	Fire Safety
	extinguishers at necessary	recheck		Dept
	places			
2	Regular inspection of fire	Annually	Factory life	Fire Safety
	hydrants			Dept
3	Organizing a firefighting	Once/ annual	Factory life	Fire Safety
	team with the guidance of	reform		Dept
	relevant firefighting			
	department			
4	Providing firefighting	Once	Factory life	Fire Safety
	trainings			Dept
5	Conducting regular fire	Quarterly	Factory life	Fire Safety
	drill			Dept

Table 69. Monitoring Plan for Fire Hazard

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Providing adequate	Plant	Monthly	Inspection	Fire Safety
	fire extinguishers at	compound		and	Dept
	necessary places			review	
2	Regular inspection	Plant	Annually	Third	Fire Safety
	of fire hydrants	Compound		Party	Dept
				Inspection	
3	Organizing a	Firefighting	Annually	Inspection	Fire Safety
	firefighting team	team - admin records			Dept

4	Providing	Training	Annually	Inspection	Fire Safety
	firefighting	records		and	Dept
	trainings			review	
5	Conducting regular	Firefighting	Annually	Inspection	Fire Safety
	fire drill	team		and	Dept
		- admin		review	
		records			

Table 70. Factoryed Budget for Fire Hazard

Sr.	Management Actions	Budget
1	Providing adequate fire extinguishers at necessary places	300,000/yr
2	Regular inspection of fire hydrants	500,000/yr
3	Organizing a firefighting team	500,000/yr
4	Providing firefighting trainings	100,000/yr
5	Conducting regular fire drill	300,000/yr

5.2.2 Waste Water

GRGICL plant installed a CIP system which use caustic and cleaning agent to clean tanks, vessels, pipe lines and other parts of the plant. In bottling plant, acid and caustic used for bottling washing. Wash water from the CIP system and bottle washing is discharged to waste water treatment plant. Waste water treatment plant can reduce the waste water of COD 885 to the acceptable level of 58 as per laboratory analysis results.

The pollutant load of the effluent is primarily composed of organic material from process activities. Bottling processes also generate liquids such as residual whisky. The main sources of residual whisky include process tanks, pipes, whisky rejected in the packaging area and broken bottles in the packaging area.

1	Objectives	To carry out operation and maintenance of existing	
		waste water treatment system so that treated water is in	
		compliance with NEQG guideline values	

Table 71. Objective and Legal Requirements for Waste Water Treatment

2	Legal Requirements	1. Environmental Conservation Law Paragraph (14, 15)
		2. NEQG Paragraph (2.3.1.8)
3	Mitigation Measure	1. Systematic water discharged from bottle washing
		2. Systematic operation of WWTP
		3. Regular monitoring and control of discharge water
		from WWTP

Table 72. Management Actions for Waste Water Mitigations

Sr.	Mitigation Measures	Management Actions		
1	Systematic operation of WWTP	Systematic Operation and maintenance or		
	system	the waste water treatment system so		
		treated waste water is in compliance with		
		NEQG guidelines value		
2	Regular monitoring and control of	Regular monitoring of waste water		
	discharge water from WWTP			

Table 73. Implementation Plan for Waste Water Treatment

Sr.	Management Action	Frequency	Duration	Responsibility
1	Systematic Operation and	Daily	Factory Life	WWTP Dept
	maintenance of the waste			
	water treatment system			
2	Regular monitoring of	Daily	Factory Life	WWTP Dept
	waste water			

Table 74. Monitoring Plan for Waste Water Treatment

Sr.	Parameter	Location	Frequency	Responsibility
1	5- day Biochemical	Final discharge from	Monthly	D&D Dept
	Oxygen Demand	WWTP		
2	Chemical Oxygen	Final discharge from	Weekly	D&D Dept
	Demand (COD)	WWTP		
3	pН	Final discharge from	Daily	D&D Dept
		WWTP		

4	Total Coliform bacteria	Final discharge from	Monthly	D&D Dept
		WWTP		
5	Total Suspended solids	Final discharge from WWTP	Daily	D&D Dept
6	Total Nitrogen	Final discharge from WWTP	Monthly	D&D Dept
7	Total Phosphorous	Final discharge from WWTP	Monthly	D&D Dept
8	Oil and Grease	Final discharge from WWTP	Monthly	D&D Dept

Table 75. Effluent W	aste Water Quality	from Online Monitoring	System of GRGICL
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Date	Average pH	Average TSS	Average BOD	Average COD
		(mg/l)	(mg/l)	(mg/l)
12.9.2019	7.94	4.7	37.1	92.9
13.9.2019	7.9	11.1	42.3	105.8
14.9.2019	7.8	11.9	41.9	104.7
15.9.2019	7.8	10.7	42.8	106.9
16.9.2019	7.8	7.4	42.9	107.3
17.9.2019	7.9	7.5	47.1	118.1
18.9.2019	8.0	6.4	46.2	115.6
19.9.2019	7.9	7.6	45.8	114.5
20.9.2019	7.9	7.6	46.6	116.5
21.9.2019	8.1	8.4	46.3	104.1
22.9.2019	8.1	8.7	45.4	113.6
23.9.2019	7.9	8.9	48.8	122
24.9.2019	7.86	8.4	50.2	126.4
25.9.2019	7.9	20	49	122.5
26.9.2019	8	8.1	48.3	120.6
27.9.2019	8	8	47.2	118.1
28.9.2019	7.8	8.4	45.2	113.6

20.0.2010	7.0	0.0	42.0	110
29.9.2019	7.8	8.2	43.9	110
30.9.2019	7.7	7	43.3	108.8
1.10.2019	7.9	7.3	44.1	110.3
2.10.2019	7.8	8	44.1	110.4
3.10.2019	7.8	8.2	43.7	109.5
4.10.2019	7.8	8.6	43.3	108.1
5.10.2019	7.8	7.4	42.1	105.3
6.10.2019	7.7	8.6	42.2	105.5
7.10.2019	8,2	6.2	42	104.9
8.10.2019	7.9	7.04	44.1	110.2
9.10.2019	8	5.56	43.1	107.8
10.10.2019	8	5.5	41.7	104.3
11.10.2019	8	5.9	42.7	106.7
12.10.2019	7.8	5.7	42.8	107.1
13.10.2019	7.8	6.6	42.9	107.4
14.10.2019	7.8	6.5	41.5	103.7
15.10.2019	8	4.4	40.5	101.3
16.10.2019	7.8	5.03	40.7	101.9
17.10.2019	8	10	45.3	126.8
18.10.2019	8.3	10	54	134.9
19.10.2019	8	6.2	52.7	131.8
20.10.2019	8.2	4.4	48.6	121.6
21.10.2019	8	13.2	52.1	130.2
22.10.2019	8	25.4	53.6	134.1
23.10.2019	8	8.6	50.8	127
24.10.2019	7.7	7	48.4	120.9
25.10.2019	7.8	10.8	50.8	127.2
26.10.2019	7.9	8.2	50.3	125.7
27.10.2019	8.1	7.5	50.2	125.7
28.10.2019	8	6.8	50.4	126
29.10.2019	8	9	50	125
30.10.2019	7.8	8.7	47.8	118.6
L	I	1	1	1

31.10.2019	7.9	6.1	45.3	113.2
1.11.2019	7.9	8.4	48.4	121.1
2.11.2019	7.8	8.5	49.4	111.1
3.11.2019	7.9	7.3	49.5	123.7
4.11.2019	8	8.5	49.5	123.8
5.11.2019	8	9	49.5	123.7
6.11.2019	7.9	8	49.3	123
7.11.2019	8	8.2	48.5	121
8.11.2019	8	7.5	48.3	121
9.11.2019	8	8.9	53.6	133.2
10.11.2019	8	9.1	67.1	127.5
11.11.2019	8	8.4	49.8	124.5
12.11.2019	8	8	49.1	122.7
13.11.2019	8.3	7.6	48.3	121.7
14.11.2019	8.3	6.2	46.7	115.6
15.11.2019	8.3	3.6	44.3	110.7
16.11.2019	7.8	8.9	50.6	126.5
17.11.2019	7.9	8.6	50	125
18.11.2019	8	5.9	49.3	123.8
19.11.2019	7.7	13	51.7	129
20.11.2019	7.8	12.8	51.7	129.3
21.11.2019	7.9	12.8	51.7	129.3
22.11.2019	7.8	16.1	51.9	129.7
23.11.2019	7.8	7.3	52.2	129.9
24.11.2019	7.9	6.1	53.1	132.9
25.11.2019	7.9	7.9	52.7	131.7
26.11.2019	7.9	8.6	53	132.4
27.11.2019	8	8.8	54	134.9
28.11.2019	8.1	9.1	54.5	136.2
29.11.2019	8.1	9.5	54	134.7
30.11.2019	7.9	7.6	53.7	122.2
1.12.2019	7.9	8.5	53.4	133.6
L		1	1	1
2.12.2019	7.8	5.9	54.2	135.6
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3.12.2019	8.2	3.4	53.7	134.3
4.12.2019	8.1	8.8	53.8	134.4
5.12.2019	8.1	1.4	51.1	127.6
6.12.2019	8	8	56.8	138
7.12.2019	8.1	4.8	58.3	145.8
9.12.2019	7.9	9.9	55.7	139
10.12.2019	8.4	4.2	57.7	145.5
11.12.2019	7.8	9.7	57.3	143.8
12.12.2019	7.7	6.6	29	72.1
13.12.2019	7.9	7.4	37.4	92.1
14.12.2019	8	14.5	56.9	142.7
16.12.2019	8	9.3	46.1	115.5
17.12.2019	8	8	46.2	115.7
18.12.2019	7.8	9.7	45	112.5
19.12.2019	7.9	6.2	45.8	114.4
20.12.2019	7.9	7.2	46.3	116.1
21.12.2019	7.8	7.3	47.3	117.6
22.12.2019	7.9	6.1	48.4	120.9
23.12.2019	7.8	7.2	49.8	124.6
24.12.2019	7.9	10.2	47.4	118.45
NEQG	6-9	50	50	250
Guideline				
Value				

Table 76. Factoryed Budget for Waste Water Treatment

Sr.	Management Actions	Budget
1	Systematic Operation and maintenance of the waste water treatment system so treated waste water is in compliance with NEQG guidelines value	12,000,000/yr
2	Regular monitoring of waste water	2,000,000/yr

5.2.3 Noise

High noise areas are bottling lines. Workers working in these areas are needed to be provided with necessary PPE such as ear muffs.

Table	77.	Objective	and Legal	Requirements	for Noise	and Vibrations
1		00,000,000			101 1 (0100	

1	Objectives	To prevent and reduce occupational hazard from noise by		
		implementing a systematic management plan		
2	Legal Requirements	1. NEQG paragraph (1.3)		
3	Mitigation Measure	1. Carrying out regular maintenance works so that		
		unnecessary mechanical noise could be prevented		
		2. Providing ear muffs for workers at high noise area		
		3. Supervising regular use of ear muffs at high noise area		

Table 78. Management Actions for Noise and Vibrations

Sr.	Mitigation Measures	Management Actions			
1	Carrying out regular maintenance	1. Carrying out regular noise level			
	works	measurement			
		2. Carrying out annual overall			
		maintenance work			
		3. Checking workplace daily			
2	Providing ear muffs for workers at	1. Providing ear muffs for workers at high			
	high noise area	noise areas			
3	Supervising regular use of ear	1. Regular inspection and supervision for			
	muffs at high noise area	wearing ear muffs at high noise areas			

Table 79. Implementation Plan for Noise and Vibrations

Sr.	Management Action	Frequency	Duration	Responsibility	
1	Carrying out noise level	Monthly	Factory life	HODs	
	measurement regularly	Womany	Tuetory me	1025	
2	Carrying out annual overall	Annually	Factory life	HODs	
	maintenance work	, initiality	Tuetory me	11025	
3	Checking workplace daily	Daily	Factory life	HODs	

4	Providing ear muffs for workers	Biannually	Factory life	Admin Dept
5	Regular inspection and supervision for wearing ear muffs	Daily	Factory life	HODs

Table 80. Monitoring Plan for Noise and Vibrations

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Noise level	Plant	Monthly	Handheld	HODs
		Compound		noise level	
				meter	
2	Maintenance	Logistics	4 times per	Inspection	Admin Dept
	record	Dept	year		
3	Checking	The whole	Daily	Visual	HODs
	workplace daily	plant		Inspection	
4	Providing earmuffs	Workers at	Bi-	Inspection	Admin Dept
		high noise	annually		
		area			
5	Regular inspection	Workers at	Daily	Visual	HODs
	of general	high noise		Inspection	
	conditions of ear	area			
	muffs				
6	Regular inspection	Workers at	Daily	Visual	HODs
	and supervision for	high noise		Inspection	
	wearing ear muffs	area			
	at high noise areas				

Table 81. Factoryed Budget for Noise and Vibrations

Sr.	Management Actions	Budget
1	Regular noise level measurement at workplaces	100,000
2	Carrying out annual overall maintenance work	5,000,000/yr
3	Checking workplace daily	-
4	Providing earmuffs	100,000/yr

5	Regular inspection and supervision for wearing ear muffs	-
	at high noise areas	

5.2.4 Physical Hazard and Vehicle Hazard

Prevention and reduction of occupational hazard by the implementation of a systematic OSH management plan is a must for every factory. GRGICL Co., Ltd will carry out the Occupational Safety and Health management plan systematically.

1	Objectives	To prevent and reduce occupational hazard by the			
		implementation of a systematic OSH management and			
		monitoring plan			
2	Legal Requirements	1. Myanmar Fire Brigade Law Paragraph (14 C, 25)			
		2. 1951 Factory Act (Chapter 3, Chapter 4)			
3	Mitigation Measure	1. Providing necessary PPE for workers			
		2. Regular inspection and supervision of the use of			
		PPE			
		3. Educating workers with workplace safety practices			
		4. Regular inspection and supervision for conforming			
		workplace safety practices			
		5. Setting, educating, monitoring and control of a			
		vehicle speed limit of 15 km/hr within plant compound			
		6. Installing and regular maintenance of back gear			
		warning alarm in every vehicle			
		7. Regular maintenance of vehicles			
		8. Drawing forklift safety line on the floor			
		9. Drawing isolated safety pathway on the floor for			
		workers			

Table 82. Objective and Legal Requirements for Physical and Vehicle Hazard

Table 83. Management Actio	ns for Physical	and Vehicle	Hazard
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Sr.	Mitigation Measures				Management Actions
1	Providing	necessary	PPE	for	1. Providing necessary PPE for workers
	workers				working at height area

2	Regular inspection and	1. Regular inspection and supervision of
	supervision of the use of PPE	the use of PPE
3	Educating workers with workplace	1. Providing necessary OSH training
	safety practices	
4	Regular inspection and	1. Daily inspection and supervision for
	supervision for conforming	conforming workplace safety practices
	workplace safety practices	
5	Setting, educating, monitoring and	1. Setting vehicle speed limit of 15 km/hr
	control of a vehicle speed limit of	within plant compound
	15 km/hr within plant compound	2. Educating drivers for safe driving
		practice within drive compound
		3. Monitoring and control of the vehicle
		speed limit of 15 km/hr within plant
		compound
6	Installing back gear warning alarm	1. Installing of back gear warning alarm
	in every vehicle	in every vehicle
7	Regular maintenance of vehicles	1. Carrying out regular maintenance of
		vehicles
8	Drawing forklift safety line on the	1. Drawing forklift safety line on the
	floor	floor within the bolting and whole plant
		compound
9	Drawing isolated safety pathway	1. Drawing isolated safety pathway on
	on the floor for workers	the floor for workers within the bolting
		and whole plant compound

Table 84. Implementation plan for Physical and Vehicle Hazard

Sr.	Management Action	Frequency	Duration	Responsibility
1	Providing necessary for	Monthly	Factory Life	Admin Dept
	workers working at height			
	area			
2	Regular inspection and	Daily	Factory Life	HODs
	supervision of the use of			
	PPE			

3	Providing necessary OSH	Annually	Factory life	Plant Manager
	training			
4	Daily inspection and	Daily	Factory life	HODs
	supervision for			
	conforming workplace			
	safety practices			
5	Setting vehicle speed	Once	Factory life	Security
	limit of 15 km/hr within			Manager
	plant compound			
6	Educating drivers for safe	Once	Factory life	Security
	driving practice within			Manager
	drive compound			
7	Monitoring and control of	Daily	Factory life	Security
	the vehicle speed limit of			Manager
	15 km/hr within plant			
	compound			
8	Installing of back gear	Once	Factory life	Security
	warning alarm in every			Manager
	vehicle			
9	Carrying out regular	Monthly	Factory life	Maintenance
	maintenance of vehicles			Dept
10	Drawing forklift safety	Once	Factory life	Plant Manager
	line on the floor			
11	Drawing isolated safety	Once	Factory life	Plant Manager
	pathway on the floor for			
	workers			

Table 85. Monitoring plan for Physical and Vehicle Hazard

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Providing	- Workers	Monthly	Inspection	Admin Dept
	necessary PPE for	working in			
	workers working at	the			
	height area	warehouse			

		- Admin			
		Record			
2	Regular inspection	Workers	Daily	Inspection	HODs
	and supervision of	within the			
	the use of PPE	plant			
		compound			
3	Providing	Training	Annually	Inspection	Plant Manager
	necessary OSH training as shown in table 48 and 49	record			
4	Daily inspection	Workers	Daily	Inspection	HODs
	and supervision for	within the			
	conforming	plant			
	workplace safety	compound			
	practices				
5	Setting vehicle	Vehicles	Daily	Inspection	Security
	speed limit of 15	within the			Manager
	km/hr within plant	plant			
	compound	compound			
6	Educating drivers	Drivers	Once	Inspection	Security
	for safe driving	within the			Manager
	practice within	Plant			
	drive compound	compound			
7	Monitoring and	Vehicles	Daily	Inspection	Security
	control of the	within the			Manager
	vehicle speed limit	plant			
	of	compound			
	15 km/hr within				
	plant compound				
8	Installing of back	Every	Once	Inspection	Security
	gear warning alarm	vehicle at			Manager
	in every vehicle	the plant			

9	Carrying out	Every	Monthly	Inspection	Maintenance
	regular	vehicle at			Dept
	maintenance of	the plant			
	vehicles				
10	Drawing forklift	Within the	Once	Factory	Plant Manager
	safety line on the	plant		life	
	floor	compound			
11	Drawing isolated	Within the	Once	Factory	Plant Manager
	safety pathway on	plant		life	
	the floor for	compound			
	workers				

Table 86. Projected budget for Physical and Vehicle Hazard

Sr.	Management Actions	Budget
1	Providing clothing and helmets for workers working at	100,000/yr
	high area in the warehouse	
2	Regular inspection and supervision of the use of PPE	-
3	Providing necessary OSH training	500,000/yr
4	Daily inspection and supervision for conforming workplace safety practices	-
5	Setting vehicle speed limit of 15 km/hr within plant compound	-
6	Educating drivers for safe driving practice within drive compound	-
7	Monitoring and control of the vehicle speed limit of 15 km/hr within plant compound	-
8	Installing of back gear warning alarm in every vehicle	600,000
9	Carrying out regular maintenance of vehicles	3,000,000/yr
10	Drawing forklift safety lines on the floor	2,000,000
11	Drawing isolated safety pathway on the floor for worker	2,000,000

5.2.5 Solid Waste

Solid waste generative can be divided into two types as non-recycle waste and recycle waste. Non-recycle wastes are landfilled at the municipal specified area in final disposal site. Recycle waste such as plastic, paper, wood and aluminum are sold to contractor who won tender in monthly basis.

Table 87. Objective and Lgal Requirements for Solid Waste

1	Objectives	To prevent and reduce environmental impacts from					
		solid waste by providing a systematic solid waste					
		management plan					
2	Legal Requirements	1. Environmental Conservation Law Paragraph (14, 15)					
		2. 1951 Factory Act Paragraph (14A)					
3	Mitigation Measure	1. Systematic disposal of non-recycle waste					
		2. Recycling the recyable waste through waste					
		contractor					

Table 88. Management Actions for Solid Waste

Sr.	Mitigation Measures	Management Actions		
1	Systematic disposal of non- recycle waste	1. Systematic disposal of non-recycle waste at waste disposal site provided by YCDC		
2	Recycling the recyable waste through waste contractor	1. Recycle waste such as plastic, paper, wood and aluminium are collected by waste contractor		

Table 89. Implementation Plan for Solid Wastes

Sr.	Management Action	Frequency	Duration	Responsibility
1	Systematic disposal of	Daily	Factory Life	Production
	non-recycle waste at			Dept
	waste disposal site			
	provided by YCDC			

2	Recycle waste such as	Monthly	Factory Life	Production
	plastic, paper, wood and aluminium are collected by waste contractor			Dept

Table 90. Monitoring Plan for Solid Wastes

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Systematic	Dottling	Deily	Increation	Draduation
1	Systematic	Bottning	Dally	Inspection	Production
	disposal of non-	Plant			Dept
	recycle waste at				
	waste disposal site				
	provided by				
	YCDC				
2	Recycle waste	Bottling	Monthly	Inspection	Production
	such as plastic,	Plant			Dept
	paper, wood and				
	aluminium are				
	collected by waste				
	contractor				
1					

Table 91. Projected Budget for Solid Wastes

Sr.	Management Actions	Budget
1	Systematic disposal of non-recycle waste at waste disposal site provided by YCDC	7,200,000/yr
2	Recycle waste such as plastic, paper, wood and aluminium are collected by waste contractor	-

5.2.6 Chemical Hazard

Prevention and reduction of chemical hazard by the implementation of a systematic hazard management plan is necessary and GRGICL plant will practice the hazard management plan systematically.

1	Objectives	To prevent and reduce harmful effect of chemical and	
		related materials on workers and environment	
2	Legal Requirements	1. Environmental Conservation Law Paragraph (14, 15)	
		2. Prevention from the Hazard of Chemicals and Related	
		Materials Law Paragraph (15 B, 16 B, 16 C, 16 D, 16 H,	
		16 K)	
3	Mitigation Measure	1. Carrying out preventive measures for hazard from	
		chemicals and related materials	

Table 92. Objective and Legal Requirements for Chemical Hazard

Table 93. Management Actions for Chemical Hazard

Sr.	Mitigation Measures	Management Actions
1	Carrying out preventive measures for hazard from chemicals and related materials	 Sending appropriate employers to prevention of hazards from chemicals and related materials training provided by relevant government departments Providing necessary PPE for workers handling chemicals
		 3. Providing training for systematic use of PPE 4. Regular inspection and supervision of the use of PPE

Sr.	Management Action	Frequency	Duration	Responsibility
1	Sending appropriate	Once	Factory Life	Plant Manager
	employers to			
	prevention of hazards			
	from chemicals and			
	related materials			
	training provided by			
	relevant government			
	departments			

2	Providing necessary	Annual	Factory Life	Admin Dept
	PPE for workers			
	handling chemicals			
3	Providing training for	Once	Factory Life	Plant Manager
	systematic use of PPE			
4	Regular inspection and	Daily	Factory Life	HODs
	supervision of the use			
	of PPE			

Table 95. Monitoring Plan for Chemical Hazard

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Sending	Admin	Once	Inspection	Plant Manager
	appropriate	records			
	employers to				
	prevention of				
	hazards from				
	chemicals and				
	related materials				
	training				
2	Providing	- Workers	Annual	Inspection	Admin Dept
	necessary PPE for	- Records			
	workers handling				
	chemicals				
	.				21 24
3	Providing training	Admin	Once	Inspection	Plant Manager
	for systematic use	Record			
	of PPE				
4	Regular inspection	Admin	Daily	Inspection	HODs
	and supervision of	Record			
	the use of PPE				

Sr.	Management Actions	Budget
1	Sending appropriate employers to prevention of hazards	300,000
	from chemicals and related materials training provided	
	by relevant government departments	
2	Providing necessary PPE for workers handling	300,000/yr
	chemicals	
3	Providing training for systematic use of PPE	-
4	Regular inspection and supervision of the use of PPE	-

Table 96. Projected Budget for Chemical Hazard

5.2.7 OSH

Ventilation system in bottling lines are inadequate. Workers working in these areas are needed to be provided adequate fans and air coolers.

1	Objectives	1. To describe detailed management and monitoring plans for the mitigation measures for ventilation and provide adequate air-cooling system
2	Legal Requirements	1951 Factory Act – Paragraph 15 Effective and suitable arrangement shall be made in every factory for securing and maintaining in every workroom adequate ventilation by the circulation of fresh air, and such equable temperatures as will secure workers therein reasonable conditions of comfort and health
3	Mitigation Measure	 Providing adequate ventilation systems for workers working in bottling lines Remove air conditioner out door unit of the office to the outside of the building. Providing pre-employment health sreening assessment

Table 97. Objective and legal requirements for OSH

Sr.	Mitigation Measures	Management Actions		
1	Providing the more fans and air	1. Providing adequate fans and air		
	coolers to comfort the about 8-	coolers at bottling lines		
	hour standing workers	2. Regular inspection of fans and air		
		coolers		
2	Remove air conditioner out door	1. Remove air conditioner out door units		
	units of the office area to the	of the office area		
	outside of the building.			
3	Providing pre-employment health	1. Carrying out pre-employment medical		
	sreening assessment	test		
		2. Carrying out regular medical check-up		

Table 98. Management Actions for OSH

Table 99. Implementation plan for OSH

Sr.	Management Action	Frequency	Duration	Responsibility
1	Providing adequate fans	Once recheck	Factory life	Plant Manager
	and air coolers at bottling			
	lines			
2	Regular inspection of fans	Annually	Factory life	HODs
	and air coolers	recheck		
3	Remove air conditioner	Once	Factory life	Plant Manager
	out door units of the office			
	area			
4	Carrying out pre- employment medical test	Once	Factory life	HSE Dept
5	Carrying out regular	Bi Appuelly	Eactory life	HSE Dent
5	medical check-up	DI Annually		HSE Dept

Table 100. Monitoring plan for OSH

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Providing adequate	Bottling	Once	Inspection	Plant Manager
	fans and air coolers	lines			
	at bottling lines				

2	Regular inspection	Bottling	annually	Inspection	HODs
	of fans and air	lines			
	coolers				
3	Remove air	Office area	Once	Inspection	Plant Manager
	conditioner out	of bottling			
	door units of the	section			
	office area				
4	Carrying out pre-	Clinic	Once	Inspection	HSE Dept
	employment				
	medical test				
5	Carrying out	Clinic	Annually	Inspection	HSE Dept
	regular medical				
	check-up				

Table 101. Projected budget for OSH

Sr.	Management Actions	Budget
1	Providing adequate fans and air coolers at bottling lines	3,000,000
2	Regular inspection of fans and air coolers	500,000/yr
3	Remove air conditioner out door units of the office area	500,000
4	Carrying out pre-employment medical test	-
5	Carrying out regular medical check-up	800000/yr

5.2.8 Impact on Community Safety and Health

Many communities' health and safety impacts during the construction of Yangon Bottling Plant are common to those of most nonhazardous industrial and com mercial activities. These impacts include dust, noise, and vibration from construction vehicle and communicable disease and adverse impacts associated with the influx of temporary construction labor. The plant compound is locating step aside of the No (4) Main Road and main entrance of the plant is about 100 feet far from the road and the length of the entrance is about 100 feet. The traffic hazard could not be critical but the appropriate mitigation such as conducting awareness program for traffic hazard if necessary.

1	Objectives	To prevent and reduce occupational hazard by the implementation of a systematic OSH management and			
		monitoring plan			
2	Legal Requirements	1. Myanmar Fire Brigade Law Paragraph (14 C, 25)			
		2. 1951 Factory Act (Chapter 3, Chapter 4)			
3	Mitigation Measure	1. Providing systematic vehicle management for			
		incoming and outgoing vehicles			
		2. All the conveyors/vehicles for the transportation			
		should be covered from all side			
		3. Conducting awareness program for traffic hazard in			
		local community and drivers so that project related			
		traffic incidents could be prevented or reduced on			
		roads			
		4. Avoiding high hazard routes and crowded periods in			
		local communities			
		5. Waste water must be treated in compliance with			
		NEQG Waste water quality standards			
		6. Provide health care services for local communities			

Table 102.	Objective	and Legal	Requireme	ents for CSH

Sr.	Mitigation Measures	Management Actions		
1	Providing systematic vehicle	1. Providing systematic vehicle		
	management for incoming and	management for incoming and outgoing		
	outgoing vehicles	vehicles		
2	All the conveyors/vehicles for the	1. Covered all conveyors/vehicles for the		
	transportation should be covered	transportation from all side		
	from all side			

3	Conducting awareness program for traffic hazard in local	1. Providing awareness training
	project related traffic incidents could be prevented or reduced on	
	roads	
4	Avoiding high hazard routes and crowded periods in local communities	1. Avoiding high hazard routes and crowded periods in local communities
5	Waste water must be treated in compliance with NEQG Waste water quality standards	1. Compliance with the instruction of waste water impact
6	Provide health care services for local communities	1. Provide health care services yearly for local communities

Table 104. Implementation Plan for CSH

Sr.	Management Action	Frequency	Duration	Responsibility
1	Providing systematic	Weekly	Factory life	Maintenance
	vehicle management for			Dept
	incoming and outgoing			
	vehicles			
2	Covered all	Once	Factory life	Maintenance
	conveyors/vehicles for			Dept
	the transportation from all			
	side			
3	Providing awareness	Annually	Factory life	Plant Manager
	training			
4	Avoiding high hazard	Daily	Factory life	Driver
	routes and crowded			
	periods in local			
	communities			

5	Provide health car	e Yearly	Factory life	HSE Dept
	services yearly for loca	1		
	communities			

Table 105. Monitoring Plan for CSH

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Providing	Factory	Weekly	Inspection	Maintenance
	systematic vehicle	compound			Dept
	management for				
	incoming and				
	outgoing vehicles				
2	Covered all	Vehicles	Once	Inspection	Maintenance
	conveyors/vehicles	from			Dept
	for the	factory			
	transportation from	compound			
	all side				
3	Providing	Training	Annually	Inspection	Plant Manager
	awareness training	record			
4	Avoiding high	Workers	Daily	Inspection	Driver
	hazard routes and	within the			
	crowded periods in	plant			
	local communities	compound			
5	Provide health care	Local	Yearly	Inspection	HSE Dept
	services yearly for	community			
	local communities				

Table 106. Projected Budget for CSH

Sr.	Management Actions	Budget
1	Providing systematic vehicle management for incoming	3,000,000/yr
	and outgoing vehicles	
2	Covered all conveyors/vehicles for the transportation	1,000,000
	from all side	

3	Providing awareness training	500,000/yr
4	Avoiding high hazard routes and crowded periods in local communities	-
5	Provide health care services yearly for local communities	5,000,000/yr

5.2.9 Impact from Future Work/Decommissioning Work

Air quality from dust and pariculate, noise, solid waste generation and occupational safety and health impact can be occured upon the decommissioning.

Sr.	Impact	Mitigation/Enhancement Measures	
1	Impact on Air Quality by	1 Sprayed with water during decommissing	
1	Dust and Particulate	1.5prayed with water during decommissing	
		1.High noise decommission work must be avoided	
2	Noise and Vibration from	the night time	
2	Demolitions	2.Providing necessary PPE for workers at high noise area	
		1.Disposing the decommissioning solid waste	
		systematically at waste disposal site provided by	
2	Solid Wests Consulion	respective YCDC	
3	Solid Waste Generation	2. Disposing the decommissioning solid waste must	
		be separated reuse materials and non-reuse	
		materials.	
4	Impact on Occupational	1.Providing necessary PPE adequately while the	
4	Safety and Health (OSH)	decommissioning	

Table 107. Impact Mitigations Table

Table 108. Management Action

Sr.	Mitigation Measures	Management Actions
1	Sprayed with water during	1. Checking workplace daily
	decommissing	
2	High noise decommission work	1. Checking workplace daily
	must be avoided the night time	2. Carrying out noise to NEQG

3	Providing necessary PPE for	1. Regular sweeping at material handling
	workers at high noise area	areas
		2. Regular inspection and supervision of
		sweeping and cleaning works
4	Disposing the decommissioning	1. Negotiation of a waste disposal site with
	solid waste systematically at waste	township development committee
	disposal site provided by	2. Disposal of decommissioning solid
	respective YCDC	waste to designated site
5	Disposing the decommissioning	1. Disposing the decommissioning solid
	solid waste must be separated	waste must be seprated reuse materials and
	reuse materials and non-reuse	non-reuse materials.
	materials	
6	Providing necessary PPE	1. Providing necessary PPE adequatedly
	adequately while the	while the decommissioning
	decommissioning	2. Planning work site layout to minimize
		the need for manual transfer of heavy loads

Table 109. Implementation Plan

Sr.	Management Action	Frequency	Duration	Responsibility
1	Checking workplace	Daily (for	Decommissioning	Plant Manager
	daily for earth work	decommissioning)		
2	Checking workplace	Daily (for	Decommissioning	Plant Manager
	daily for high noise	decommissioning)		
3	Carrying out noise to	Daily (for	Decommissioning	Plant Manager
	NEQG	decommissioning)		
4	Checking workplace	Daily (for	Decommissioning	Plant Manager
	daily for systematic	decommissioning)		
	usage of PPE			
5	Negotiation of a waste	Daily (for	Decommissioning	Project
	disposal site with	decommissioning)		Manager
	township development			
	committee			

6	Disposal of	Daily (for	Decommissioning	Project
	decommissioning solid	decommissioning)		Manager
	waste to designated site			
7	Disposing the	Daily (for	Decommissioning	Project
	decommissioning solid	decommissioning)		Manager
	waste must be seprated			
	reuse materials and			
	non-reuse materials.			
8	Providing necessary	Once	Decommissioning	Admin Dept
	PPE adequatedly while			
	the decommissioning			
9	Planning work site	Daily (for	Decommissioning	Plant Manager
	layout to minimize the	decommissioning)		
	need for manual			
	transfer of heavy loads			

Table 110. Monitoring Plan

Sr.	Parameter	Location	Frequency	Method	Responsibility
1	Checking	Admin	1 Month	Inspection	Plant Manager
	workplace daily	record			
	for earth work				
2	Checking	Admin	1 Month	Inspection	Plant Manager
	workplace daily	record			
	for high noise				
3	Carrying out noise	Project	1 Month	Inspection	Plant Manager
	to NEQG	compound			
4	Checking	Admin	1 Month	Inspection	Plant Manager
	workplace daily	record			
	for systematic				
	usage of PPE				
5	Negotiation of a	Township	1 Month	Inspection	Project
	waste disposal site	development			Manager
	with township	Committee			

	development				
	committee				
6	Disposal of	Admin	1 Month	Inspection	Project
	decommissioning	record			Manager
	solid waste to				
	designated site				
7	Disposing the	Admin	1 Month	Inspection	Project
	decommissioning	record			Manager
	solid waste must				
	be seprated reuse				
	materials and non-				
	reuse materials.				
8	Providing	Admin	1 Month	Inspection	Admin Dept
	necessary PPE	record			
	adequatedly while				
	the				
	decommissioning				
9	Planning work site	Project	1 Month	Inspection	Plant Manager
	layout to minimize	compound			
	the need for				
	manual transfer of				
	heavy loads				

Table 111. Projected Budget

Sr.	Management Actions	Budget
1	Checking workplace daily for earth work	-
2	Checking workplace daily for high noise	-
3	Carrying out noise to NEQG	-
4	Checking workplace daily for systematic usage of PPE	-
5	Negotiation of a waste disposal site with township development committee	-
6	Disposal of decommissioning solid waste to designated site	_

7	Disposing the decommissioning solid waste must be	-
	seprated reuse materials and non-reuse materials.	
8	Providing necessary PPE adequatedly while the	-
	decommissioning	
9	Planning work site layout to minimize the need for	-
	manual transfer of heavy loads	

Besides, occupational health and safety plan and activities with photo records are described in APPENDIX-H.

5.3 Projected Budgets

Projected budget for implementation of EMP management actions and monitoring requirements could be summarized from detailed particulars described in previous section of the report. Yangon Bottling Plant (GRGICL) will allocate 9,500,000 kyats total of one-time cost and 41,700,000 kyat of annual recurring cost for successful implementation and monitoring of the EMP.

Sr.	Management Actions	Budget
1	Providing adequate fire extinguishers at necessary places	300,000/yr
2	Regular inspection of fire hydrants	500,000/yr
3	Organizing a firefighting team	500,000/yr
4	Providing firefighting trainings	100,000/yr
5	Conducting regular fire drill	300,000/yr
6	Systematic Operation and maintenance of the waste water	12,000,000/yr
	treatment system so treated waste water is in compliance with	
	NEQG guidelines value	
7	Regular monitoring of waste water as shown in Table 30	2,000,000/yr
8	Regular noise level measurement at workplaces	100,000
9	Carrying out annual overall maintenance work	5,000,000/yr
10	Providing earmuffs	100,000/yr
11	Providing clothing and helmets for workers working at high	100,000/yr
	area in the warehouse	

Table 112. Project Budgets for Implementation and Monitoring of EMP

12	Providing necessary OSH training	500,000/yr
13	Installing of back gear warning alarm in every vehicle	600,000
14	Carrying out regular maintenance of vehicles	3,000,000/yr
15	Draw forklift safety lines on the floor	2,000,000
16	Draw isolated safety pathway on the floor for worker	2,000,000
17	Systematic disposal of non-recycle waste at waste disposal	7,200,000/yr
	site provided by YCDC	
18	Sending appropriate employers to prevention of hazards from	300,000
	chemicals and related materials training provided by relevant	
	government departments	
19	Providing necessary PPE for workers handling chemicals	300,000/yr
20	Providing adequate fans and air coolers at bottling lines	3,000,000
21	Regular inspection of fans and air coolers	500,000/yr
22	Remove air conditioner out door units of the office area	500,000
23	Carrying out regular medical check-up	800000/yr
24	Providing systematic vehicle management for incoming and	3,000,000/yr
	outgoing vehicles	
25	Covered all conveyors/vehicles for the transportation from all	1,000,000
	side	
26	Providing awareness training	500,000/yr
27	Provide health care services yearly for local communities	5,000,000/yr
	Total One Time Cost	9,500,000
	Total Recurring Cost	41,700,000

6 Public Consultation and Disclosure

6.1 Objectives

In order to acquire public opinion on the operation of Yangon Dislillery Plant, public consultation works were done firstly disclosing related factory information in local community. Public consultation and information disclosure work for Grand Royal Group International Factory operation were carried out with the following objectives:

- (a) To disseminate the factory information, benefits and disadvantages of the plant to general public so that they could understand the trade-offs;
- (b) To be able to gain meaningful contribution of informed public; and

(c) To achieve greater trust of general public with the plant proponent by disseminating relevant information.

6.2 Public Consultation Methodology and Approach

6.2.1 Personal Interviews

Personal interviews with local authorities around plant area were exercised to collect their opinion and suggestion. Then, interested persons from local community were consulted firstly disseminating plant information to them and then acquiring their comments and suggestions.

6.2.2 Open Discussion

An agenda was provided for open discussion with local people and representatives from EMP team and plant proponent in both public meetings. Results from these open discussion sessions were shown in later section.

6.2.3 Information Disclosure

(a) Presentation

Representatives from factory proponent and EMP teams gave presentations about their respective scope of works before general public in the public meetings.

(b) Translated Executive Summery

After the draft EMP report was compiled, executive summary of the report was translated into Myanmar and the translated documents were delivered to local people and local authorities for their review and comments. The summary was expressed in first section of EMP report.

6.3 Public Consultation Meetings

Public meeting for releasing EMP study results to general public requesting their comments and suggestions on the Grand Royal Group International Factory was carried out on 8th December, 2019 at Canteen of GRGICL Plant Compound. There were (50) people from nearby Leik Poke, Kwin Leik Poke, Upper Thae Kone and Lower Thae Kone villages. Representative from Grand Royal Group International Company Limited gives the information concerned with Grand Royal Group International Factory operation and representative from ECCEA(MES) explained EMP processes and participated in open discussion.

6.4 Results from Public Consultation

There was no discussion from local people. But Eight comments and suggestions letters was achieved from public meeting. Suggesstion Letters for GRGICL is shown in Appendix A.

6.4.1 Information Disclosure

Following activities were performed to disseminate the information relating to the Grand Royal Group International Factory operation process and EMP works for general public in various stages of EMP works.

A. Representative from the GRGICL Speaking with the Grand Royal Group International Factory operation process and safety procedure of GRGICL in public meeting





B. Representative from ECCEA (MES) Explaining EMP Process to be performed by ECCEA (MES) EMP team and results and finding from EMP study



C. Public Comments and Suggestion

(a) Open discussion and consultation works were exercised in public meetings but there was no comments and suggestions in open discussion section

D. Dissemination of Results from EMP Studies

- (a) Executive summary of EMP reports translated into Myanmar was delivered to general public in public meeting
- (b) Translated executive summary was also delivered to ward administration office so that local community could be freely accessible

6.5 CSR Activities of GRGICL Company Limited

(a) For Internal Employees

- Providing training to staff for work place improvement
- Establish ISO 14001 for better controlling our impact on local environment
- Safety training and personal protective equipment is provided to all their employees
- Recognition on achievement with special lunch /dinner
- Yearly April month Buddha donation ceremony
- Provide health training, disease prevention and yearly medical check-up

(b) For Local Communities

Providing based on-

- Educational programs
- Health care and medical check-up program
- Environmental program
- Support sport programs

(c) For University and College Student Training

Provided students from local college and university site visit to understand their commitment to "Green Environment"

- Provided technical training and support for other distilleries on wastewater treatment operation
- Permit on on-job training and site study training (2 week and 2 months)

Details CSR activities and estimated budget are provided in APPENDIX-B.

7 Environmental and Social Management Plan

7.1 Environmental Management Team

An Environmental Management Team will be established for successful implementation of the environmental management plan. Grand Royal Group International Company Limitedis responsible for complete implementation of the EMP and will carry out environmental monitoring programme which is part of the EMP. The team consists of plant manager, assistant plant manager and five head of departments. The objectives of the Environmental Management Team are:

- (a) To assure systematic implementation of EMP throughout factory life, and
- (b) To monitor and review effectiveness of EMP regularly

Sr.	Representative	Number
1	Plant Manager	1
2	Assistant Plant Manager	1
3	Head of Department (Production Dept)	1
4	Head of Department (Bottle Pallet Type & Old Bottle Receive Dept)	1
5	Head of Department (Process Engineering Dept)	1
6	Head of Department (Production Planning Dept)	1
7	Head of Department (Admin Dept)	1

Table 113. Environmental Management Team

7.1.1 Organization Chart of Environmental Management Team from GRGICL

GRGICL is organized environmental management team for environmental monitoring program of EMP implementation. The organization chart of environmental management team is shown in the following figure and the obligations of the team member is shown in Appendix E.



Figure 61. Organization Chart of GRGICL's Environmental Management Team

7.1.2 Roles and Responsibilities

7.1.2.1 Plant Manager

Plant Manager is responsible for overall achievement of environmental management objectives. She has to report to Chief Executive Officer for regular progress, compliance, non-compliance and corrective actions for the course of implementation of EMP. She has to lead the regular EMP review process together with the environmental management team so that effectiveness of EMP is assured.

7.1.2.2 Assistant Plant Manager

The assistant plant manager is responsible for overseeing day to day activities of the EMP. He has to direct HODs to the right path of implementation of EMP and report back to plant manager for progress, compliance, non-compliance and corrective actions for the course of implementation of EMP.

7.1.2.3 Heads of Departments

Heads of Departments (HODs) are responsible for carrying out day to day activities of the EMP. They have to direct employees or carrying out inspection works of the implementation of EMP and report back to deputy plant managers and plant manager for progress, compliance, non-compliance and corrective actions for the course of implementation of EMP.

7.2 Training, Awareness and Competence

This plan describes the provisions of training to ensure that any people working for or on behalf of GRGICL involved in the activities covered by the scope of the EMP are properly trained to carry out their assigned duties in a manner that will not cause deviation from company environmental policy.

This procedure applies to EMP related training for staff and any persons working for or on behalf of GRGICL involved in the activities covered by the scope of the EMP. GRGICL will ensure that all people performing tasks for or on behalf of the organization have had an appropriate assessment for their potential to cause a significant environmental impact and the associated competence required.

The HODs shall ensure that people working for or on behalf of the company within the scope of EMP are competent on the basis of appropriate education, training or experience. The Plant Manager shall identify training needs for people working for or on behalf of the company to ensure individual competence to implement the EMP effectively.

Sr.	Training Topics	Trainee	Duration
1	OSH Training	Supervisors, Operators, Workers and	40 hours
		Security	
2	EMP Training	Environmental management team	40 hours
3	Emergency	All employee	16 hours
	Response Training		
4	First Aid Training	All employee	20 hours
5	Fire Fighting	All employee	40 hours
	Training		

Table 114. Training Requirement

Grand Royal Group International Company Limitedis provided each of the staff in all departments for all training. And then, company is cared for the workers and local people's health by supporting free clinic.

Budget for training requirements could be summarized from detailed particulars described in section 5 of the report. GRGICL will allocate 5,700,000 kyats of annual recurring cost for successful implementation and monitoring. If the estimated budget isn't enough, GRGICL Co., Ltd. will be used by adding the enough budgets as necessary.

Table 1	15.	Budget	for	Training	of	GRGICL
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Sr.	Management Actions	Budget
1	Providing firefighting trainings	100,000/yr
2	Conducting regular fire drill	300,000/yr
3	Providing necessary OSH training	500,000/yr
4	Carrying out regular ambient air quality monitoring as shown in table 118	2,500,000/yr
5	Fund for monitoring of biodiversity	2,000,000/yr
6	Sending appropriate employers to prevention of hazards from chemicals and related materials training provided by relevant government departments	300,000/yr
	Total Cost	5,700,000/yr

Table	116.	Training	of	GRGICL	Plant
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Sr.	Name of Training	Trainer	Training Center	Date
1	Fire Drill	U Than Htay	Mdy Bottling Plant	4-Apr-17
2	Fire Fighting Equipment Training	U Aung Zaw Oo	Mdy Distillery	25-Apr-17
3	Fire Safety	U Than Htay	Mdy Bottling Plant	30-Apr-17
4	Fire Drill	U Saw Lwin Myint	Mdy Distillery Canteen	25-May-17
5	Fire Drill	U Than Htay	Mdy Bottling	27-May-17

	Fire Safety Training			
6	(How to Used Fire	U Han Win	Dining Hall	13-May-17
	Equipment)			
	Fire Safety Training			
7	(How to Used Fire	U Han Win	Dining Hall	15-May-17
	Equipment)		-	
	Fire Safety Training			
8	(How to Used Fire	U Han Win	Dining Hall	17-May-17
	Equipment)			
		Daw Khin		
0	Food Safety (GMP &	Sandar Tu &	Ygn Bottling	11 May 17
9	HACCP)	Daw Min Min	Meeting Room	11-May-17
		Thu		
10	Fire Safety Training (How	Li Hon Win	Dining Holl	10 May 17
10	to Used Fire Equipment)		Dining Hall	19-May-17
11	Fire Safety Training (How	∐ Han Win	Dining Hall	22-May-17
11	to Used Fire Equipment)		Dining Han	22 Widy 17
12	Fire Safety Training (How	U Han Win	Dining Hall	24-May-17
12	to Used Fire Equipment)			
13	Fire Safety Training (How	U Han Win	Dining Hall	29-May-17
10	to Used Fire Equipment)			29 101ug 17
14	Safety Induction	U Mvint Kvaw	Ygn Bottling	28-Jun-17
			Meeting Room	
15	Fire training	U Aung Zaw Oo	Mdy Distillery	28-Jun-17
16	Fire Drill	U Than Htay	Mdy Bottling	28-Jun-17
17	Safety Induction	U Mvint Kvaw	Ygn Bottling	30-Jun-17
17	Surety madeuon		Meeting Room	50 Juli-17
18	Safety Induction	U Mvint Kvaw	Ygn Bottling	21-Jul-17
			Meeting Room	21 Jul-1/
19	Safety Training	U Zaw Moe	Meeting Room	29-Jul-17
	, ,	Aung	6	
20	Fire Drill	U Aung Zaw Oo	Mdy Distillery	26-Jul-17
21	Washing Machine	U Aung San	Mdy Bottling	4-Jul-17
-1	Operation and Safety	Myint		

22	Incident / Accident	U Kyaw Swar	Mdy Bottling	6-Jul-17
23	Fire Training	U Than Htay	Mdy Bottling	21-Jul-17
24	About H1N1	Daw Khin Wai Myint	Mdy Bottling	8/10/2017
25	Fire Drill	U Than Htay	Mdy Bottling	23-Aug-17
26	About H1N1	Daw Khin Wai Myint	Mdy Distillery	9-Aug-17
27	Classification of fire	U Saw Lwin Myint	Mdy Distillery	28-Aug-17
28	Working Area Safety & Cleaning	U Kyaw Swar Linn & U Win Han	Ygn Bottling Meeting Room	21-Aug-17
29	Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	22-Aug-17
30	Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	23-Aug-17
31	Role & Responsibilities for Line Leader & Accident Communication	U Chit Wai Oo	Ygn Bottling Meeting Room	24-Aug-17
32	General Machine Safety	U Zaw Moe Aung	Ygn Bottling Meeting Room	26-Aug-17
33	Machine Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	29-Aug-17
34	Safety Awareness	U Kaung Nyunt Win	Ygn Bottling Meeting Room	29-Aug-17
35	'Occupational Safety & Health Specialist Course'	Mr. Win Bo & Mr.San Nyunt	MICT Park	19~23- Aug-2017
36	Fire Fighting with Extinguisher	U Than Htay	Mdy Bottling	27-Sep-17
37	Safety Training	U Zaw Moe Aung	Mdy Distillery Meeting room	13/Sep/17
38	Fire Drill	U Aung Zaw Oo	Mdy Distillery Meeting room	27/Sep/17
39	Fire Wet Drill	U Myint Wai	CFD Front	28.9.17

40	Machine Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	1-Sep-17
41	Machine Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	1-Sep-17
42	Machine Operation Training	U Chit Wai Oo	Ygn Bottling Meeting Room	4-Sep-17
43	Machine Operation Training	U Chit Wai Oo	Ygn Bottling Meeting Room	5-Sep-17
44	Basic HSE Awareness Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	7-Sep-17
45	Basic HSE Awareness Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	8-Sep-17
46	Machine Operation Training	U Chit Wai Oo	Ygn Bottling Meeting Room	11-Sep-17
47	Machine Operation Training	U Chit Wai Oo	Ygn Bottling Meeting Room	12-Sep-07
48	Machine Operation Training	U Chit Wai Oo	Ygn Bottling Meeting Room	13-Sep-17
49	Basic HSE Awareness Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	16-Sep-17
50	Basic HSE Awareness Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	19-Sep-17
51	Basic HSE Awareness Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	21-Sep-17
52	Occupational Health Safety	U Toe Maung	Ygn Bottling Meeting Room	12~13-10- 2017
53	Occupational Safety & Health Specialist Program	Mr. Win Bo & Mr.San Nyunt	OSHE Training Center	14~18-Oct- 2017
54	Hand Safety	U Chit Wai Oo	Ygn Bottling Meeting Room	16-Oct-17
55	Hand Safety	U Chit Wai Oo	Ygn Bottling Meeting Room	17-Oct-17
56	Hand Safety	U Chit Wai Oo	Ygn Bottling Meeting Room	18-Oct-17

57	Hand Safety	U Chit Wai Oo	Ygn Bottling	31_{-0} ct $_{-17}$
57	Trand Safety	e chit war oo	Meeting Room	51-000-17
58	Fire Wet Drill	U Myint Wai	CFD Front	30.10.17
59	Fire Safety Talk	U Myint Wai	CFD Front	31.10.17
60	Fire Fighting with Extinguisher	U Than Htay	Mdy Bottling	10/24/2017
61	Fire Training	U Kyaw San	Mdy Bottling	28-Oct-17
62	Safety Training	U Aung Zaw Oo, U Lin Maung Thin	Mdy Distillery	12~13-Oct- 2017
63	Fire Fighting Drill Training	U Than Htay	Mdy Bottling Plant	11/27/2017
64	Fire Safety training	U Saw Lwin Myint	Mdy Distillery	28/11/2017
65	Occupational Health and Safety training	Mr. Toe Maung	Mdy Distillery	29~30/11/2 017
66	Hand & Safety	U Chit Wai Oo	Ygn Bottling Meeting Room	8-Nov-17
67	Hand & Safety	U Chit Wai Oo	Ygn Bottling Meeting Room	9-Nov-17
68	Hot Work Safety Training	U Zaw Moe Aung	Ygn Bottling Meeting Room	18-Nov-17
69	Fire Drill	U Han Win	Ygn Bottling Area	25-Nov-17
70	ISO 22000 Food Safety Internal Audit Training	Ms. Kang Jia Hui	Singapore	16~17/11/2 017
71	Water Drill	U Than Htay	Mdy Bottling Plant	22-12-2017
72	Fire Drill	U Aung Zaw Oo	Mdy Distillery Plant	27-12-2017
73	How to use trolley training	U Aung Zaw Oo	Mdy Distillery Plant	27-12-2017
74	Occupational Health & Safety	Mr. Toe Maung	Hotel Dinger (Mdy)	1~2-12- 2017
75	Fire Fighting with	II Then IItory	Mdy Dottling	1/20/2019
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15	Extinguisher	U Inan Hiay	May Bounng	1/30/2018
76	Fire Drill	U Aung Zaw Oo	MDY Dist.;	1/30/2018
77	Road Safety Training	U Moe Kyaw Kyaw	Head Office	31-1-2018
78	Fire Drill	U Aung Zaw Oo	Mdy Dist.;	28-2-2018
79	Fire Training	U Than Htay	Mdy Bottling Plant	28-2-2018
80	Fire Drill	U Than Htay	Mdy Bottling Plant	28-2-2018
81	Fire Fighting	U Than Htay	Mdy Bottling Plant	28-2-2018
82	Fire Wet Drill	U Myint Wai	CFD Front	15-2-2018
83	Safety Awareness Training	U Wai Yan Phyo	Ygn Bottling Meeting Room	7-Mar-18
84	Safety Awareness Training	U Wai Yan Phyo	Ygn Bottling Meeting Room	9-Mar-18
85	Safety Awareness Training	U Wai Yan Phyo	Ygn Bottling Meeting Room	9-Mar-18
86	Safety Awareness Training	U Wai Yan Phyo	Ygn Bottling Meeting Room	14-Mar-18
87	Fire Drill Training	U Than Htay	Bottle Warehouse	3/19/2018
88	Fire & Health Safety Training	U Than Htay & U Aung San Myint	Mdy Bottling	3/28/2018
89	Fire & Health Safety Training	U Than Htay & U Aung San Myint	Mdy Bottling	3/29/2018
90	Fire & Health Safety Training	U Than Htay & U Aung San Myint	Mdy Bottling	30-Mar-18
91	Fire Drill Training	U Aung Zaw Oo	Mdy Distillery	3/28/2018









Figure 63. Employees approached to Emergency Assembly Points







Figure 65. First Aid Training of GRGICL

7.3 Communication

This plan ensures a consistent and efficient approach to internal communication and external complaints relating to the environment. The procedure applies to all documents established under the EMP of Yangon Bottling Plant (GRGICL). The documents under the EMP include but are not limited to:

- EMP Report
- Mitigation Measures and Management Actions
- Environmental Monitoring Programme
- Registers of Legal and Other Requirements
- External documents including legislation, professional guides and code of practices, etc.

7.3.1 Responsibility

- The plant manager is responsible for dealing with complaints.
- The assistant plant manager is responsible for ensuring that all communications relating to the environment are processed correctly.
- All staffs are responsible for putting forward suggestions on environmental matters.

7.3.2 External Communications

Communications to be handled according to this procedure include correspondence, conservations and meeting with relevant interested parties.

The person receiving the communication shall be noted the time and date, relevant address/telephone number and details of communication. Details shall be passed to the plant manager who will determine the response and whether the corrective action is required. If the communication is significant, the plant manager shall inform the chief executive officer as soon as possible.

The assistant plant manager shall be responsible for maintaining records, responses and corrective action in a separate file designated for that purpose.

7.3.3 Internal Communications

The primary means of communication is through team briefings, supported as appropriate by use of notice boards and memos. Suggestions for environmental improvements are made through the company suggestion scheme.

7.4 Document Management

This procedure describes the control system for preparing, approving, distributing, revising and updating documents that are required under the Environmental Management Plan (EMP). Yangon Bottling Plant (GRGICL) should be reporting to environmental monitoring report in biannually after the completion of EMP process.

This procedure applies to all documents established under the EMP of Yangon Bottling Plant (GRGICL). The documents under the EMP include but are not limited to:

- Impact Mitigation
- Management Actions
- Environmental Monitoring Programme as per Section 7.5
- EMP Forms, Checklists and Guidelines
- Registers of Legal and Other Requirements
- Emergency Preparedness and Response Plan
- External documents including legislation, professional guides and code of practices, etc.

7.4.1 Responsibility

7.4.1.1 Plant Manager

The Plant Manager shall approve and sign all EMP documents, include the Environmental Policy, EMP report and Other Requirements. In the absence of plant manager assistant plant manager shall approve and sign the EMP documents.

7.4.1.2 Assistant Plant Manager

The assistant plant manager is responsible for the EMP document control system. The assistant plant manager shall ensure that only controlled and current copies of documents are used and distribute the controlled EMP documents to relevant personnel. The assistant plant manager shall also maintain and update the Master List of Documents.

7.4.1.3 Heads of Departments (HODs)

HODs shall review relevant EMP documents and procedures, ensure that their subordinates are familiar with the EMP documents related to them, and report any proposed changes to the EMP documents and forms to the Environmental Management Team.

7.5 Environmental Management and Monitorong Plan

Sr.	Parameter	Location	Frequency	Analysis Method
1	5- day Biochemical Oxygen Demand	At wastewater treatment plant effluent outlet	Monthly	Estimated by Eco-lab with Jenway Dissolved Oxygen Meter (Model 970)
2	Chemical Oxygen Demand (COD)	At wastewater treatment plant effluent outlet	Daily	Lovibond SpectroDirect Method No.130-132
3	рН	At wastewater treatment plant effluent outlet	Daily	pH Meter
4	Total Coliform bacteria	At wastewater treatment plant effluent outlet	Monthly	Total Plate Count Method
5	Total Suspended solids	At wastewater treatment plant effluent outlet	Weekly	Lovibond SpectroDirect Method No.383

Table 117. Wastewater Quality Monitoring Plan

		At wastewater		Lovibond SpectroDirect
6	Total Nitrogen	treatment plant	Weekly	Method No.256-257
		effluent outlet		
	Total	At wastewater		Lovibond SpectroDirect
7	Dhaamharaya	treatment plant	Weekly	Method No.320-321
Phosphorous		effluent outlet		
		At wastewater		US EPA Method by using
8	Oil and Grease	treatment plant	6 Monthly	SPE-DEX 1000
		effluent outlet		
		At final water		-
0	Final discharged	discharge	Monthly	
9	water quality	point, Lane	Monuny	
		Kone creek		

Table 118. Air Quality Monitoring Plan

Sr.	Parameter	Location	Frequency	Analysis Method
1	Nitrogen	17° 1'23.60"N	Bi-annually	Haz-Scanner
	dioxide	96° 4'34.28"E		Environmental
				Perimeter Air
				Station (EPAS)
2	Ozone	17° 1'23.60"N	Bi-annually	Haz-Scanner
		96° 4'34.28"E		Environmental
				Perimeter Air
				Station (EPAS)
3	PM ₁₀	17° 1'23.60"N	Bi-annually	Haz-Scanner
		96° 4'34.28"E		Environmental
				Perimeter Air
				Station (EPAS)
4	PM _{2.5}	17° 1'23.60"N	Bi-annually	Haz-Scanner
		96° 4'34.28"E		Environmental

				Perimeter Air
				Station (EPAS)
5	Sulfur dioxide	17° 1'23.60"N	Bi-annually	Haz-Scanner
		96° 4'34.28"E		Environmental
				Perimeter Air
				Station (EPAS)

Table 119. Soil Quality Monitoring Plan

Sr.	Parameter	Location	ency Analysis Method					
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
1	Moisture	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
2	рН	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
3	Texture	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
	Organia	17°1'22.00"N 96°4'23.34"E		Sending Soil				
4	Carbon	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
5	Humus (%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
6	Total N	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				
		17°1'22.00"N 96°4'23.34"E		Sending Soil				
7	Ca (wt.%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to Land				
				Use Department				

		17°1'22.00"N 96°4'23.34"E		Sending	Soil
8	Mg (wt.%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to	Land
				Use Departm	ent
		17°1'22.00"N 96°4'23.34"E		Sending	Soil
9	K (wt.%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to	Land
				Use Departm	ent
		17°1'22.00"N 96°4'23.34"E		Sending	Soil
10	P (wt.%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to	Land
				Use Departm	ent
		17°1'22.00"N 96°4'23.34"E		Sending	Soil
11	K ₂ O(wt.%)	17°1'16.56"N 96°4'11.03"E	Annually	Sample to	Land
				Use Departm	ent

Respective laboratory results are provided in APPENDIX-D.

7.5.1 Monitoring Budget

Projected budget for implementation of Air, Water, Soil, Biodiversity and Social management actions and monitoring requirements could be summarized from detailed particulars described in section 5 of the report. GRGICL will allocate 7,700,000 kyats of annual recurring cost for successful implementation and monitoring. If the estimated budget isn't enough, GRGICL Co., Ltd. will be used by adding the enough budgets as necessary.

Sr.	Management Actions	Budget
1	Regular monitoring of waste water as shown in table 117	1,500,000/yr
2	Regular noise level measurement at workplaces	500,000/yr
3	Regular monitoring of soil quality as shown in table 119	1,200,000/yr
4	Carrying out regular ambient air quality monitoring as shown in table 118	2,500,000/yr
5	Fund for monitoring of biodiversity	2,000,000/yr

Table 120	. Budget for	Implementation	of Monitoring Plan
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Total Cost	7,700,000/yr
	-

7.6 Emergency Preparedness and Response Plan

The plant prepared a systematic fire prevention and emergency response plan. The emergency response plan of GRGICL plant is following;

(a) Establishing an emergency team and their responsibilities

- (b) Appointment of an emergency coordinator who will direct the execution of emergency procedures in accordance with the situation
- (c) Procedures for notification and raising of alarms
- (d) Procedures for evacuation, rescue and First-Aid Treatment
- (e) Means of communication with the relevant government response agencies such as FBD, Police, MOL and GRG key personnel
- (f) The firefighting team exits within the plant compound
- (g) Fire extinguishing equipment is provided for all buildings
- (h) GRGICL provided medical doctors and nurses for all workers and local people

Emergency response plan is provided in APPENDIX-F.



Figure 66. Plant Firefighting Equipment Layout of GRGICL

EMP FOR YANGON BOTTLING PLANT (GRGICL)

	MANMAR DISTILLERY CO., ITD A SUBSIDERY OF IBTC GROUP				HS	ΕT	RA	INI	NG	i M.		RIX						
No.	TRAINING TITLES ATTENDEE LEVEL	New Employee induction	Basic HSE awareness training	Emergency evacuation	PPE	Fire Safety	Electrical Safety	Chemical Safety	Hot work safety	Work at high	ΓΟΤΟ	Hazard Identification and reporting (SOC	Incident investigation & reporting	RA/JSA	PTW	Office Ergonomic	Confined space safety	Forklift safety
1	Management		~	\checkmark	J	\checkmark	V								1	V		
2	Admin staff		5	<i>\</i>	5	1	J	J	1	<i>\</i>		J	J	J	1	V		
3	HR staff		1	J	J	1						J	J	J	J	V		
4	All trade supervisor/ In Charge		1	\checkmark	J	1	J		1	<i>√</i>	J	J	J	V	J			
5	Staff of Hot work		\checkmark	\checkmark	J	\checkmark	<i>√</i>		\checkmark	<i>√</i>	J	J	J		1			
6	M & E (Maintenance)		1	<i>√</i>	J	1	V	<i>√</i>	<i>√</i>	<i>√</i>	7	J	J		1		1	
7	Electrician		<i>✓</i>	V	J	\checkmark	V		\checkmark	\checkmark	1	1	J		\checkmark			
8	General maintenance		1	J	J	1	J		J	J	1	1	V		1			
9	Store		1	<i>s</i>	<i>√</i>	1	<i>√</i>	\checkmark	1	\checkmark	1	1	<i>\</i>					
10	Staff of Chemical process		1	>	J	1	1	5				J	J			1		
11	Laboratory staff		<i>√</i>	>	<i>J</i>	<i>√</i>	7	>				7	J			5		
12	Blending Staff	_	~	>	J	1	>	5				1	J				J	
13	Bottling (Rinsing)		~	<i>√</i>	1	1	<i>√</i>	\$				<i>√</i>	<i>J</i>					
14	Bottling (Fill/lable/pack)		5	1	1	1	1	5				J	5					
15	Distillery (Milling/ cooking)		<i>√</i>	1	J	1	1	<i>s</i>				7	J					
16	Distillery (Fermentitation)		~	<i>√</i>	J	<i>√</i>	<i>\</i>	5				5	J					
17	Distillery (Distillery)		1	\checkmark	J	1	\checkmark	V				5	J					
18	Distillery (WWTP)		1	<i>√</i>	1	1	<i>\</i>	1				1	J				<i>√</i>	
19	Oak cask (Blending)		\checkmark	\checkmark	1	\checkmark	\checkmark	J				1	\checkmark					
20	Oak cask (Casking)		1	V	V	1	J	J				J	V					
21	Forklift operators																	J

Figure 67. HSE Training Matrix of GRGICL

Re	marks

7.6.1 Organization Structure of Emergency Team

A Main Committee, known as the Emergency Planning Committee, which shall be responsible for all decisions, connected with the handling of the emergency.

An Action Committee, which shall be responsible for carrying out the decisions of the Emergency Planning Committee.

7.6.1.1 Emergency Planning Committee

Chairman : HOD

Deputy Chairman : Plant Manager

(Note: In the absence of HOD, the Plant Manager shall be the Chairman to act on his upon)

Members:

- Human Resource / Admin. Manager
- HSE Manager
- P&T Manager
- Maintenance Manager
- Plant Manager
- Warehouse Manager
- Security Manager
- Project Manager

7.6.1.2 Action Committee

The decisions of the Emergency Planning Committee shall be translated into action by the Action Committee.

Head	: Plant Manager
Deputy Head	: HSE Executive

Members:

- Environmental Executive
- Admin Assistant
- Maintenance Supervisor

- Security Supervisor
- Warehouse Supervisor
- Plant Supervisor
- Operation Supervisor

7.6.2 Duties and Responsibilities of Emergency Team

7.6.2.1 Emergency Co-Ordinator / Assistant Emergency Coordinator

- 1. To co-ordinate all evacuation activities to ensure all staff and workers are safely evacuated from Plant and assembled at the assembly area.
- 2. To take position at assembly area.
- 3. Be at the assembly area to receive information and direct activities.
- 4. To ensure that Plant security is adhered to.

7.6.2.2 Fire Warden (Safety Personnel / Senior Engineers)

- 1. To assist the Emergency Coordinators/Asst Emergency Coordinators in his duties.
- 2. To take position at assembly area.
- 3. To collect attendance sheet from various trade supervisors and contractors
- 4. To cross-check and co-ordinate with trade supervisor and contractors regarding roll-call / head count.
- 5. To report to Emergency Coordinators/Asst Emergency Coordinators on attendance and other matters.
- 6. To co-ordinate clean-up and salvage activities.

7.6.2.3 Supervisors

- 1. To ensure complete and save evacuation of all his/her men and contractors by taking roll-call when assembled and to locate his/her men if found missing.
- 2. To report and submit strength and attendance of his/her men and sub-contractors to safety supervisor.
- 3. To instruct his/her men and contractors to leave the workplace and meet at the assembled area.
- 4. To ensure his/her men and contractors behave orderly while assembled.
- 5. Assist in clean-up and salvage activities.

7.6.2.4 Canteen Staff

- 1. Shut off all gas cooking appliances.
- 2. Remove the LPG cylinders from the kitchen and store.
- 3. Evacuate to assembly area.
- 4. Assist in clean-up and salvage activities as necessary.

7.6.2.5 Security Guards

- 1. In case of emergency, immediately call 191.
- 2. Attempt to control fire or situation.
- 3. Notify key organization personnel as soon as possible
- 4. When an emergency occurs after office hours, make a log of all incoming calls, from whom, what company, when contact number, so that response could be made to them when the appropriate personnel reach the Plant.
- 5. Crowd Control
- 6. Direct FBD fire engine or ambulance to the location of incident.
- 7. Screening of the people entering and leaving the Plant.
- 8. Log the movement of all vehicles.
- 9. Provide Plant lay out plan to the first FBD fire engine to arrive at the plant.
- 10. Do not allow any press people or Police unless otherwise permission granted by the Security Manager.

7.6.2.6 Fire Fighting Team

- 1. Know the location of all fire extinguishers and their proper usage.
- 2. To ascertain the location of the emergency scene and proceed to that area.
- 3. To control the fire or situation without taking personal risk before the arrival of the FBD.
- 4. Assist in clean-up and salvage activities.

7.6.2.7 First-Aiders / Rescuers

- 1. Rescuers to rescue of injured person(s).
- 2. First Aiders to render first aid to the injured while waiting for the arrival of the ambulance.

7.6.2.8 Plant Admin

- 1. To notify Police, FBD, Ambulance and Company's key personnel.
- 2. Refuse all in-coming calls.

- 3. No information should be given to the press.
- 4. Know the emergency telephone numbers of key organization and personnel.
- 5. Know the location of alternate phones in case the Plant Office phones are out of order.

7.6.2.9 Operator

- 1. Shut off equipment, gas and electricity.
- 2. Know locations of all shut off and familiar with proper procedures for shutting off.
- 3. Evaluate upon completing above procedures.
- 4. After emergency, restore shut-off utilities, making repairs as necessary.

7.6.2.10 Contractors

- 1. To ensure complete and save evacuation of all his men and contractors by taking roll-call when assembled and to locate his men if found missing.
- 2. To report and submit strength and attendance of his/her men and contractors to EOSH Manager/Executive.
- 3. To instruct his/ men to leave the workplace and meet at the assembled area.
- 4. To ensure his/her men and sub-contractors behave orderly while assembled.
- 5. Assist in clean-up and salvage activities.

7.6.2.11 Vehicles Drivers

- 1. All drivers to proceed to their respective vehicles immediately.
- 2. Vehicles to be cleared from fire engine access (surface level) for fire engines or ambulances.

7.6.2.12 Workers

- 1. Stop all work and shut off machines, power and / or gas supplies.
- 2. Leave the workplace by the nearest escape route.
- 3. Walk quickly and proceed orderly to the assembly area for head counts.
- 4. Do not return to the workplace for valuables.
- 5. Do not make use of the lift.
- 6. Do not panic, rush or push one another.
- 7. Do not disperse but remain at assembly area unless instructed otherwise.

7.7 Factory Decommissioning Management Plan

7.7.1 Production Area Decommissioning Management Plan

The DMP for production area will consist of the following actions

- All products will be sent for suitable re-use, recovery, treatment or disposal.
- Shutting off unnecessary services to the building. Heating and ventilation capability would be maintained.
- The instrumentation will be disconnected and rendered safe.
- Cleaning and decontamination of all floor drains.
- All remaining specialized equipment will be sent for suitable re-use or sold to an interested party. Obsolete equipment will be recycled where possible or otherwise disposed of.

7.7.2 Utilities Area Decommissioning Management Plan

The DMP for the utilities area would consist of shutting down the following systems

- Removal of any associated chemicals, oils or any other materials used in the utilities area for redistribution, return to vendor or disposal.
- Waste oils, lubricants and diesel will be sent for suitable re-use, recovery, treatment or disposal as appropriate. Any hazardous waste arising from the plant and utilities areas will be removed from site and disposed of.

7.7.3 Warehouse Area Decommissioning Management Plan

The DMP for the stores warehouse would consist of the following actions

- Cancellation of all orders for incoming materials to the site.
- Negotiation with other plants with a view to distribution of unused materials.
- Negotiation with relevant suppliers to return unused materials to supplier.
- Dispatch of opened containers and non-returnable or out-of-date goods for appropriate treatment or disposal.
- Cleaning and decontamination of the storage areas.

7.7.4 Site Decommissioning Management Plan

The following actions would be required to ensure the implementation of the site DMP

- Cessation of any construction project work on site so that the site is left in a safe and orderly condition. Contractors will be required to decommission any construction compounds and remove all construction equipment, construction materials and waste, storage units and temporary offices from the site at the completion of construction projects.
- Disbandment of contract personnel, facilities and equipment.
- Termination of all non-essential maintenance and other contracts.
- Removal from site any temporary offices or storage areas.
- Rationalization of the site electricity supply. This would involve removing transformers from service, allowing remaining site operations to run from one transformer.
- The boilers onsite will be decommissioned.

7.8 Grievance Redress Mechanism (GRM)

GRGICL will deal with public comment and suggestion by implementation of Grievance Redress Machanism.

7.8.1 Objectives of GRM

The fundamental objectives of GRM are

- To resolve any environmental and related grievence locally in consultation with the aggrieved party to facilitate smooth implementation of the project
- To democratize the development process at the local level and
- To establish accountability to the stakeholder

7.8.2 Grievance Redress Mechanism Process

The grievance redress process from GRGICL will include the following four major steps

- 1. Registration
- 2. Sorting
- 3. Processing
- 4. Feedback/Reporting

In grievance redress mechanism, any person/group affected by project implementation can complaints to GRGICL whenever the affected person feels the

grievance even before the starting of the project to the end of the project by throughing voice massages on hotline phone, email, social media account, postal with GRM form, compliant and feed back box. The detail information to contact GRGICL is shown in section 1.2 of this report. GRGICL was held the public meeting on 8th December, 2019 at Canteen of GRGICL Plant Compound and the detail of Public Meeting is shown in Appendix A. Moreover, GRGICL will consult with the local public who live in the project affected area as necessary.

8 Conclusions and Recommendations

Seven key environmental impacts can be occurred from the project objectivities. But, GRGICL can be reduced and monitored on theses environmental impacts by following specifically the impacts management and monitoring plan described in section 5.2. On the other hand, there will be left to be investigated positive impacts such as Job Opportunities and surrounding villages can be developed by CSR program of the factory.

8.1 Mangement Review

A process that will review the results of the implementation of EMP by the analysis of the monitoring results to ensure that the mitigation measures and management actions are fully satisfied with the minimum side effects to the environment is required. The plant manager shall work with all HODs to carry out analysis and evaluation of monitoring results in compliance with set environmental standard values. The plant manager has the overall responsibility for ensuring that this EMP is implemented to ensure the factory operation is in compliance with applicable environmental legislations.

The plant manager of Yangon Bottling Plant (GRGICL) will be the responsible person of management review process. She shall be supported by all HODs and various functional heads.