JIN SEN MYANMAR COMPANY LIMITED

Environmental Management Plan

Manufacturing of Various Kinds of Bags and Bag's Strings on (CMP) Basis

Prepared by

MYANWEI ENVIRONMENTAL SOLUTIONS

MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED

22-Feb-22

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Commitment and Acknowledgement

Date: 18.2.2022

Attention: Dear Director

Environmental Conservation Department

Subject: Environmental Management Plan (EMP) Report in respect of the Manufacturing of Various Kinds of Bags and Bag's Strings on CMP Basic.

EMP report describes the environmental condition of a project, including significant impact, formulation of mitigation measures and preparation of institutional requirements and environmental monitoring.

Myanwei Environmental Solutions Company Limited has prepared this report with all reasonable skill, care, and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking into account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

We strongly commit that this report was prepared in compliance with Myanmar Environmental Laws and Regulations.

MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED
No.....
Date.....

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS
COMPANY LIMITED.

Jin Sen Myanmar Company Limited
Plot No. (154/171), Myay Taing No. Section (5), Industrial Zone (5), Hlaing Thar Yar Township, Yangon Region. Email: jenny5617@163.com

Date: 18.2.2022

Dear: Director

Environmental Conservation Department

Nay Pyi Taw

Subject: Environmental Management Plan (EMP) Report in respect of the Manufacturing of Various Kinds of Bags and Bag's Strings CMP Basic.

We refer to the captioned EMP report, which has been prepared by Myanwei Environmental Solutions Co., Ltd. (Third Party Consultant) in compliance with EIA procedure (2015) and other related laws/rules.

We believe, to the best of our knowledge at the time of writing, that;

- The EMP report is accurate and complete
- The EMP report has been prepared in strict compliance with all applicable laws, rules, regulations, and procedures in force.

Jin Sen (Myanmar) Co., Ltd. will at all times comply fully with all commitment and obligations in the EMP report.

We acknowledge and understand that

肖湘武

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Abbreviation

1. CEMP = Construction Environmental Management Plan
2. CMP = Contract Manufacturing Process
3. CSR = Corporate Social Responsibility
4. ECC = Environmental Compliance Certificate
5. ECD = Environmental Conservation Department
6. EIA = Environmental Impact Assessment
7. EMOP = Environmental Monitoring Plan
8. EMP = Environmental Management Plan
9. GIIP = Good International Industry Practices
10. HSE = Health, Safety and Environment
11. IEE = Initial Environmental Examination
12. IFC = International Finance Corporation
13. NEQG = National Environmental Quality (Emission) Guidelines
14. MIC = Myanmar Investment Commission
15. MOECAF = Ministry of Environmental Conservation and Forestry
16. MONREC = Ministry of Natural Resources and Environmental Conservation
17. OEMP = Operation Environmental Management Plan
18. OSHA = Occupational Safety and Health Administration
19. PPE = Personal Protective Equipment
20. WHO = World Health Organization
21. YCDC = Yangon City Development Committee
22. YESB = Yangon City Electricity Supply Board

အစီရင်ခံစာအကျဉ်းချုပ်

နိဒါန်း

ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ရေရည်ဖွံ့ဖြိုးတိုးတက်ဖို့မှု သေချာဖို့အပ်ပါသည်။ အဆိုပြုလုပ်ငန်းသည် Bag and Bag's Strings အမျိုးမျိုးချုပ်လုပ်ခြင်းလုပ်ငန်းအတွက် ရင်နှီးမြှုပ်နှံသော ကုမ္ပဏီဖြစ်ပါသည်။ ရင်းနှီးမြှုပ်နှံမှုလိုင်စင်ကို ၂၀၁၉ခုနှစ်၊ ဒီဇင်ဘာလ ၂၇ ရက်နေ့တွင် (ထောက်ခံချက်အမှတ် ရကတ၃၂၀-/၂၀၁၉)ဖြင့် ရန်ကုန်တိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ ရရှိပြီးဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ရန်အတွက် မြန်မာနိုင်ငံသယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) ၏ အတည်ပြုချက်ရယူရန် လိုအပ်ကြောင်း ကော်မရှင်မှ မှာကြားခဲ့ပါသည်။

ထို့ကြောင့် မြန်မာနိုင်ငံ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)အရ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) ပြုလုပ်ရန်လိုအပ်ကြောင်း ၂၀၂၀ ခုနှစ် ဇန်နဝါရီလ၊ ၂၄ ရက်နေ့တွင် (စာအမှတ်၊ ရကာ-၁/၃/၄ (အီးအိုင်အေ) (၂၇၈၁/၂၀၁၉) ဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန ရန်ကုန်တိုင်းဒေသကြီးမှ သဘောထားမှတ်ချက် ရရှိပြီးဖြစ်ပါသည်။ ထို့ကြောင့် EMP အစီအရင်ခံစာရေးဆွဲရန် တတိယအဖွဲ့အစည်းဖြစ်သော MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED မှ တာဝန်ယူရေးဆွဲခဲ့ပါသည်။

EMP အစီအစဉ်တွင်JIN SEN MYANMARCOMPANMY LIMITED (၏ Bag and Bag's Strings အမျိုးမျိုးချုပ်လုပ်ခြင်းစီမံကိန်းအတွက် MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED မှ ရေးသားပြုစုထားသော ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာဖြစ်သည်။ အဆိုပါ လေ့လာဆန်းစစ်ခြင်း၏ ရည်ရွယ်ချက်များမှာ-

- သဘာဂပတ်ဂန်းကျင်နှင့် လူမှုစီးပွားပတ်ဂန်းကျင်အပေါ် စီမံကိန်းဆောင်ရွက်ချက်များကြောင့် ထိခိုက်မှုများကိုလေ့လာရန်။
- ထိုထိခိုက်မှုများကို လျော့ချနိုင်ရန် လျော့နည်းစေမည့်နည်းလမ်းများကို ဖော်ပြရန်။
- စီမံကိန်းအတွက် ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို ပြင်ဆင်ရန်နှင့် အကောင်အထည်ဖော်ရန်။
- စီမံကိန်းအတွက် ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အစီရင်ခံစာ လုပ်ဆောင်ရာတွင် လုံလောက်မှုရှိစေရန်။
- ဒေသခံများ၏ လူမှုရေးသက်သာချောင်ချိမှုများ တိုးမြှင့်ရန်နှင့် ဒေသတွင်း ဖွံ့ဖြိုးတိုးတက်မှုများ အတွက် မရှိမဖြစ်အရေးပါသော လူမှုစီးပွားတာဂန်ယူမှုအစီအစဉ်အား အကောင်အထည်ဖော်ရန်တို့ဖြစ်ပါတယ်။
- အဆိုပြုထားသော စီမံကိန်း၏ ရည်ရွယ်ချက်သည် Bag and Bag's Strings အမျိုးမျိုးချုပ်လုပ်၍ ပြည်ပသို့ တင်ပို့ရောင်းချရန် ဖြစ်ပါသည်။

ဥပဒေနှင့် မူဝါဒဆိုင်ရာ အချက်အလက်များ

EMP ရေးဆွဲရခြင်း၏ ရည်ရွယ်ချက်မှာ နိုင်ငံတော်နှင့် နိုင်ငံတကာမှချမှတ်ထားသော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအစီအစဉ်များ၊ စည်းမျဉ်းစည်းကမ်းများ၊ ဥပဒေနှင့် နည်းဥပဒေများကို လိုက်နာပြီး

ပတ်ဝန်းကျင်နှင့် လိုက်ရောညီထွေရှိသော ထိခိုက်မှု လျော့ချရေး အစီအစဉ်များ ပြုလုပ်ရန် ဖြစ်ပါသည်။ ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် အစီရင်ခံစာ ရေးသားပြုစုသူများ၏ ကျွမ်းကျင်မှုနယ်ပယ်ဆိုင်ရာ ဖော်ပြချက်များကို ရေးသားဖော်ပြထားပါသည်။ ဥပဒေနှင့် နည်းဥပဒေ အခန်းတွင် MONREC မှ ထုတ်ပြန်ထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအပြင် စက်ရုံနှင့်ဆက်စပ်သက်ဆိုင်နေပြီး လိုက်နာရမည့် ဥပဒေနှင့် နည်းဥပဒေများ၊ ဒေသတွင်း သို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒများ၊ ဆက်စပ်နေသည့် နိုင်ငံတကာသဘောတူချက်များကို အကျဉ်းချုပ်ရေးသားဖော်ပြထားပါသည်။ စက်ရုံအတွင်းလိုက်နာ ဆောင်ရွက်ရမည့် စည်းမျဉ်းစည်းကမ်းများ၊ လုပ်ငန်းခွင် အန္တရာယ်ကင်းရှင်းရေးနှင့် ကျန်းမာရေးဆိုင်ရာ အခြေခံစည်းမျဉ်းစည်း ကမ်းများလည်း ထည့်သွင်းဖော်ပြထားပါသည်။ JIN SEN MYANMAR COMPANY LIMITED ၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာ ကတိကဝတ်များအပြင် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ချရေး မူဝါဒများကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။

၁. ပတ်ဂန်းကျင်ထိန်းသိမ်းရေးဥပဒေ, ၃၀ မတ်လ ၂၀၁၂

၂. ပတ်ဂန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ၂၀၁၄, 2014

၃. ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်းများ၊၂၀၁၅

၄. အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ၊၂၀၁၅

၅. မြန်မာနိုင်ငံအမျိုးသားပတ်ဂန်းကျင်ဆိုင်ရာမူဂါဒ၊၂၀၁၉

၆. နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုဥပဒေ၊ ၂၀၁၂

၇. နိုင်ငံခြားရင်းနှီးမြှုပ်နှံနည်းဥပဒေ၊ ၂၀၁၃

၈. မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုနည်းဥပဒေ၊၂၀၁၇

၉. အခကြေးငွေပေးချေရေးဥပဒေ၊၂၀၁၆

၁၀. ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ၊၂၀၁၈

၁၁. ၁၉၅၁ခုနှစ်အလုပ်ရုံများအက်ဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ

၁၂. ပုဂ္ဂလိကစက်မှုလုပ်ငန်းဥပဒေ ၁၉၉၀

၁၃. ပို့ကုန်သွင်းကုန်ဥပဒေ၊၂၀၁၂

၁၄. မြေအောက်ရေအက်ဥပဒေ၊၁၉၃၀

၁၅. မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ၊၂၀၁၅

၁၆. လျှပ်စစ်ဥပဒေ၊၂၀၁၄

၁၇. အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ၊နည်းဥပဒေ၊၂၀၁၂

၁၈. ကူးစက်ရောဂါများကာကွယ်နှိမ်နင်းရေးဥပဒေ၊၂၀၁၁)

၁၉. လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်ကျန်းမာရေးဆိုင်ရာဥပဒေ၊၂၀၁၉

၂၀. စံချိန်စံညွှန်းသတ်မှတ်ခြင်းဆိုင်ရာဥပဒေ၊၂၀၁၄

၂၁. လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သောဝတ္ထုပစ္စည်းများဆိုင်ရာဥပဒေ၊၂၀၁၈

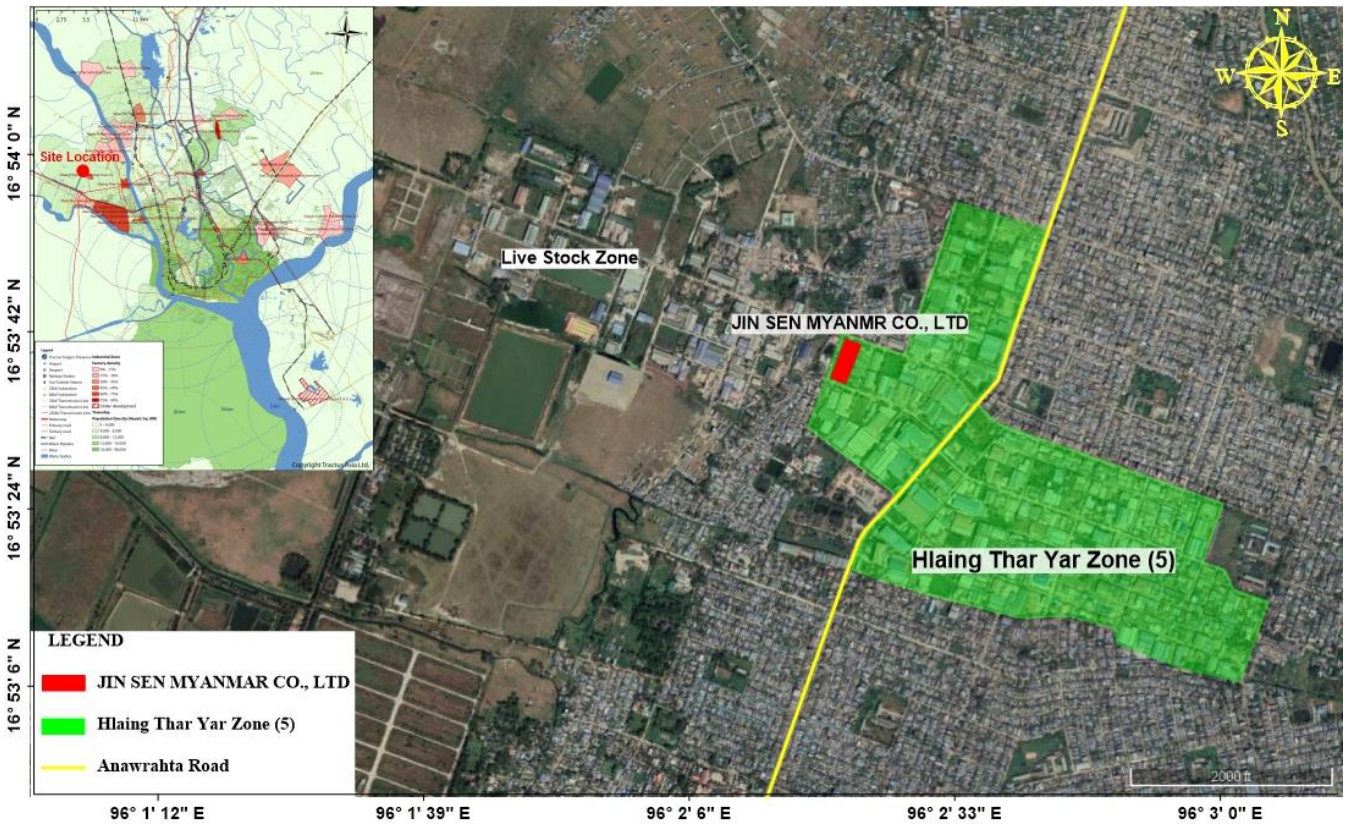
၂၂. မော်တော်ယာဉ်ဥပဒေ၊၂၀၁၅

၂၃. ကုန်သွယ်လုပ်ငန်းခွင်ဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ၊၂၀၁၄

၂၄. ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းများထိန်းသိမ်းရေးဥပဒေ၊၂၀၁၆

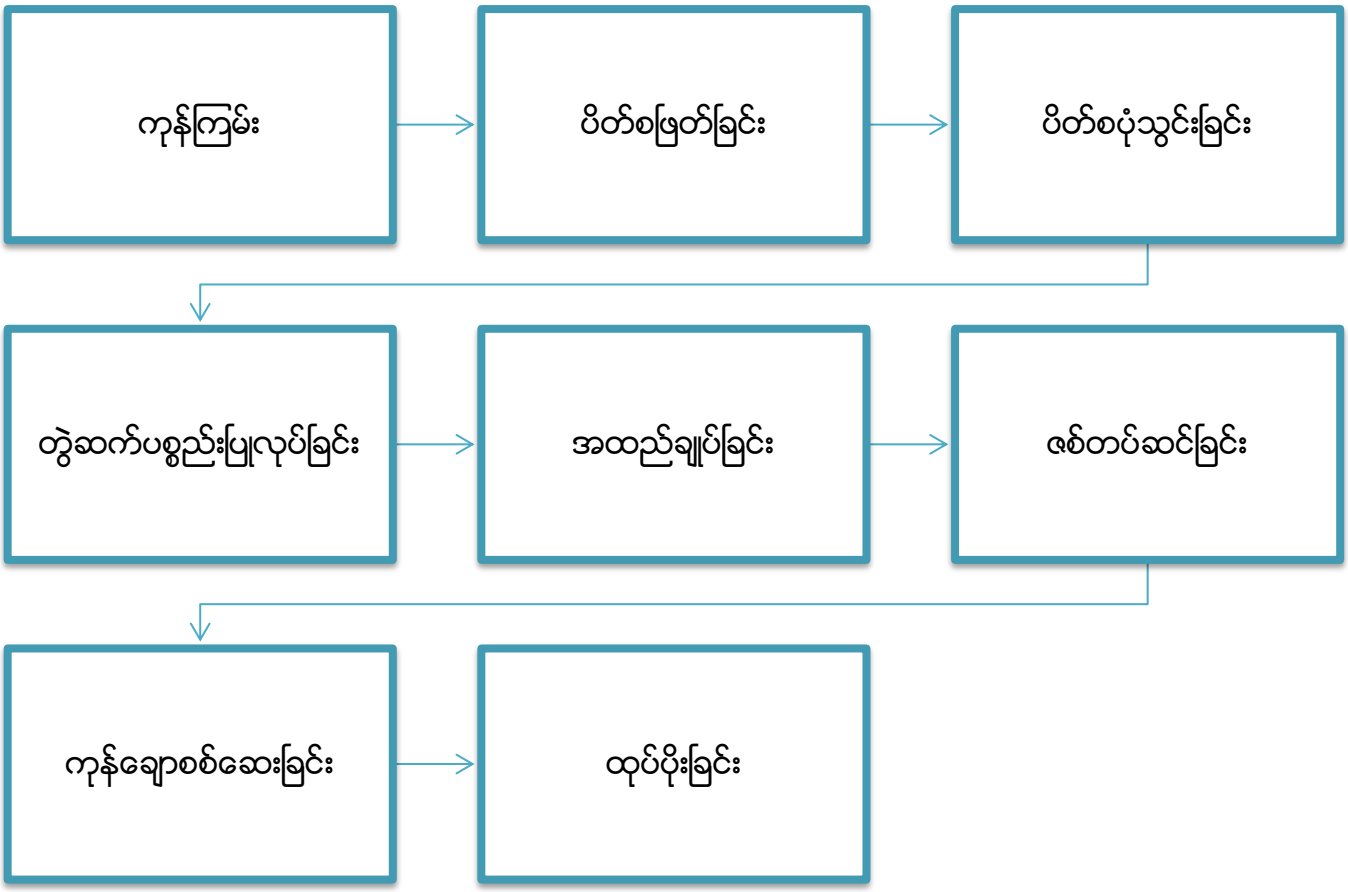
စီမံကိန်းဆိုင်ရာအချက်အလက်

အဆိုပြုထားသော စီမံကိန်း	Bag and Bag's Strings အမျိုးမျိုးချုပ်လုပ်ခြင်းလုပ်ငန်း
ရင်းနှီးမြှုပ်နှံမှုပုံစံ	၁၀၀ % နိုင်ငံခြားသားရင်းနှီးမြှုပ်နှံမှု
ကုမ္ပဏီအမည်	JIN SEN MYANMAR COMPANY LIMITED
အဆိုပြုရင်းနှီးမြှုပ်နှံမှုကာလ	နှစ် ၃၀
စုစုပေါင်းမြေကွက်ဧရိယာ	၁.၄၂၉ကော (၅,၇၈၂.၉၅၇၈ စတုရန်းမီတာ)
မြေနေရာပုံစံ	စက်မှုဇုန်မြေ
တည်ဆောက်မှုကာလ	၁ နှစ်
စီမံကိန်း တည်နေရာ	မြေကွက်အမှတ်(၁၅၄၊၁၇၁)၊ မြေတိုင်းရပ်ကွက် အမှတ်အပိုင်း(၅)၊ စက်မှုမြို့၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။
ဆက်သွယ်ရန် ဖုန်းနံပါတ်	ဒေါ်ဇင်သန့်ဖြူ၊ ၀၉-၄၂၁၁၈၈၇၀၂
အီးမေးလ်ပစာ	jinsenmyanmar.jiangh@gmail.com



စက်ရုံတည်နေရာပြမြေပုံ

အဆိုပြုလုပ်ငန်းအတွက် တည်နေရာနှင့် စက်ရုံအတွင်းပါရှိသည့် အဆောင်များ၊ စားသောက်ဆောင်၊ စတို၊ ပြုပြင်ထိမ်းသိမ်းရေးအခန်း၊ မီးဖိုချောင် အစရှိသည်တို့ကိုသီးခြားဖော်ပြထားပါသည်။ထို့အပြင် ထုတ်လုပ်မှုနည်းလမ်းများ၊ လိုအပ်သည့်ကုန်ကြမ်းများ၊ နှစ်စဉ်ထွက်ကုန်များ နှင့် စက်ပစ္စည်းများအား ဖော်ပြထားပါသည်။ အဆိုပြုလုပ်ငန်းအတွက်လိုအပ်သည် စွမ်းအင်နှင့် အသုံးပြုသည့်ပမာဏများကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။ ကျန်လုပ်ငန်းသုံးယာဉ်နှင့် ရုံးသုံးပစ္စည်းများကို ပြည်တွင်းမှ ဝယ်ယူအသုံးပြုပါသည်။ ကုန်ထုတ်လုပ်ခြင်းလုပ်ငန်းမှာ automatic machine နှင့် လူစွမ်းအားကို အသုံးပြုသော လုပ်ငန်းမျိုးဖြစ်ပါသည်။ ထုတ်လုပ်ပုံအဆင့်ဆင့်ကို အောက်ဖော်ပြပါ ပုံပြဇယားဖြင့် ဖော်ပြထားပါသည်။



လုပ်ငန်းမှ ပထမနှစ်မှ ၁၀ နှစ်အတွင်း (၁)နှစ်လျှင်အထည်ရေ (၆၅၃,၅၀၀) မှ (၇၁၈,၈၅၀)အထိ တိုးမြှင့်ထုတ်လုပ်သွားမည်ဖြစ်သည်။ နိုင်ငံခြားသားလုပ်သား (၁၃)ဦး နှင့် နိုင်ငံသား (ပြည်တွင်း)လုပ်သား (၄၃၆) ဦးဖြင့် ဆောင်ရွက်သွားမည်ဖြစ်သည်။

စက်ရုံတွင်းအမှိုက်များစုပုံသည့်နေရာပြမြေပုံ

အနီးပတ်ဝန်းကျင် အခြေအနေ

ကနဦးစစ်တမ်းကောက်ယူခြင်းနှင့် ဒေသဆိုင်ရာမှအချက်အလက်များရယူခြင်းသည် အလွန်အရေးကြီးပါသည်။ ပတ်ဂန်းကျင်အရည်အသွေး တိုင်းတာခြင်းကဲ့သို့သော ကနဦးစစ်တမ်းကောက်ယူခြင်းသည် ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာတွင် အရေးပါသောအခန်းအဖြစ် တည်ရှိနေသည်။ ထို့အတွက် စီမံကိန်းဒေသသို့ ကွင်းဆင်းလေ့လာမှုများကို ၁၇ ရက်၊ ဇွန်လ၊ ၂၀၂၀ တွင်လက်တွေ့ကွင်းဆင်းလေ့လာခဲ့ပီးလိုအပ်သည့် လေအရည်အသွေး၊ ဆူညံမှု၊ အလင်း၊ အပူချိန်နှင့် စိုထိုင်းမှု အစရှိသည့် အချက်အလက်များကို ရယူခဲ့ပါသည်။ ကွင်းဆင်းလေ့လာထားသည် အချက်အလက်များကို သက်ဆိုင်ရာခေါင်းစဉ်အလိုက် အမျိုးသားပတ်ဂန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များနှင့် နှိုင်းယှဉ်၍ ဖော်ပြထားပါသည်။ ထိုနည်းတူ လျော့ချရမည့်နည်းလမ်းများကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။ စီမံကိန်းတည်ရှိရာဒေသရှိ ရာသီဥတု၊ မိုးရေချိန်၊ လူမှုစီးပွားရေးဆိုင်ရာအချက်အလက်များကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုနှင့် လျော့ချရေး အစီအစဉ်

စီမံကိန်းဆောင်ရွက်ချက်များကြောင့် ပတ်ဂန်းကျင်ဆိုင်ရာအရင်းအမြစ်များ၊ ဂေဟဆိုင်ရာ အရင်းအမြစ်များ၊ လူ့စွမ်းအားအရင်းအမြစ်များနှင့် စွန့်ပစ်ပစ္စည်းများစွန့်ပစ်ခြင်း စသည့်ဖြစ်လာနိုင်သည့်ထိခိုက်မှုများကို ခွဲခြားသတ်မှတ်ပြီး ၎င်းတို့၏ ရလဒ်များကို ထိခိုက်မှုဆန်းစစ်သည့် နည်းလမ်းများကို အသုံးပြု၍ သတ်မှတ်ခဲ့ပါသည်။ စီမံကိန်းအား ထိခိုက်မှုများကို အပိုင်းသုံးပိုင်းခွဲ၍ သတ်မှတ်ထားသည်။ အမျိုးအစားမှာ တည်ဆောက်သည့်ကာလ၊ လုပ်ငန်းလည်ပတ်သည့်ကာလ နှင့် လုပ်ငန်းဖျက်သိမ်းသည့်ကာလများ ဖြစ်ပါသည်။ ပတ်ဂန်းကျင်ထိခိုက်မှု လျော့ပါးစေရေး နည်းလမ်းများကိုလဲထည့်သွင်းဖော်ပြထားပါသည်။

စက်ရုံလည်ပတ်သည့်ကာလသိသာထင်ရှားသည့် သက်ရောက်မှုများနှင့် လျော့ချရေးနည်းလမ်းများ

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
ပတ်ဝန်းကျင်ညစ်ညမ်းမှု			
လေထုအရည်အသွေး	ကုန်ကြမ်းပစ္စည်းများ၊ ကုန်ချောပစ္စည်းများ သယ်ဆောင်သော ယာဉ်များမှ ဖုန်မှုန့်များ၊ ဖန်လုံအိမ် အာနိသင်ဖြစ်စေသော ဓာတ်ငွေ့များ ထွက်ရှိ ခြင်း၊ အရေးပေါ် မီးစက်များမှ ထုတ်လွှတ်သော အခိုးအငွေ့များ။	• စက်ရုံနှင့် စက်ရုံပတ်ဂန်းကျင်တွင် လေထုညစ်ညမ်းမှု ဖြစ်ပေါ် လာစေခြင်း • အဆိုပါလေထုကို ရှူရှိုက်မိခြင်းဖြင့် ရေရှည်တွင် ကျန်းမာရေးပြဿနာဖြစ်ပေါ် လာစေနိုင်ခြင်း • အဆုတ်နှင့် နလုံးရောဂါများ လူကြီးနှင့်ခလေးများတွင် ပိုခံစားရစေနိုင်ခြင်း။	• လေညစ်ညမ်းမှုများကိုထိန်းချုပ်ခြင်း၊ ယာဉ်များ၊ မီးစက်များ၊ စက်ပစ္စည်းများကို ပုံမှန်စစ်ဆေးခြင်း၊ • ယာဉ်များ၊ ကွန်ပရက်ဆာ၊ မီးစက်များကို ကောင်းမွန်စွာ ထိန်းသိမ်းခြင်း၊ • မီးခိုးထွက်ရှိမှုများကို စစ်ပေးသည့်စနစ်များတပ်ဆင်စေခြင်း၊ • မလိုအပ်သောယာဉ်အသုံးပြုမှုများ လျော့ချစေခြင်း။
ရေအရည်အသွေး	အိပ်ဆောင်၊ ကန်တင်းနှင့် ရေချိုးကန်များမှ ထွက်လာမည့်စွန့်ရေများ စီးဆင်းရန် ရေဆင်းမြောင်းများ စနစ်တကျ မတည်ဆောက်ထားနိုင်ခြင်း။	• ရေမြောင်းပိတ်ဆို့ခြင်းမှ အနံ့ဆိုးနှင့် ခြင်၊ ယင်၊ ပိုးမွှားများပေါက်ဖွားကာ စနိုင်သည်။	• စက်ရုံတွင် လိုအပ်သောရေဆင်းမြောင်းများ၊ ပိုက်များကို စနစ်တကျ သွယ်တန်းထားပါသည်။
မြေအရည်အသွေး	အင်ဂျင်ဆီများ၊ ဒီဇယ်ဆီများသိုလှောင်ခြင်းနှင့် ဖိတ်ယိုခြင်း	• စိမ့်ထွက်လာသော ဆီနှင့်လောင်စာဆီများသည်	• ဆီနှင့်လောင်စာများကို ကွန်ကရစ်လှောင်ကန်များ သို့ ကွန်ကရစ်ကြမ်းခင်းများဖြင့် စနစ်တကျစီမံသိုလှောင်အသုံး

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
		မြေဆီလွှာနှင့်ရေထုကို ညစ်ညမ်းစေနိုင်သည်။	ပုပါက ဆီစိမ့်ထွက်မှုမှ မြေနှင့်ရေ ညစ်ညမ်းမှုကို လျော့ချပေးနိုင်သည်။
ဆူညံသံနှင့် တုန်ခါမှု	မီးစက်နှင့် ယာဉ်အသံုးပြုမှု၊ ကုန်ပစ္စည်းထုတ်လုပ်သည့် စက်များမှ ဆူညံသံများထွက်ခြင်း	• ကျယ်လောင်သောဆူညံမှုများသည် ဘေးပတ်ဝန်းကျင်ကို အနှောက်အယှက်ပြုစေနိုင်ပြီး စက်ရုံတွင်းလည်ပတ်မှုများကို နှေးကွေးစေနိုင်သည်။	• စက်ရုံတွင် မီးစက်၊ စက်ပစ္စည်းထိန်းသိမ်းသည့် သီးခြားအခန်းများ တည်ဆောက်ပေးခြင်း၊ ဆူညံသံနှင့် တုန်ခါမှုဖြစ်စေနိုင်သော လုပ်ငန်းများကို နေ့ခင်းဘက်တွင်လုပ်ဆောင်ခြင်း စသည်တို့ ပြုလုပ်ထားကြောင်းတွေ့ရသည်။ •
စွန့်ပစ်အစိုင်အခဲ	ကုန်ထုတ်လုပ်သည့် နေရာမှ ထွက်ရှိသော ပိတ်နှင့်ရေမြှုပ်ဖော့အပိုင်းအစများ၊ ထုတ်ပိုးခြင်းမှထွက် ရှိသော အပိုင်းအစများ၊ မီးဖိုချောင် လူနေဆောင် ရုံးခန်းမှ တွက်ရှိသော အမှိုက်များကို ရန်ကုန်စည်ပင်သာယာနှင့် ပူးပေါင်းစွန့်ပစ်ခြင်းမရှိဘဲ မီးရှို့ခြင်း၊ မြောင်းထိသို့သွန်ပစ်ခြင်း၊ လမ်းဘေးတစ်နေရာတွင် စုပုံခြင်း။	• စွန့်ပစ်အစိုင်အခဲများသည် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုကိုဖြစ်စေနိုင်သည့်အပြင် မလိုလားအပ်သော ကျန်းမာရေးပြဿနာများစွာကို ဖိတ်ခေါ်နိုင်သည်၊ ထို့ပြင်စက်မှုဇုန်ဝင်းအတွင်း သန့်ရှင်းသာယာမှုကို ပျက်ပြားစေပါသည်။	• စက်ရုံအတွင်း အမှိုက်ပုံးများထားရှိခြင်း။ • သတ်မှတ်ထားသောနေရာတွင် အမှိုက်စို၊ အမှိုက်ခြောက်များ ခွဲခြားစွန့်ပစ်ခြင်း။ • အမှိုက်များကို ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီနှင့် ချိတ်ဆက်၍ စွန့်ပစ်ခြင်း၊ ပိတ်စများအားမီးရှို့ဖျက်ဆီးခြင်းနှင့် မြောင်းများ၌စွန့်ပစ်ခြင်းကို မပြုလုပ်ရန်တို့ဖြစ်သည်။
စွန့်ပစ်အရည်	ကောင်းမွန်သော မိလ္လာစနစ်မထားရှိခြင်း။ ရုံးခန်း၊ မီးဖိုချောင် နှင့် လူနေဆောင်များမှ စွန့်ပစ်အရည်များထွက်ရှိခြင်း။	• စွန့်ပစ်အရည်များကြောင့် မြေဆီလွှာ၊ အပေါ်ယံရေလွှာနှင့် မြေအောက်ရေတို့ကို ညစ်ညမ်းစေပြီး အချိန်ကြာစီးဆင်းခြင်းမရှိပါက	• ဆီကန်၊ မိလ္လာကန်များကိုပုံမှန်စစ်ဆေးခြင်း၊ သန့်ရှင်းခြင်းများ ပြုလုပ်ခြင်းဖြင့် စွန့်ပစ်အရည်များ စိမ့်ဝင်မှုများကို လျော့ကျစေနိုင်ခြင်း၊ စွန့်ပစ်အရည်များကို

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
		အနှံ့အသက်ဆိုးများ ထွက်ပေါ် စေပါသည်။	တစ်နေရာထဲတွင် ပိတ်မိမနေစေဘဲ စီးဆင်းမှုရှိအောင် ရေစီးမြောင်းများ ဖောက်လုပ်ထားပေးခြင်း။
အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်း	မော်တော်ယာဉ်များ စက်ပစ္စည်းများ ပြုပြင်ထိန်းသိမ်းခြင်းမှ ဆီများပိုစိမ့်ခြင်း။	• စက်ဆီ၊ ချောဆီနှင့် အင်ဂျင်ဝိုင်စိမ့်ကျလျက်ရှိသောနေရာများတွင် မတော်တဆမီးလောင်ခြင်းနှင့် သယ်ယူပို့ဆောင်ရေးယာဉ်များ၊ စက်ယန္တရားများလမ်းဖျက်ခြင်းတို့ ဖြစ်ပေါ် စေနိုင်သည်။	• အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများသိုလှောင်မှု အားထိန်းသိမ်းခြင်း စစ်ဆေးခြင်း။ • လုပ်ငန်းခွင်ကျန်းမာရေး လုံခြုံမှုနှင့်ပတ်ဂန်းကျင်ဆိုင်ရာ လိုအပ်ချက်များ နှင့်ကိုက်ညီမှုရှိစေရန် ဓာတုပစ္စည်းများကို စနစ်တကျစွန့်ပစ်ခြင်း။ • ဓာတုပစ္စည်းသိုလှောင်သည့် ပုံးခွန်များကို စနစ်တကျ ပြန်လည်အသုံးပြုခြင်း (သို့မဟုတ်) စနစ်တကျစွန့်ပစ်ခြင်း။ • အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများကို ရန်ကုန်မြို့တော်စည်ပင် သာယာရေး ကော်မတီ (သို့မဟုတ်) လိုင်စင်ရ အမှိုက်စွန့်ပစ်ရေး ဆိုင်ရာအဖွဲ့အစည်းများ (ဥပမာ DOWA or YCDC) နှင့် ချိတ်ဆက်၍စွန့်ပစ်ခြင်း။
သဘာဝပတ်ဝန်းကျင်ဂေဟစနစ်ကိုထိခိုက်စေမှု			
ကာကွယ်ထားသော ဇရိယာ အပင်၊ သတ္တဝါများ၊ ဂေဟစနစ် ဇလဗေဒ မြေမျက်နှာသွင်ပြင်/ ဘူမိဗေဒ	စီမံကိန်းတည်ဆောက်ခြင်း၊ စက်ရုံလည်ပတ်ခြင်း။	• စီမံကိန်းတည်ဆောက်ခြင်းကြောင့် နဂိုတည်ရှိသော သက်ရှိသက်မဲ့ ဂေဟစနစ်တစ်ခုကို သက်ရောက်မှုရှိစေနိုင်ခြင်း။	• စက်ရုံသည် စက်မှုဇုန်ဇရိယာတွင် တည်ရှိသောကြောင့် အပင်၊ သတ္တဝါများ၊ ဂေဟစနစ်၊ဇလဗေဒ မြေမျက်နှာသွင်ပြင်/ ဘူမိဗေဒ မြေတိုက်စားခြင်းများ အပေါ် သိသာသည့်

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
			ဆိုးကျိုးသက်ရောက်မှုများ မရှိပါသောကြောင့် ထိခိုက်မှုလျော့ချရန်မလိုအပ်ပါ။
လူမှုပတ်ဝန်းကျင်ကိုထိခိုက်စေမှု			
မီးဘေးအန္တရာယ်	စက်ရုံတွင်းထားရှိသော ရေမြေပြင်ဖော့တုံးများနှင့် အိပ်ယာများသည် အလွယ်တကူ မီးလောင်ကျွမ်းနိုင်ခြင်း။	• မီးဘေးအန္တရာယ်ကြောင့် စက်ရုံကိုပြင်းထန်သော ဆိုးကျိုးများဖြစ်စေနိုင်သည့်အပြင် ထိခိုက်ဒဏ်ရာနှင့် အသက်သေဆုံးသည်အထိ ဖြစ်စေနိုင်သည်။	• စက်ရုံ၏မီးဘေးအန္တရာယ်ကာကွယ်ရန်အတွက် မီးသတ်ဘူး၊ မီးသတ်ပိုက်၊ မီးသတ်ခေါင်းများထားရှိခြင်း။ • မီးသတ်ဆိုင်ရာစက်ပစ္စည်းကိရိယာများကိုပုံမှန်စစ်ဆေးခြင်း၊ အရေးပေါ် အခြေနေအတွက် မီးသတ်ရေကန်အဆင်သင့် ထားရှိခြင်း။ • စက်ရုံအတွင်းအရေးပေါ် အချက်ပေးစနစ်များထားရှိခြင်း။ • အရေးပေါ် ထွက်ပေါက်များတွင်တစ်လျောက်တွင် ကုန်ပစ္စည်းများပိတ်ဆိုခြင်းမရှိအောင်ရှင်းလင်းထားရှိခြင်း။
ကျန်းမာရေး	တိရစ္ဆာန်မှလူသို့ကူးစက်စေတက်သော၊ လူမှလူသို့ကူးစက်စေတက်သော ရောဂါများဖြစ်သည့် တီဘီ(အဆုတ်ရောဂါ)နှင့် COVID-19ကဲ့သို့သော ကူးစက်မြန်ရောဂါများအတွက် ကြိုတင်ကာကွယ်မှုအစီအမံများ အားနည်းခြင်းတို့အပြင် စက်ရုံဝင်းအတွင်း စွန့်ပစ်အရည်၊ အစိုင်အခဲများကြောင့် ကျန်းမာရေးပြဿနာများစွာထပ်မံပေါ် ပေါက်စေနိုင်ခြင်း။	• စက်ရုံတွင်း ကျန်းမာရေးဆိုင်ရာစောင့်ရှောက်မှု ပြင်ဆင်မှု အားနည်းခြင်းသည် မလိုလားအပ်သောပြဿနာများနှင့် ကူးစက်ရောဂါများကိုပိုမိုဆိုးရွားစေကာ စက်ရုံပိတ်သိမ်းရခြင်းထိပြင်းထန်ပါက စက်ရုံ၏အကျိုးစီးပွားနှင့် ဝန်ထမ်းများ၏အခြေခံစားဝတ်နေရေးကိုပါ သက်ရောက်မှုရှိလာနိုင်ခြင်း။	• ပုံမှန် ကျန်းမာရေး စစ်ဆေးခြင်း၊ ကျန်းမာရေးဆိုင်ရာ အသိပညာပေးခြင်းနှင့် ရှေးဦးသူနာပြုနည်းများကို လုပ်သားများအား သင်တန်းပေးခြင်းများ ပြုလုပ်ခြင်း၊ ကျန်းမာရေးအသိပညာပေးချက်များကို စနစ်တကျလိုက်နာခြင်း၊ စက်ရုံနှင့် စက်ရုံပတ်ဝန်းကျင်ကို သန့်ရှင်းစွာ ထိန်းသိမ်းထားရှိခြင်း။

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
လုပ်ငန်းခွင် အန္တရာယ်ကင်းရှင်းရေး	စက်ပစ္စည်းများ ထိန်းသိမ်းပြုပြင်ခြင်းကို ပုံမှန်မစစ်ဆေးခြင်း၊ လုပ်ငန်းခွင်သင်တန်းအားနည်းခြင်းတို့အပြင် လုပ်ငန်းခွင်အတွင်း ပစ္စည်းတင်ချုပြုလုပ်ရာတွင်လည်းကောင်း၊ ဖြတ်တောက်ခြင်းတို့ ဆောင်ရွက်ရာတွင်လည်းကောင်း၊ ရေနွေးငွေ့သုံး မီးပူများကြောင့်လည်းကောင်း မတော်တဆ ထိခိုက်မှုများ ဖြစ်ပေါ်နိုင်ခြင်း။	• စက်ရုံလုပ်ငန်းခွင်တွင်း မတော်တဆဖြစ်ရပ်များကြောင့် ရုပ်ပိုင်းဆိုင်ရာထိခိုက်ခြင်း သို့ အသက်အန္တရာယ်ကိုခြိမ်းခြောက်နိုင်ခြင်းတို့ဖြစ်ပေါ်စေတတ်သည်။	• အရေးပေါ်အခြေအနေများအတွက် စက်ပစ္စည်းကိုင်တွယ်မှုသင်တန်းပေးခြင်း၊ ကြက်ခြေနီသင်တန်းပေးခြင်း၊ မီးသတ်သင်တန်းပေးခြင်း။ • လုပ်ငန်းခွင်တွင်း အလုပ်သမားများ အလင်းရောင် ကောင်းစွာ ရရှိစေရန်နှင့် အမြင်အာရုံမထိခိုက်စေရန် အလင်းရောင်များကို လုံလောက်စွာထားရှိခြင်း။ • အလုပ်သမားများအတွက် တစ်ကိုယ်ရေ ကာကွယ်ရေးသုံး ပစ္စည်းများဖြစ်သည့် နားကြပ်၊ လက်အိတ်၊ ဦးထုတ်၊ မျက်မှန်များ အသုံးပြုစေခြင်း။ • လျှပ်စစ်အန္တရာယ် မဖြစ်စေရန်နှင့် ပြုပြင်ထိန်းသိမ်းမှုများ ပြုလုပ်ရန် အတွက် ဝန်ထမ်းထားရှိ၍ ပုံမှန်စစ်ဆေးခြင်း။
သဘာဝဘေးအန္တရာယ်များ	ရာသီဥတုပြောင်းလဲမှုနှင့် သဘာဝဖြစ်စဉ်များ ဖောက်ပြန်ခြင်းကြောင့် မိုးခေါင်ခြင်း၊ အပူပိုင်းမုန်တိုင်းများ၊ အပူလိုင်းများ၊ ငလျင်နှင့်ရေလွှမ်းမှုများဖြစ်ပေါ်လာစေပါသည်။	• အဓိကအခြေခံအဆောက်အအုံများပျက်စီးခြင်း၊ ထိခိုက်ဒဏ်ရာများနှင့်ဝေသကြေမှုများ၊ အရင်းအနှီးများဆုံးရှုံးခြင်းနှင့် စီးပွားပျက်ကပ်များဖြစ်ပေါ်လာနိုင်စေခြင်း။	• ဖြစ်ပေါ်လာနိုင်သည်များအတွက် သက်ဆိုင်ရာကယ်ဆယ်ရေးသင်တန်းများ၊ ကြိုတင်စီမံမှုအစီအမံများ မီးသတ်အစီအစဉ်များ၊ လုံခြုံရေးသင်တန်းများနှင့် လိုအပ်သောအခြေခံအထောက်အပံ့များနှင့် အထူးသဖြင့် သဘာဝဘေးခုခံကယ်ဆယ်ရေးအသင်း စသည်တို့ကိုဖွဲ့ထားသင့်သည်။

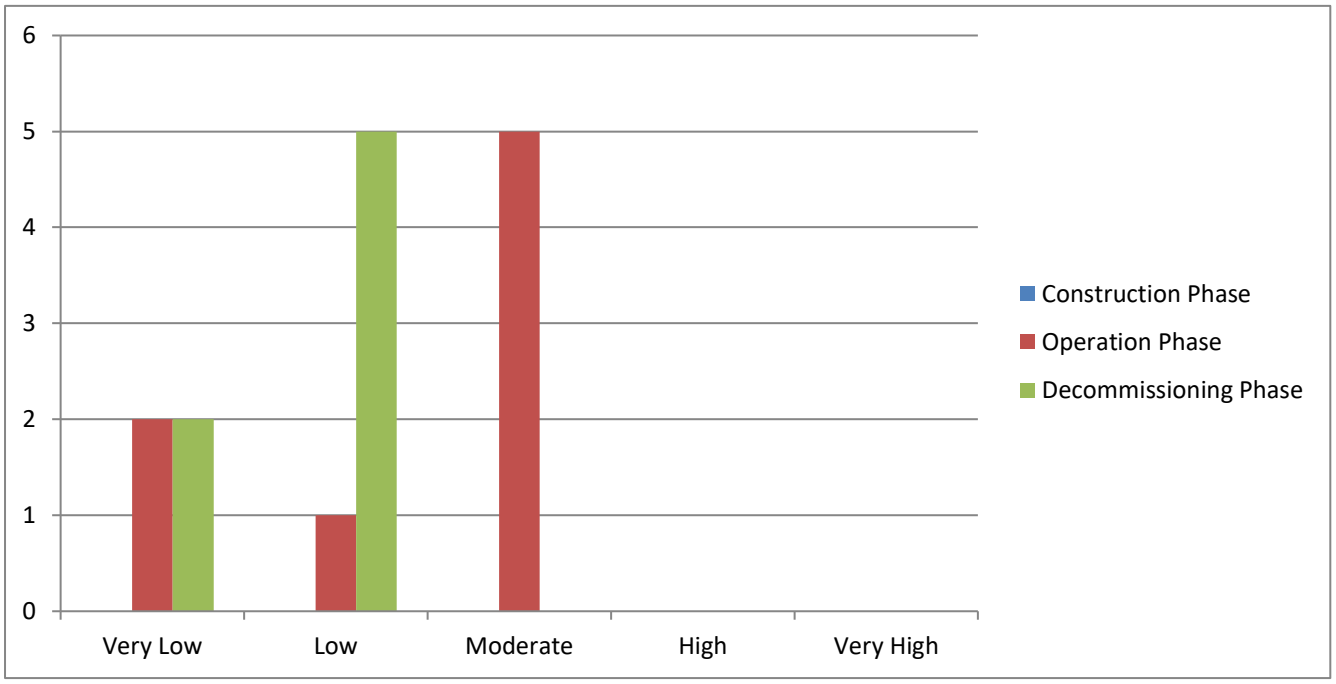
အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေး အစီအစဉ်
အရေးအခင်းကာလ၊ အရေးပေါ် အခြေအနေများ	ရည်ရွယ်ချက်ဖြင့်သော်လည်းကောင်း၊ မတော်တဆဖြင့်သော်လည်းကောင်း အခြေခံအများပြည်သူပိုင် အဆောက်အအုံများဖြိုဖျက်ခံရခြင်း။ ကဗ္ဘာ့ကပ်ရောဂါ COVID-19အတွက် ကြိုတင်ပြင်ဆင်မှုနှင့် လိုက်ပါဆောင်ရွက်မှုအားနည်းခြင်း။	• အခြေခံအားဖြင့်အလုပ်သမားများ၏လူမှုစီးပွားရေးနှင့် စက်ရုံဖက်မှ ရင်းနှီးမြှုပ်နှံမှုကိုထိခိုက်ခြင်းကို ဖြစ်ပေါ် စေနိုင်သည့်အပြင် စက်ရုံပိတ်သိမ်းသည်အထိ ဆိုးကျိုးသက်ရောက်စေနိုင်ပါသည်။	• အရေးပေါ် ဆိုင်ရာအထိကရုန်းကာလများတွင် အချိန်ပြည့်အစောင့်များထားရှိခြင်း၊ အလိုအလျောက်သတိပေးစနစ်များတပ်ဆင်ခြင်း၊ • အရေးပေါ် အရေးအခင်းကာလများအတွက် မီးဘေးကာကွယ်ရေးအသင်း၊ ကျန်းမာရေးစောင့်ရှောက်မှုအသင်း၊ အရေးပေါ် ခုခံကာကွယ်ရေးအသင်း များကို ပြင်ဆင်ဖွဲ့စည်းထားသင့်သည်။

စက်ရုံပိတ်သိမ်းသည့်ကာလသိသာထင်ရှားသောသက်ရောက်မှုများနှင့်လျော့ချခြင်းနည်းလမ်းများအားဆန်းစစ်အ**ကဲဖြတ်**ခြင်း

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုးသက်ရောက်မှုများ	လျော့ချရေးအစီအစဉ်
လေထုညစ်ညမ်းခြင်း	အဆောက်အအုံများဖြိုချခြင်းနှင့် ကြွင်းကျန်အစများ သယ်ယူစွန့်ပစ်ခြင်း	ဖြိုချခြင်းလုပ်ငန်းမှအလွန်သေးငယ်သော အမှုန်အမွှားများနှင့် အိုဇုန်းလွှာပါးလွှာစေနိုင်သော ဖန်လုံသင်အာနိသင်ဓါတ်ငွေ့များ ထုတ်လွှတ်ခြင်း	အတွေ့အကြုံရှိဆောက်လုပ်ရေးကုမ္ပဏီနှင့်စနစ်တကျ ပိတ်သိမ်းခြင်း နှင့် လုံခြုံစွာကာရံထားသော ယာဉ်များဖြင့်သယ်ဆောင်ခြင်း။
ရေထုညစ်ညမ်းခြင်း	ရေစီးမြောင်းများအား ဖြိုချအပိုင်းအစများဖြင့်း ပိတ်ဆို့မှုဖြစ်စေခြင်း	စက်ရုံဇုန်တွင်းရေစီးမြောင်းများ ပိတ်ဆို့ခြင်းမှ မလိုလားအပ်သောကျန်းမာရေးပြဿနာများနှင့် ရေကြီးရေလျှံမှုကိုပါ တပါတည်းဖြစ်စေနိုင်သည်	ဖြိုကျအပိုင်းအစများကို သီးသန့်နေရာတွင် စုပုံထားခြင်း၊ ရေစီးမြောင်များမပိတ်အောင် စည်းစနစ်တကျဖြင့် စက်ရုံပိတ်သိမ်းခြင်းကို ဆောင်ရွက်သင့်သည်။
ဆူညံမှုနှင့် တုန်ခါမှု	စက်ရုံဖြိုဖျက်ခြင်းလုပ်ငန်းများနှင့် ပြောင်းရွှေ့သယ်ယူခြင်း လုပ်ငန်းများ	ကြီးမားသောဆူညံသံနှင့်တုန်ခါမှုများသည် ဘေးပတ်ဝန်းကျင်ကို စိတ်အနှောက်အယှက် ဖြစ်စေနိုင်သည်။	ဆူညံမှုလျော့ချရန်နှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးအတွက် စက်ရုံပိတ်သိမ်းခြင်းကို နေ့ခင်းပိုင်းတွင် ဆောင်ရွက်သင့်သည်။ အလုပ်သမားများအား လုံခြုံရေးပစ္စည်းများလည်း ထောက်ပံ့သင့်သည်။

အမျိုးအစား	ထိခိုက်မှုအကြောင်းအရာ	အလားအလာရှိဆိုးကျိုး သက်ရောက်မှုများ	လျော့ချရေးအစီအစဉ်
အမှိုက်စွန့်ပစ်ခြင်း	အုတ်ခဲကျိုးနှင့်ကွန်ကရစ်အစကဲ့သို့ ဖြိုချအပိုင်းအစများ စက်မှုဇုန်နယ်မြေများတွင် စည်းကမ်းမဲ့စွန့်ပစ်ခြင်း		စွန့်ပစ်အစိုင်အခဲများအားလုံးကို စွန့်ပစ်ရန်သက်မှတ်ထားသောနေရာများတွင် သွားရောက်စွန့်ပစ်ခြင်း သို့ ရန်ကုန်စည်ပင်သာယာကော်မတီနှင့် ချိတ်ဆက်စွန့်ပစ်ခြင်း။
အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများ	အမှိုက်များကိုရောနှောစွန့်ပစ်ခြင်း၊ ဟင်းလင်းပြင်တွင် အကာအကွယ်မဲ့ အမှိုက်များအားမီးရှို့ခြင်း။	ရောနှောအမှိုက်များမှ မတော်တဆပေါက်ကွဲခြင်း၊ အသစ်ပြန်လည်သုံးစွဲရန်အရင်း အမြစ်လျော့နည်းလာခြင်း နှင့် ဟင်းလင်းပြင်ရှို့မီးများကြောင့် လေထုညစ်ညမ်းမှုကို တိုးစေခြင်း။	အမှိုက်အမျိုးအစားအလိုက် ခွဲခြားစွန့်ပစ်ခြင်း၊ စည်ပင်သာယာဖြင့် ချိတ်ဆက်စွန့်ပစ်ခြင်း၊ မီးရှို့ခြင်း။
လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေး	စက်ရုံအဆောက်အဦးများ ဖြိုချခြင်းနှင့် ဖြိုချအစိတ်အပိုင်းများအား သယ်ယူရွှေ့ပြောင်းခြင်း။	မတော်တဆထိခိုက်ဒဏ်ရာများနှင့် ပျက်ဆီးခြင်းများ။	ပိတ်သိမ်းမှုများဆောင်ရွက်သည့်အချိန်တွင် စက်ရုံတစ်ဝိုက်ကို ဖြိုချလုပ်ငန်းများပြုလုပ်နေကြောင်းသိရှိစေရန် သတိပေးဆိုင်းဘုတ်များ၊ စာတန်းများ၊ အချက်ပြကိရိယာများကို ထားထားသင့်သည်။ အပျက်အစီးအပိုင်းအများနှင့် အန္တရာယ်ရှိနိုင်သော ပစ္စည်းများကို ကျွမ်းကျင်အဖွဲ့အစည်းများအကူအညီ ရယူဆောင်ရွက်သင့်သည်။

ပတ်ဝန်းကျင် စိမ်ခန့်ခွဲမှု အစီအစဉ်



အဆိုပြုလုပ်ငန်း၏ ပတ်ဂန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် Continuous Improvement Circle စက်ဝိုင်းဖြင့် အစီစဉ်တကျ ပြုလုပ်သွားမည်ဖြစ်ပါသည်။ အစီအစဉ်တွင် စက်ရုံကြောင့် ဖြစ်ပေါ်စေနိုင်သော ပတ်ဝန်းကျင်နှင့် လူမှုဘဝအပေါ် ဆိုးကျိုးသက်ရောက်မှုများကို လျော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုရေး အစရှိသည့် အစီအစဉ်များ ပါဝင်ပါသည်။ ၄င်း EMP အစီအစဉ်များကို အကောင်အထည်ဖော်ရန်အတွက် သည် စက်ရုံတွင် ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အဖွဲ့အစည်းတစ်ခုထားရှိပြီး လျော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်များကို အကောင်အထည်ဖော်သွားမည်ဖြစ်ပါသည်။ အဆိုပါစက်ရုံ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို ရေရှည်ဖွံ့ဖြိုးတိုးတက်ကောင်းမွန်သော ပတ်ဝန်းကျင် အဖြစ် အကောင်အထည်ဖော်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ဆိုင်ရာ ဆိုးကျိုးသက်ရောက်မှုများကို လျော့နည်းစေရန် စီမံခန့်ခွဲမှုအစီအစဉ်များနှင့် စောင့်ကြပ်ကြည့်ရှုရမည့်အစီအစဉ်များကို အောက်ပါအတိုင်းပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအရာတစ်ခုချင်းစီအလိုက် ခွဲခြားမှု ပြုလုပ်ထားပါသည်။

၁။ လေထုညစ်ညမ်းမှုနှင့် ဖုန်မှုန့်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စက်ရုံတွင် ကာဗွန် နှင့် လေထုညစ်ညမ်းမှု လျော့ချရန် သစ်ပင်ပန်းပင်များ စိုက်ပျိုးထားရှိခြင်း၊
- စက်ရုံအတွင်း မည်သည့် စွန့်ပစ်အမှိုက်များကို မီးရှို့ဖျက်စီးခြင်းအား မပြုလုပ်စေခြင်း၊
- အမှုန်များသောနေရာများတွင် လုပ်ငန်းလုပ်ဆောင်ရမည့် လုပ်သားများကို မျက်နှာအုပ် (Mask) များတပ်ဆင်စေခြင်း။

၂။ ရေသုံးစွဲမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- ရေအသုံးပြုမှု အတွက် ရေအသုံးပြုမှု ထိန်းချုပ်သည့် ပစ္စည်း တပ်ဆင်ထားရှိစေခြင်း

- ရေအသုံးပြုသည့် နေရာများ ၊ အိမ်သာများတွင် ရေကို သင့်လျော်သော နည်းလမ်းနှင့် အသုံးပြုခြင်း နှင့် ထိန်းသိမ်းစောင့်ရှောက်ခြင်း ဆိုင်ရာ နည်းလမ်းများ သိရှိစေခြင်းနှင့် သင်တန်းပို့ချခြင်း

၃။ ရေဆိုးစွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စက်ရုံ၏ မိလ္လာစနစ်နှင့် ရေစီးကြောင်းများ နှင့် အနီးပန်းကျင်ရှိ ရေမြောင်းစနစ်များကို ရေလုံစေခြင်းနှင့် လုံလောက်သော အရွယ်အစား ထားရှိစေခြင်း
- မိလ္လာလိုအပ်ချက်များကို ပုံမှန်စစ်ဆေးပေးခြင်းနှင့် ပြုပြင်ထိန်းသိမ်းခြင်း

၄။ အမှိုက်စွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- စက်ရုံအတွင်း မည်သည့်စွန့်ပစ်ပစ္စည်းများကို့မြစ်၊ ချောင်း၊ အင်းအိုင် အတွင်းသို့ မစွန့်ပစ်ရ၊
- စွန့်ပစ်ပစ္စည်းများအား ပြန်လည်အသုံးပြုရန်နှင့် အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းအဖြစ် ခွဲခြားစွန့်ပစ်စေခြင်း၊
- အစိုင်အခဲစွန့်ပစ်ပစ်စွည်းများ(အဂတ်အစဖြတ်စ၊ ညှပ်စ)အား ပြည်တွင်းဝယ်ယူသူများထံ ပြန်လည်ရောင်းချစေခြင်း၊
- အိမ်သုံးစွန့်ပစ်အမှိုက်နှင့် လုပ်သားစွန့်ပစ် အမှိုက်များကို YCDC နှင့် နေ့စဉ် စွန့်ပစ်ခြင်း
- အမှိုက်စွန့်ပစ်ခြင်းနှင့် ပတ်သက်၍ သင်တန်းပို့ချပေးခြင်း

၅။ ဆူညံမှုထိန်းခြင်းဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

- မီးစက်အသုံးပြုမှုအတွက် အသံလုံခန်းများဆောက်လုပ်ထားရှိခြင်း၊
- လုပ်ငန်းသုံးပြုသည့်ယာဉ်များကို သတ်မှတ်အရှိန်ထက် ကျော်လွန်၍ မမောင်းနှင်စေခြင်း
- လုပ်ငန်းခွင်အတွင်း လုပ်သားများအတွက် တစ်ကိုယ်ရေသုံး ကာကွယ်ရေးပစ္စည်း (PPE) များလုံလောက်စွာ ထားရှိပေးခြင်း
- လုပ်သားများကို PPE အသုံးပြုမှုနှင့် ပက်သက်၍ သင်တန်းများပို့ချပေးခြင်းနှင့် ဆူညံသံများသော နေရာတွင် အလုပ်လုပ်စဉ်တွင် PPE များကိုသေချာစွာ အသုံးပြုစေခြင်;

၆။ အရေးပေါ်တုန့်ပြန်ရေး အစီအစဉ်

- မီးသတ်ကိရိယာများနှင့် မီးသတ်နည်းစနစ်များကို လုပ်ငန်းဆောင်ရွက်သည့်နေရာတိုင်းတွင် ထားရှိပေးခြင်းနှင့် သိရှိစေခြင်း
- မီးဘေးကာကွယ်ရေး လမ်းကြောင်းမြေပုံ အသေးစိတ်ကို ပြုလုပ်ထားရှိရန်နှင့် လုပ်သားများကို အသိပေးထားခြင်း
- လုပ်သားများကို မုန်တိုင်း၊ ငလျင်ကဲ့သို့သော သဘာဝဘေးအန္တရာယ်များတွင် လုပ်ဆောင်ရမည့် အချက်များကို အသိပေးထားခြင်း

- စက်ရုံ၏ ဆေးဘက်ဆိုင်ရာ အဖွဲ့အစည်းမှ ရှေးဦးသူနာပြုစုနည်းများ အတွက် ပြင်ဆင်ထားရှိခြင်း
- မီးသတ်တပ်ဖွဲ့ ၊ ကယ်ဆယ်ရေးအဖွဲ့များ ဖြင့် လုံခြုံရေးကော်မတီ ဖွဲ့စည်းခြင်း၊ ကော်မတီမှ လုံခြုံရေး စီမံခန့်ခွဲရေး နှင့် ပတ်သက်သည်များ ဆွေးနွေးရန် လစဉ် အစည်းအဝေးများ ပြုလုပ်စေခြင်း

၇။ စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်

၈။ လူမှုအကျိုးတူ ပူးပေါင်းပါဝင်မှု အစီအစဉ် CSR Plan

၉။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် ငွေကြေးလျာထားမှု

၁၀။ မကြေနပ်မှု ဖြေရှင်းခြင်း နည်းလမ်း

အဆိုပြုလုပ်ငန်း၏ လူထုအကျိုးတူပူးပေါင်းပါဝင်မှုများအဖြစ် အကျိုးအမြတ်၏ ၂% ကို ကျန်းမာရေး၊ ပညာရေးနှင့် နယ်ပယ်ဖွံ့ဖြိုးတိုးတက်ရေးများတွင် ထည့်ဝင်လှူတန်းသွားမည်ဖြစ်ပါသည်။ အဆိုပြုလုပ်ငန်း၏ ပတ်ဂန်းကျင်စောင့်ကြပ်ကြည့်ရှု့ရေးလုပ်ဆောင်ရမည့် လုပ်ငန်းစဉ်များနှင့် ဖြေရှင်းရမည့်နည်းလမ်းများကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။

သက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း

သက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း အစီအစဉ်တွင် စက်ရုံ၏ EMP အစီရင်ခံစာ အကြောင်းကို ရှင်းလင်းတင်ပြခြင်းဖြစ်သည်။ တွေ့ဆုံပွဲကို ၉ ရက်၊ ဇူလိုင်လ၊ ၂၀၂၀ ခုနှစ်တွင် လှိုင်သာယာမြို့နယ် Sky Hotel အစည်းအဝေးခန်းမ၌ ပြုလုပ်ခဲ့ပါသည်။ တွေ့ဆုံပွဲတွင် စက်ရုံ၏သက်ဆိုင်ရာပုဂ္ဂိုလ်များ၊ အစိုးရအဖွဲ့ရုံးများဖြစ်သော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၊ စက်မှုကြီးကြပ်နှင့် စစ်ဆေးရေး ဦးစီးဌာန၊ ပတ်ဝန်း ကျင်ထိန်းသိမ်းရေးနှင့် သန့်ရှင်းရေးဌာ အစရှိသော သက်ဆိုင်ရာဌာနများ၏ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ စက်မှုဇုန်စီမံခန့်ခွဲ မှုကော်မတီ၏ တာဝန်ရှိပုဂ္ဂိုလ်များမှ လိုအပ်သည်များကို အကြံပေးခြင်း၊ စီမံကိန်း၏ အစီရင်ခံစာတွင် လိုအပ်သည်များကို ဖြည့်စွက်ပေးရန် အကြံပြုချက်များပေးခဲ့ပါသည်။ အဆိုပါအကြံပြုချက်များအရ စက်ရုံတာဝန်ရှိသူများဖက်မှလည်း ဆောင်ရွက်ရန်လိုအပ်သော လုပ်ငန်းတာဝန်များအား လက်တွေ့အကောင်အထည်ဖော်ဆောင်ရွက်ခဲ့ပါသည်။ ပြုလုပ်ခဲ့သည့် အစီအစဉ်အကျဉ်းကို ထည့်သွင်းဖော်ပြထားပါသည်။

အချိန်	ကြာသပတေးနေ့၊ ၉ ရက်၊ ဇူလိုင်လ၊ ၂၀၂၀ ပြည့်နှစ်
နေရာ	Sky Hotel အစည်းအဝေးခန်းမ ၊လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်မြို့။
အစီအစဉ်အကျဉ်း	စက်ရုံနောက်ခံအကြောင်း စက်ရုံလုပ်ငန်းအကြောင်း ပတ်ဝန်းကျင်ထိခိုက်မှုနှင့် လျော့ချရေးအစီအစဉ် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ် အမေးအဖြေကဏ္ဍ

နိဂုံး

နိဂုံးချုပ်အားဖြင့် ယခုစီမံကိန်းသည် ဆောက်လုပ်ရေးကာလ၊ လုပ်ငန်းလည်ပတ်သည့်ကာလနှင့် လုပ်ငန်းဖျက်သိမ်းသည့် ကာလသုံးခုလုံးတွင် ဒေသခံပြည်သူများကိုအလုပ်အကိုင် အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်သည်။ ကာလသုံးခုလုံးတွင် ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများကို လျော့ချနိုင်မည့် နည်းလမ်းများနှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အား အကောင်အထည်ဖော်ခြင်းဖြင့် လျော့ချနိုင်သည်။ ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမှု အစီအစဉ်အား စီမံကိန်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးကို စောင့်ကြပ်ကြည့်ရှုရန် မဖြစ်မနေ အကောင်အထည်ဖော်ပေးရမည်။ စီမံကိန်း ကောင်အထည်ဖော်သူသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ယခုအစီရင်ခံစာအား စစ်ဆေးပီးနောက် ပြန်လည်ပေးပို့လာသော သဘောထားမှတ်ချက်နှင့် အကြံပြုချက်များကိုလိုက်နာရမည်။ ထို့ပြင် စီမံကိန်းအကောင်အထည်ဖော်သူသည် မြန်မာနိုင်ငံ၏ ပတ်ဝန်းကျင်နှင့် သက်ဆိုင်သောမူဝါဒများ၊ ဥပဒေများ၊ နည်းဥပဒေများ၊ သတ်မှတ်ချက်များကို လိုက်နာရန်လိုအပ်ပါသည်။

EXECUTIVE SUMMARY

Introduction

Environment Management Plan is required for ensuring sustainable development. It should not affect the surrounding environment adversely. The management plan presented in this chapter needs to be implemented by the proposed expansion of JIN SEN MYANMAR COMPANY LIMITED. The Environment Management Plan (EMP) aims at pollution controlling at source with available and affordable technology followed by treatment measures. Waste minimization and waste recycling measures are emphasized. In addition to the Industry specific control measures, the proposed industry should adopt following guidelines.

The project is new investment for manufacturing and selling of various kinds of Bag and Bag's Strings for CMP Basis from China. The project is issued by the Yangon Region Investment Committee (YRIC) on 27 December 2019 with the Endorsement No. (YGN- 320/2019). YRIC notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in Manufacturing of Bag and Bag's Strings for local CMP Basis processing enterprise under the name of JIN SEN MYANMAR COMPANY LIMITED as a solely owned foreign investment from the China.

According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). As per the comments of Environmental Conservation Department (ECD), said project requires an Environmental Management Plan (EMP) to meet the environmental assessment requirements of Notification No. Yaka- 1/3/4 (EIA) (2781/2019) on 24 January 2020. Therefore, JIN SEN MYANMAR COMPANY LIMITED commissioned MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED for EMP report study. The specific objectives of this study are

- ✓ Identify the major impacts that are may arise from the activities of the proposed project on natural environmental and socio-economic environment of the project area
- ✓ Describe the mitigation measures to minimize these impacts
- ✓ Prepare and implement Environmental Management Plan for the project
- ✓ Make sure that EMP is developed sufficiently and sound for the proposed project and
- ✓ Corporate Social Responsibility Plan (CSR Plan) plays an essential part for the improvement of the social welfare of community as well as development of the region.

The proposed project aims to manufacturing and selling of various kinds of Bag and Bag's Strings for CMP Basis from China.

The main purpose of this EMP report is to obey the rule and regulation of Local and International Environmental Protection programs and harmonize with the environmental and also describes the responsible person and his responsibility.

Policy, Legal and Institutional Framework

National Laws and Regulations, international guidelines are referred for Environmental Management Plan of the proposed project.

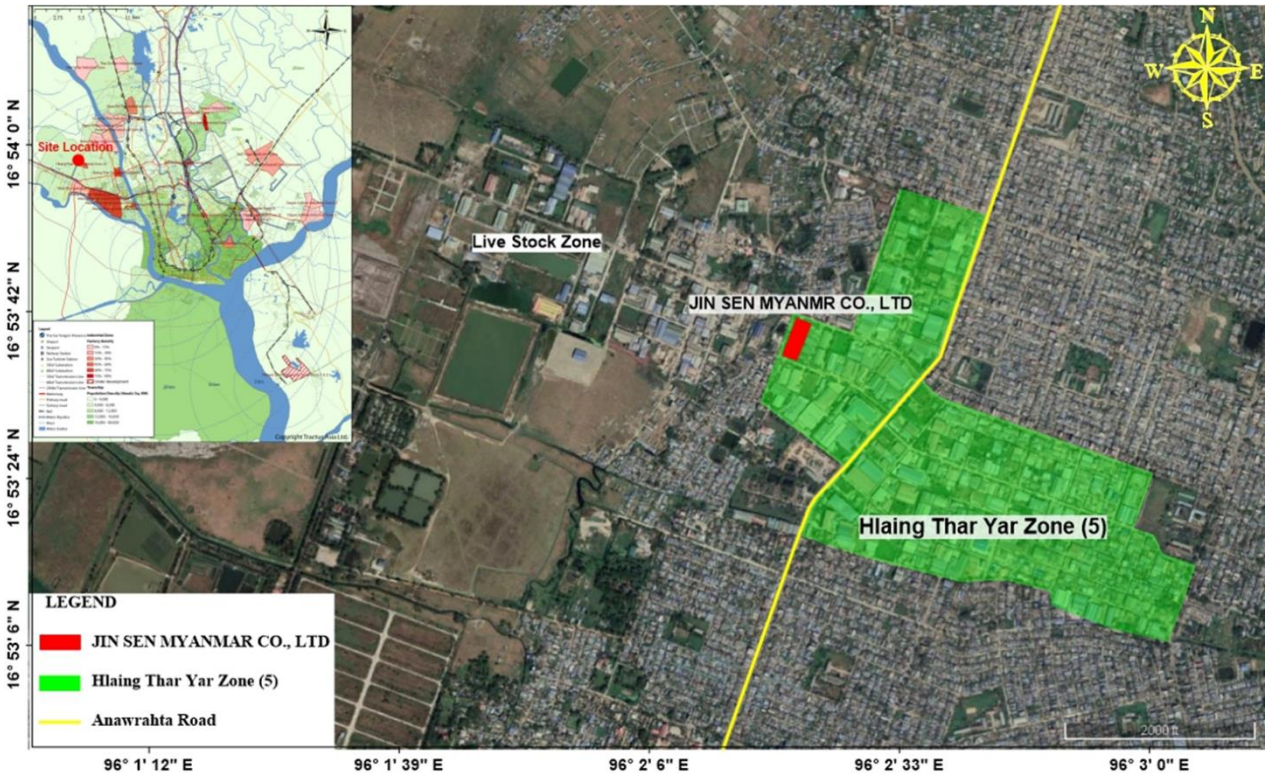
1. The Constitution Law, 2008
2. The Environmental Conversation Law, 2012
3. The Environmental Conversation Rule, 2014
4. Environmental Impact Assessment Procedure, 2015
5. National Environmental Quality (Emission) Guideline, 2015
6. National Myanmar Environmental Policy, 2019
7. Foreign Investment Law, 2012
8. Foreign Investment Rule, 2013
9. Myanmar Investment Rule, 2017
10. Myanmar Insurance Law, 1993
11. Payment of Wages Law, 2016
12. The Payment of Wages Act, 1936
13. Yangon City Development Committee Law, 2018
14. The Amended Law for Factories Act, 1951 (2016)
15. The Private Industrial Enterprise Law
16. The Export and Import Law, 2012
17. The Prevention of Hazard from Chemical and Related Substances Law, 2013
18. The Underground Water Act
19. Myanmar Fire Brigade Law, 2015
20. Fire Safety Procedure
21. The Electricity Law, 2014
22. Boiler Law, 2015
23. Labor Dispute Settlement Law, 2012
24. The Law Amending the Settlement of Labor Dispute Law, 2019
25. The Social Security Law, 2012
26. The Employment and Skill Development, 2013
27. The Worker's Compensation Act, 1923
28. The Leave and Holidays Act (1951, partially reused in 2014)
29. The Minimum Wage Law, 2013
30. Public Health Law, 1972

31. Prevention and Control of Communicable Disease Law (1995 Amendment in 2011)
32. Occupational Safety and Health Law, 2019
33. The Law on Standardization
34. လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သော ဝတ္ထုပြစ္စည်းများဆိုင်ရာ ဥပဒေ၊ (2018)
35. The Motor Vehicles Law, 2015
36. The Conversation of Water Resources and River Law, 2006
37. The Commercial Tax Law (1990 Amended 2014)

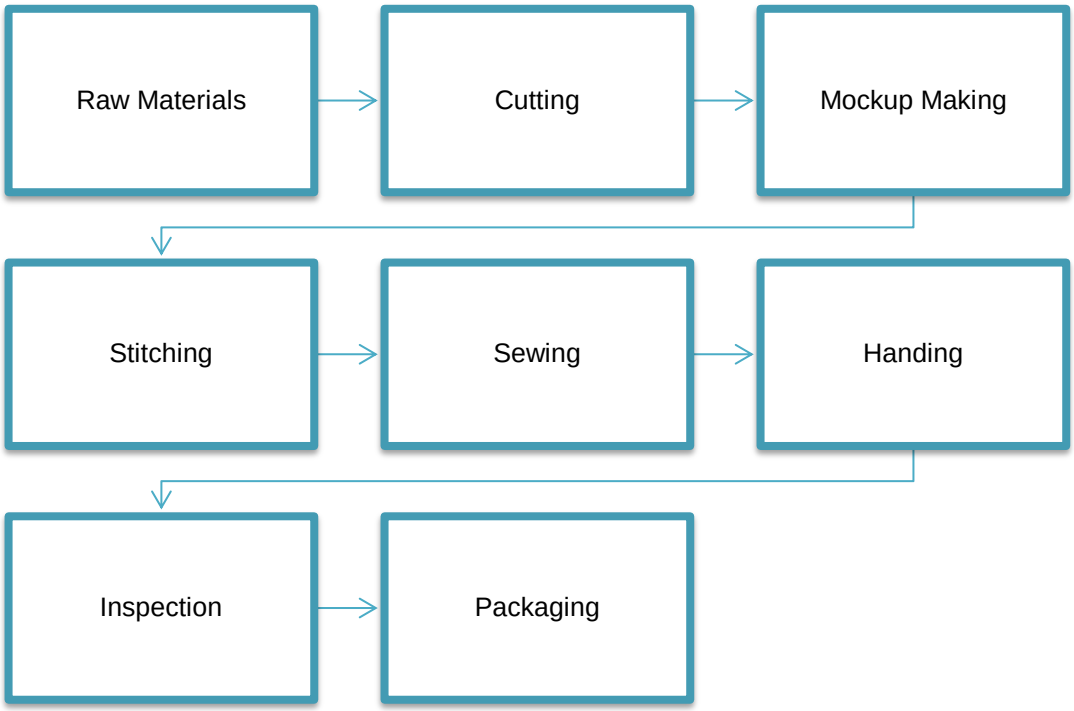
Project Description

Type of Proposed Business	Manufacturing of Various Kinds of Bag and Bag's Strings For CMP Basis
Type of investment	100% Foreign Investment
Name of Company	JIN SEN MYANMAR COMPANY LIMITED
Land lease year	30 years
Total land area	1.429 acres (5,782.9578 sq meter)
Total Building	Four Factory Building
Type of land	Industrial Land
Construction Period	1 year
Address of Proposed Project	Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region.
Contact Person	Daw Zin Thant Phyu, 09-421118702
Email Address	jinsenmyanmar.jiangh@gmail.com

The proposed project is located at Yangon region. The total area of project site is 1.429 acres (5,782.9578 square meters). Main structure is designed into production area for four building. Transformer room, generator room and water treatment plant are separated by main factory building structure. The factory layout plan which is also can be seen in this report. The main product of the JIN SEN MYANMAR COMPANY LIMITED factory is Bag and Bag's Strings. The Utilities for proposed factory include electrical power, fuel oil for emergency used generator and water for domestic use. Electric power is used for the purpose of to run the steam boiler and to provide lighting.



Location Map of Jin Sen Myanmar Company Limited



Production Process of JIN SEN MYANMAR COMPANY LIMITED

Production rate of JIN SEN MYANMAR COMPANY LIMITED is produced between first year of operation and ten years' operation as 653,500 to 718,850 pieces annually. It is requiring of work force (13) foreigner's technician and (436) local employees for first year operation to 10 years' operation.

Waste storage photos

Brief Description of Surrounding Environment

Primary data and secondary data collections are very imported to assess environmental impacts. Primary data collections (environmental quality measurements and monitoring) play an important role for conducting EMP. Therefore. MYANWEI ENVIRONMENTAL SOLUTIONS LIMITED conducted air quality, temperature and humidity, noise level measurement and light pollution measurement on 17 June 2020 and compared with the National Environmental Quality (Emission) Guidelines and also described how to reduce the impact and how to maintain the pollutions. Other more described the weather conditions, rainfalls, and socio-economic component of the proposed project.

Environmental Impact and Mitigation Measure

Possible effects, such as impacts on environmental resources, ecological resources, human and waste disposal due to construction, operation, and decommissioning processes. Potential impacts for the proposed projects are normally differentiated into three main categories, viz, Construction phase, Operation phase and Decommissioning phase.

The relative importance of each impact is assessed based on the understanding that general mitigation measures will be integrated into the baseline project. Therefore, when the general mitigation measures reduce impacts to the point of rendering them negligible they are excluded from further analysis. Once the significance of the impact is established as more than negligible, it is described and additional, specific mitigation measures may be proposed to allow optimal integration of the project into the environment.

Evaluation and Perdition of Significant Impacts during operation phase

Parameter	Source of Impact	Potential Adverse Impact	Mitigation Measures
Air	Dust and GHGs emission from vehicles used for transporting raw materials, final products and the running of emergency diesel generators and vehicles.	Air pollution and inhaling them can increase the chance of health problems such as cancer, respiratory diseases and environmental issues such as ozone depletion, ecosystem degradation and global warming.	To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. Ensuring vehicles, compressor and generator are well maintaining. Avoid the opening burning of clothes and fabric scraps.
Water	Poorly planned the ditches where flows the liquid waste from dormitory and toilets.	Bad smell and getting block the drains.	The factory not generated hazardous wastewater from production process on CMP basic. No mitigation measures for water.
Soil	Engine oil leaks, spills at diesel storage and during fuel refuelling.	Degrade the soil level if properly not built the factory ground.	No Mitigation Measure
Noise and Vibration	Generating noise from the production machineries.	Intense of noise and vibration can cause nuisance on working environment.	No Mitigation Measure

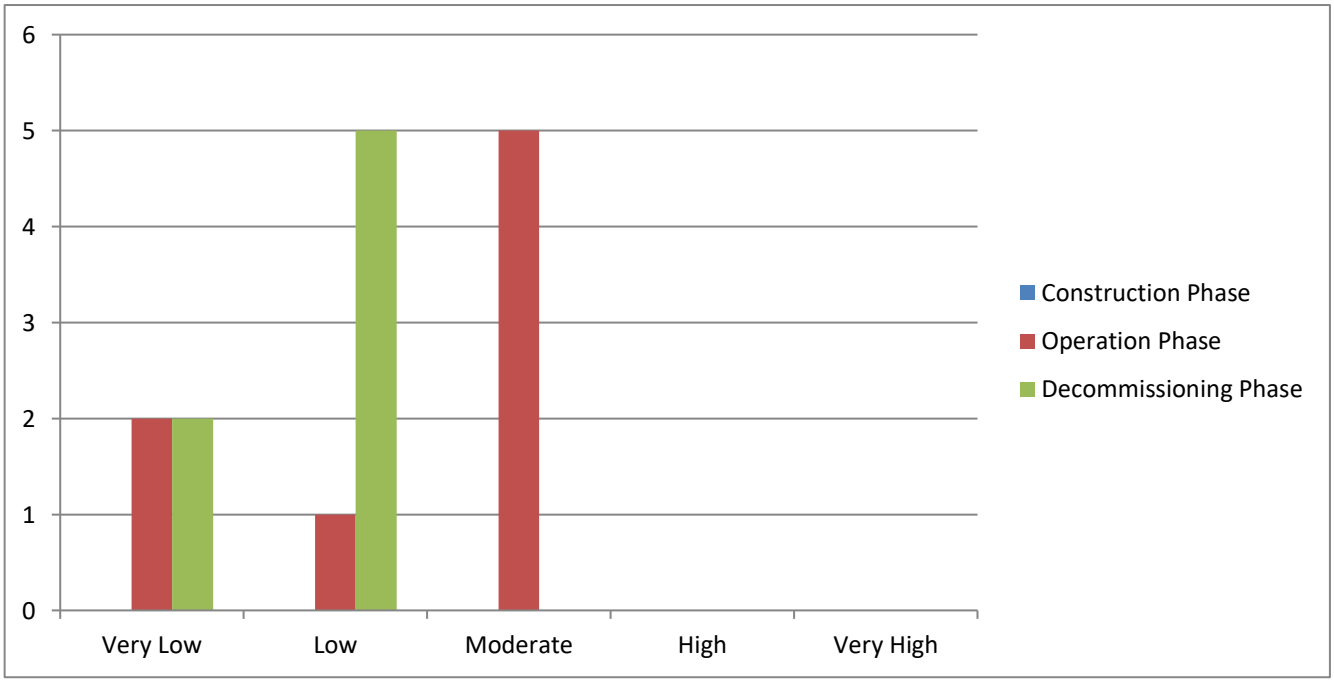
Flora and fauna on terrestrial and aquatic life	Operation of the garment factory	Not Significant Impact on Ecological Resources	No Mitigation Measure
Fire	Raw material, foam is easily combustible.	Serious damage to property and even injury and death	Proposed factory is well preparing the fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. Regular inspection for existing firefighting equipment should be and of fire emergency, water storage tanks are well prepared. The emergency fire alarms are installing at the factory for alerting the workers in case of fire. The main entrances and route for emergency cases of the factory must not block with materials or machines for fire emergency cases.
Occupational Safety	Accidental cases cause by operating of machines.	Accidents in workplace (physical injuries or even death) can occur during operation.	First aid training, safety training, firefighting training or other essential training for machinery handling provided for emergency cases of workers. To prevent electric shock hazards, electrical maintenance staffs (repairperson) are to assign to do regular inspections and take preventive measures.
Health	Influx of people accelerates the rate of infections.	COVID-19 may be disclosure the factory and losses in the properties of business.	Prepare the preventive measures such as follow the social distancing, wear the masks, spraying with hand sanitizers and avoid the grouping.
Solid Waste	Residual pieces of fabric scraps from the production lines Waste from packaging Waste from kitchen, dormitory and office.	Environmental pollutions, health problems and accidental fire cases	All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area. Final wastes should be disposed by using YCDC's service.
Liquid Waste	Domestic liquid wastes from kitchen, dormitory and sewage system.	Contamination of soil, surface water and ground water	Proposed factory well planned the sewage and septic tanks system. Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.
Hazardous Waste	Used of oil and lubricant discharged from the maintenance of vehicles and machines. Use of chemicals in the planned production processes.	Soil Contamination, water pollution, slippery accidents of vehicles and fire burning.	Using of hazardous chemicals and discharging of used chemicals in accordance with occupational health, safety and environmental requirements. The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (e.g., DOWA and YCDC)

Natural Hazardous	Climate change and natural phenomenon might be happening of droughts, tropical storms, heat waves, earthquakes and floods.	Disruptions of basic buildings, injuries to death, capital loss of investments in supply chain and changes in demographic situation of ecosystem.	Providing relevant rescue trainings, preparing the preparedness plans such as firefighting plans, safety training and essential equipment, and comprising the natural disaster response team.
Crisis Situation	Destroying the public infrastructures either purposive or accidentally. Poor planning and functioning of COVID-19 preventive measures.	Damaging to employees or factory and make get the loss of financial investments and even disclosure the project.	Promote the full-time guards and alert system during the crisis situation period Comprise the fire safety team, and emergency response team for crises and criminal cases.

Evaluation and Perdition of Significant Impacts during decommissioning phase

Categories	Source of Impact	Potential Adverse Impact	Mitigation Measure
Air pollution	Demolishing of buildings and transportation of residual parts	Emission of particulate matters (PM 2.5 & 210) and GHGs.	Hire the professional demolishing company. Carry broken material with cover by canvas.
Water pollution	Blocking of ditches with demolished materials	Bear the undesired health problems and may be floods by blocking of drains.	Systematically decommission and assembly the fragments in a particular place and this will not to block the water flow ditches.
Noise Pollution and Vibration	Decommission activities and transportation of demolished materials	Noise pollution and nuisance on surrounding environments.	Carry out the activities during daytime. Maintain the machines and vehicles to reduce noise pollution. Provide the earmuffs to the workers.
Waste disposal	Demolished debris such as bricks, concrete materials without dumping to the landfill site	May cause adverse impacts on clean and tidy industrial area and other health problems.	Reusable materials and dispose to the define areas or discard contacting with YCDC.
Hazardous waste	Open burning the unclassified wastes and materials	Explosions, loss in recycle materials and enhance the air pollution due to open burning.	Classify the waste types and discard as to their kinds of waste.
Occupational Health and Safety (Accidents, Injuries)	Decommissioning activities and transportation of demolished materials	Injuries and accidental cases.	Provide protective fencing or demarcation with tape at the boundaries of dangerous / hazardous zone and the appropriate warning signs, marking and safety signs and installation of the lost time injury notice board. Use the third-party expert assisted by trained personnel to identify and remove hazardous materials.

According to the result of analysis, it can be concluded that most of the project activities have low significance on environment, in all phases. Project activities that can produce solid waste and liquid waste are moderate significance. Moreover, project activities that emit dust and GHGs and accidental cases are moderately significant. Fire hazard potential of the proposed project and noise pollution are highly significant. But this can be prevented or mitigated by using the following mitigation measures. The following figure shows the impact significance of the proposed project.



Impact significance of the proposed factory project

Environment Management Program

The proposed project of environmental management plan, which need to made the Continuous Improvement Cycle. In that plan, it includes not only reducing to the environmental and social-economic impact but also includes the environmental management plan and the monitoring plan. In this EMP to implement the health, safety and occupational for the industry, they need to create a team and to must be implemented that. The EMP for JIN SEN MYANMAR COMPANY LIMITED has been prepared to address potential issues based upon discussion with factory management, workers, local community's view, stakeholder consultation and from the site visit of experts. The EMP is additional to and compliments the factory's safety management system. The following environmental issues that require environmental management plans based upon the potential impacts of activities by for JIN SEN MYANMAR COMPANY LIMITED are as follows:

1. Air pollution/Dust Management plan
2. Wastewater Management Plan
3. Solid Waste Management plan
4. Noise Management
5. Energy Management Plan
6. Occupational health and safety Management Plan

7. Fire Management Plan
8. Disaster Management plan
9. Crisis Situation Management Plan
10. Environmental Monitoring and Reporting
11. Corporate Social Responsible (CSR) Plan
12. Budget Plan
13. Grievance Redress Mechanism

Public Consulting

This chapter presents results of public consultation and information disclosure conducted for the JIN SEN (MYANMAR) Manufacturing factory. Public participation can be considered as the required element of the EMP process. In this study various stakeholder's participation were made. Public consultation during preparation of EMP report was conducted on 9, July 2020, following the EIA procedure. The project's stakeholders in this category are key officials or representatives of the regional and local authorities who have direct responsibilities for the administration of the EMP process for environmental and social clearance and issuing operation permits for proposed development projects. For this factory, relevant key offices at the national level are Environmental Conservation Department (ECD) and Industry Supervision and Inspection Department. Relevant key office at the regional level is Yangon City Development Committee (YCDC), General Administrative Department, Fire Department, Factories and General Labor Law Inspection Department, Public Health Department, Industrial Supervision and Inspection Department.

Time and Date	Thursday, 9 July 2020 10:30-12:30
Venue	Sky Hotel Meeting Room, Hlaing Thar Yar Township, Yangon Region
Agenda	• Presentation on the Background Information of Project, • Project Description, • Impact Assessment, Environmental Mitigation • Environmental Management Plan and Monitoring Plan • Received and Answer from feedback of participants

Conclusion & Recommendation

In Conclusion, the environmental management practices, procedures, and responsibilities are defined here in to get full compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. All the feed backs, desired and needs of local public recorded in public consultation meetings are well addressed and incorporated in formulation of EMP. It has been figured out that, the proposed Bag and Bag's Strings factory is going to generate local employment opportunities and enhance capabilities and working skills of employees. Consequently, their socio-economic standard is expected to be improved and undertaking corporate social responsibilities (CSR) as recommended. The study further concluded that positive impacts will be of immense benefit to the local community and national development as well.

This is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to dispose according to YCDC rules and regulation
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.
- Daily, monthly, and annual action plan shall be formulated based on this EMP and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third-party environment audit.
- Abide environmental policy, laws, rules, and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EMP report. Once concerned authorities approve EMP, effective implementation of EMP by the project proponent is essential. The proponent should abide environmental policy, laws, rules, and instructions of the Republic of the Union of Myanmar.

1. INTRODUCTION

Environment Management Plan is required for ensuring sustainable development. It should not affect the surrounding environment adversely. The management plan presented in this chapter needs to be implemented by the proposed expansion of JIN SEN MYANMAR COMPANY LIMITED. The Environment Management Plan (EMP) aims at controlling pollution at source with available and affordable technology followed by treatment measures. Waste minimization and waste recycling measures are emphasized. In addition to the Industry specific control measures, the proposed industry should adopt following guidelines.

1.1. PROJECT BACKGROUND

The project is new investment for manufacturing and selling of various kinds of Bag and Bag's Strings for CMP Basis Company from China. The Yangon Region Investment Committee (YRIC) issues the project on 27 December 2019 with the Endorsement No. (YGN- 320/2019). YRIC notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of Bag and Bag's Strings on Cutting, Making and Packaging (CMP) basis under the name of JIN SEN MYANMAR COMPANY LIMITED.

According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). As per the comments of Environmental Conservation Department (ECD), said project requires an Environmental Management Plan (EMP) to meet the environmental assessment requirements of Notification No. Yaka- 1/3/4 (EIA) (2781/2019) on 24 January 2020. Therefore, JIN SEN MYANMAR COMPANY LIMITED commissioned MYANWEI ENVIRONMENTAL SOLUTIONS LIMITED (MYANWEI) for EMP report study.

1.2. PROJECT PROPONENT PROFILE

This is the information of project proponent from the MIC's registration that is describing in below Table 1-1 and Table 1-2.

Table 1-1 Information of Investor

Investor Name:	Mr. Jiang Xiaoping
ID No.:	G53979513
Citizenship:	Chinese
Address of Registration office:	Chashan Town, Subian Industrial Area, Dongguan Town, Dongguan City, Guangdong Province, China

1.2.1. Director List

Name of Shareholder	Citizenship	Percentage
Hong Kong Jin Sen Limited	Hong Kong	100%
Mr. Jiang Xiaoping	Chinese	
Ms. Xiao Xiangwu	Chinese	

1.2.2. Investment Plan and Salient Features of the Project

The estimated authorized capital investment is 0.936 Million US Dollar (Table 1-2). Organization chart of Jin Sen Myanmar Company Limited is presenting in Figure 1-1.

Table 1-2 Salient Features of the Project

Type of Proposed Business	Manufacturing and Selling of Various Kinds of Bag and Bag's Strings for Local Basis
Type of investment	100% foreign investment
Type of Share	Ordinary Share
Type of land	Industrial Land
Total land area	1.8 acres (7,284.34 sq m)
Total building area	One Factory Building
Land lease year	60years
Construction period	1 years
Operation starting date	30 years investment permit
Address	Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region.
Contact person	Daw Zin Thant Phyu, 09-421118702
Email Address	jinsenmyanmar.jiangh@gmail.com

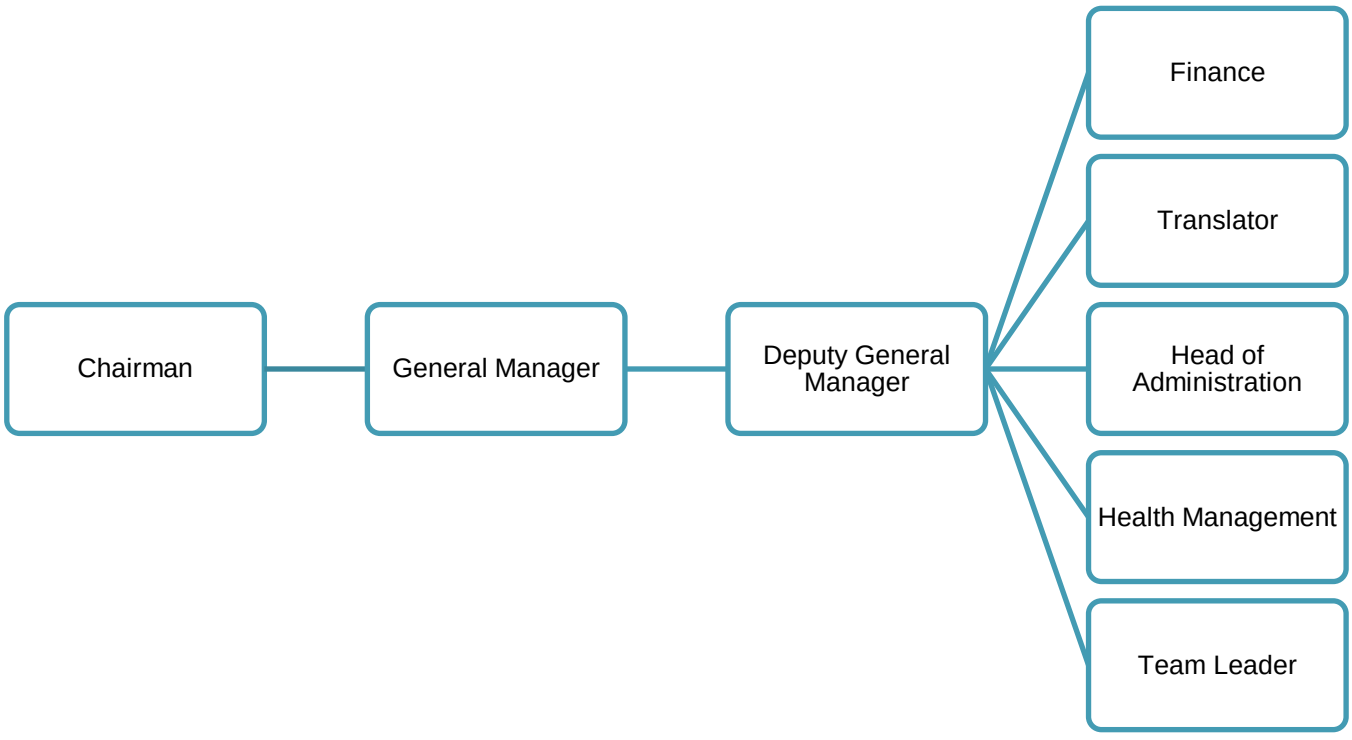


Figure 1-1 Organization chart of JIN SEN MYANMAR COMPANY LIMITED

1.3. ENVIRONMENTAL CONSULTANT PROFILE

MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED prepares the EMP for the proposed project. The field studies were carried out by MYANWEI having experiences in conducting environmental assessments for various types of projects in Myanmar. The MYANWEI team conducted field survey, assessment activities, and prepared the report. A reconnaissance study was performed on the proposed project site and baseline environmental data were also collected from possible sources using the appropriate measuring devices. Data interpretation and analysis were made based on those collected data for the present and potential future conditions. Suitable measures were proposed for the impacts to be mitigated to reduce to acceptable ones. The environmental study was carried out by the study team and the following is a summary of team member's responsibilities during the study period.

Table 1-3 Member of EMP Study Team

Name	Qualification	Responsibility
MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY Limited	**Transition Consultant Registration Certificate No. 0069**	**EIA Organisation**
Dr. Win Aung	M.B, B.S (Yangon), M.P.H (Mahidol University, Thailand)	Public Health and Health Management Expert,
Dr. Hein Lynn Aung	M.B, B.S (Yangon), Business Management (International Collage of Management Sydney, Australia)	Project Director, Public health consultant, project management
Mr. Lin Htet Sein	MSc (Regional Geology) BSc (Hons) Geology Dip in Environmental Science Certificate in Environmental & Social Assessment **TCR No. 0048**	Project Director, Environmental consultant, project management
Ms. Wah Wah Zaw	B.E Material and Metallurgy Engineering Diploma in Environmental Planning and Management M.S Environmental Planning and Management	Senior Environmental Consultant, Social and Environmental Research, Quality control, Environmental planning and Management
Ms. Khin Thu Zar Myint	B.E(Materials and Metallurgy) Dip in Environmental Planning and Management	Senior Environmental Consultant, Social Research, Public consultation, social economic investigation
Ms. Su Myat Hlaing	B.E Civil Engineering B. Tech Civil Engineering	Environmental Engineer
Mr. Aung Kyaw Moe	B.E. Chemical Engineering B. Tech Chemical Engineering	Junior Environmental Consultant, monitoring measure, document administration
Mr. Saw Yan Naung	B.E. Chemical Engineering B. Tech Chemical Engineering	Junior Environmental Consultant, monitoring measure, document administration

Mr. Myat Ko Ko	B.Sc (Hons) Geology M.Sc. Geology (Economic and Mining) Certificate of Environment Management	Junior Environmental Consultant, monitoring measure, document administration
Mr. Htoo Nanda Aung	B.Sc (Forestry)	Junior Environmental Consultant, monitoring measure, document administration
Mr. Si Yan Hein	B.Sc (Geology)	Junior Environmental Consultant, monitoring measure, document administration
Mr. Kaung Sett Lwin	B.Sc (Hons) Geology	Junior Environmental Consultant, monitoring measure, document administration

MYANWEI ENVIRONMENTAL SOLUTIONS

No. 36-38, 9th floor (A), Grand Myay Nu Condo, Myay Nu Street, Sanchaung Township, Yangon, Myanmar.

www.myanwweiconsulting.com.01-501221

2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This section provides a brief summary of relevant national environmental legislations established by the MONREC and overview of current local and international environmental and social policies including related international or regional convention for the proposed project.

2.1. MYANMAR REGULATORY FRAMEWORK

Myanmar has 24 ministries under the Office of the President as of May 2016. The leading ministries in-charge of environmental and social considerations is the Environmental Conservation Department (ECD) of the MONREC that was reorganized Ministry of Environmental Conservation and Forestry (MOECAF) in April 2016.

2.1.1. Laws and Regulations Related to Environmental and Social Considerations

Requirements related to environmental (and social) impact management for development projects are described in Table 2-1.

Table 2-1 List of Myanmar's Law Relating to Environmental Management

Law and Regulation	Description
National Environmental Policy of Myanmar, (Notification No. 26/94 dated 5 December 1994)	To achieve harmony and balance between socioeconomic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens.
Constitution 2008	
Section 37, (a)	The Union is the ultimate owner of all lands and all-natural resources above and below the ground, above and beneath the water and in atmosphere in the Union.
Section 37, (b)	The Union shall permit citizens rights of private property, right of inheritance, right of private initiative and patent in accord with the laws.
Section 372	The Union guarantees the right to ownership, the use of property and the right to private invention and patent in the conducting of business if it is not contrary to the provisions of this Constitution and the existing laws.
Section 45	The Union shall protect and conserve natural environment.
Section 390, (a),(b),(c),(d)	Every citizen has the duty to assist the Union in preserving and safeguarding the cultural heritage, conserving the environment, striving for the development of human resources, and protecting and preserving the public property.
Environmental Conservation Law, 30 March 2012	
Objectives	to contract a healthy and clean environmental and to conserve natural and cultural heritage for the benefit of present and future generations; to maintain the sustainable development through effective management of natural resources and to enable to promote international, regional and bilateral cooperation in the matters of environmental conversation.
Section 3	c) to enable to emerge a healthy and clean environment and to enable to conserve natural and cultural heritage for the benefit of present and future generations; (d) to reclaim ecosystems as may be possible which are starting to degenerate and disappear;

	(e) to enable to manage and implement for decrease and loss of natural resources and for enabling the sustainable use beneficially;
Provisions of Duties and Powers relating to the Environmental Conservation of the Ministry: Section 7	(a) To specify categories and classes of hazardous wastes generated from the production and use of chemicals or other hazardous substances in carrying out industry, agriculture, mineral production, sanitation and other activities; (b) To prescribe categories of hazardous substances that may affect significantly at present or in the long run on the environment; (c) To promote and carry out the establishment of necessary factories and stations for the treatment of solid wastes, effluents and emissions which contain toxic and hazardous substances; (j) To prescribe the terms and conditions relating to effluent treatment in industrial estates and other necessary places and buildings and emissions of machines, vehicles and mechanisms; (m) To lay down and carry out a system of EIA and SIA as to whether or not a project or activity to be undertaken by any Government department, organization or person may cause a significant impact on the environment; (o) To manage to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works.
Chapter VI Environmental Quality Standards: Section10	The Ministry may, with the approval of the Union Government and the Committee, stipulate the following environmental quality standards: (a) suitable surface water quality standards in the usage in rivers, streams, canals, springs, marshes, swamps, lakes, reservoirs and other inland water sources of the public; (b) water quality standards for coastal and estuarine areas; (c) underground water quality standards; (d) atmospheric quality standards; (e) noise and vibration standards; (f) emissions standards; (g) effluent standards; (h) solid wastes standards; (i) other environmental quality standards stipulated by the Union Government.
Section 14	A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards.
Section 15	The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods.
Section 16	A person or organization operating business in the industrial estate or business in the SEZ or category of business stipulated by the Ministry: (a) is responsible to carry out by contributing the stipulated cash or kind in the relevant combined scheme for the environmental conservation including the management and treatment of waste;

	(b) shall contribute the stipulated users 'charge s or management fees for the environmental conservation according to the relevant industrial estate, SEZ and business organization; (c) shall comply with the directives issued for environmental conservation according to the relevant industrial estate, SEZ or business.
Section 24	The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition include in prior permission, stipulated by the ministry, or not.
Section 25	The project proponent has to comply with the terms and conditions include in prior permission.
Section 29	The project proponent has to abide by the stipulations included in the rules, regulations, by-law, order, notification and procedure, which are issued by said law.
Environmental Conservation Rules, 2014	
Rules 58	The Ministry shall form the EIA Report Review Body with the experts from the relevant Government departments, organizations.
Rules 59	The Ministry may assign duty to the Department to scrutinize the report of EIA prepared and submitted by any organization or person relating to EIA and report through the EIA Report Review Body.
Rules 61	The Ministry may approve and reply on the EIA report IEE or EMP with the guidance of the Committee.
Sub-rule (a) of rule 68	The project proponent has to avoid emit, discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public.
Sub-rule (b) of rule 68	The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem.
Environmental Impact Assessment Procedure (December 2015)	
Objectives	The project proponent has to be liable for all adverse impacts caused by doing or emitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102. The project proponent has to support, after consulting with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102 The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover, the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103. The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104. The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105. The project proponent has to continuously monitor all adverse impacts in the pre-construction phrase, construction phrase, operation phrase,

	suspension phrase, closure phrase and post-closure phrase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under paragraph 106. The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under paragraph 107. The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under paragraph 108. The project proponent has to prepare the monitoring report in accord with the rule 109. The project proponent has to show this monitoring report in public place such as library, hall and website and office of project for the purpose to know this report by public within 10 days from the date which the report is submitted to the Ministry. Moreover, has to give the copy of this report, by email or other way which way agreed with the asked person, to any asked person or organization, under paragraph 110. The project proponent has to allow inspector to enter and inspect in working time and if it is needed by Ministry has to allow inspector to enter and inspect in the office and work-place of project and other work-place related to this project in any time, under paragraph 113. The project proponent has to allow inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under paragraph 115. The project proponent has to allow inspector to inspect the contractor and sub-contractor who implement on behalf of project, under paragraph 117.
Screening: Section 23	a) The project proponent shall submit the Project Proposal to the Ministry for Screening. b) The Ministry will send the Project Proposal to the Environmental Conservation Department to determine the need for environmental assessment. c) Following the preliminary Screening and verification that the Project Proposal contains all required documents and related materials, subject to Articles 8, 9, 10, 11, 26 and 27 the Department shall make a determination in accordance with Annex 1 _ Categorization of Economic Activities for Assessment Purposes ', taking into account Article 25 and the additional factors listed in Article 28 in order to designate the Project as one of the following, and then submit it to the Ministry: i) An EIA Type Project, or ii) An IEE Type Project, or iii) A Non IEE or EIA Type, and therefore not required to
National Environmental Quality (Emission) Guidelines (NEQG) (December 2015)	
Objectives	To provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.
National Environmental Policy of Myanmar (2019)	

National Environmental Policy Vision & mission	Vision A clean environment, with healthy and functioning ecosystem, that ensures includes development and wellbeing for all people in Myanmar. Mission To establish national environmental policy principle for guiding environmental protection and sustainable development and for mainstreaming environmental consideration into all polices, laws, regulation, plans, strategic, programmes and projects in Myanmar.
Foreign Investment Law, 2012	
Section 8	(a) To support the primary objectives of the national economic development plan, and for businesses that cannot yet be run by the State and citizens or businesses that have insufficient funds and technology. (b) Development of employment activities (l) Protection and conservation of the environment. (q) Appearing the required modern services for the Union and citizens.
Section 17	(a) To abide by the existing laws of the Republic of the Union of Myanmar. (b) To carry out the business by forming a company under the existing laws of Myanmar by the investor. (h) To carry out not to cause environmental pollution or damage in accord with existing laws in respect of investment business. (k) To carry out the systematic transfer of high technology relating to the business which are carried out by the investor to the relevant Basis, departments or organizations in accord with the contract.
Foreign Investment Rule, 2013	
Rule 54	The promoter or investor shall: (a) comply with Environmental Protection Law in dealing with environmental protection matters related to the business; (b) shall carry out socially responsible investment in the interest of the Union and its people; (c) shall co-operate with authorities for occasional or mandatory inspection; (d) shall exercise due diligence to be in conformity and harmony with norms and standards prescribed by relevant Union Ministry in conducting construction of factories, workshops, buildings, and other activities; (e) shall enforce Safety and Health
Myanmar Investment Rules, 2017	
Rule 202	The project proponent has to comply with the conditions of the permit issued by the MIC and applicable laws when making the investment
Rule 203	The project proponent has to fully assist while negotiating with the authority for settling the grievance of the local community which has been affected due to investment
Rule 206.	The project proponent has to submit the passport, expert evidence or document of degree and profile to the MIC office for approval if decide to appoint a foreigner as senior management, technician expert or consultant according to subsection (a) of section 51 of Myanmar Investment Law
Myanmar Insurance Law (1993)	Section 15 - If the project proponent uses the owned vehicles the project owner has to ensure the insurance for the injured person.

	Section 16 - The project proponent has to ensure insurance to compensate for general damages because the project may cause damages to the environment and injury to the public.
Payment of Wages Law (2016)	
Section 3 & 4	The project proponent has to pay the wages in accord with section 3 and 4 of said law,
Section 5	The project proponent has to submit with the agreements of employees & reasonable ground to the department if it is difficult to pay because of force majeure included in a natural disaster
Section 7-13	The project proponent has to abide by the provisions of section 7 to 13 in the chapter (3) in respect of deduction from wages.
Section 14	The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours
Yangon City Development Committee Law (2018)	
Section (317)	The proponent shall not block the natural river channel, change the course, and disrupt the water channel, filling with soil within the city boundaries without the consent of the Committee
Section (318)	The project proponent shall not construct buildings, factories, and industries without sewage, toilet, septic tanks, and wastewater treatment system
Section (322)	The project proponent is not allowed to make activities that will produce noise pollution, water pollution, air pollution, and soil pollution to impact the environment within the city's boundaries
The Amended Law for Factories Act, 1951 (2016)	
Hygiene in Working Environment: Section 3	Mentions responsibilities of employer and manager regarding waste disposal, ventilation, extreme temperature, dust and gas generation, minimum space for each worker, lighting, portable drinking water and toilets for employees.
Safety in Working Environment: Section 4	States responsibilities of employer and manager concerning with machine guarding, personal protective equipment, housekeeping, aisles and exits, chemical storage and fire protection system to avoid accident.
The Private Industrial Enterprise Law, 1990	
Basic Principles: Section 3	Private Industrial Basis shall be conducted in accordance with the following basic principles: - (a) to enhance the higher proportion of the manufacturing value added in the gross national product and value of services, and to increase the production of the respective economic Basis which are related to the industrial enterprise; (b) to acquire modern technical know-how for raising the efficiency of industrial Basis and to establish the sale of finished goods produced by the industrial enterprise not only in the local market, but also in the foreign market; (d) to cause narrowing down of the gap between rural development and urban development by causing the development and improvement of industrial Basis; (e) to cause opening up of more employment opportunities; (f) to cause avoidance of or reduction of the use of technical know-how which cause environmental pollution;

	(g) to cause the use of energy in the most economical manner.
The Export and Import Law (2012)	
Objectives	The objectives of this law are as follows: a) To enable to implement the economic principles of the State successfully. b) To enable to lay down the policies relating to export and import that supports the development of the State. c) To cause the policies relating to export and import of the State and activities are to be in conformity with the international trade standards. d) To cause to be streamlined and speedy in carrying out the matters relating to export and import.
Prohibitions: Section 5	No persons shall export or import restricted, prohibited and banned goods.
Prohibitions: Section 6	Without obtaining license, no person shall export or import the specified goods which are to obtain permission.
Prohibitions: Section 5	A person who obtained any license shall not violate the conditions contained in the license.
The Prevention of Hazard from Chemical and Related Substances Law, 2013	
This law was enacted with the objectives of: a. To protect from being damaged the natural environment resources and being hazardous any living beings by chemical and related substances; b. To supervise systematically in performing the chemical and related substances business with permission for being safety; c. To perform the system of obtaining information and to perform widely educative and research for using the chemical and related substance systematically; d. To perform the sustainable development for the occupational safety, health and environmental conservation. Regarding the chemical management and storage, currently, regulations governing chemicals management are divided between various Acts, mostly dating from colonial times; hence the legislation is in many respects related to the British framework. The Factory Act and the Public Health Act contain the provisions for chemicals management and storage. Some chemicals are likely to require permits.	
Underground Water Act	
The underground water act enacted on the date of 21st June in 1930 whereas it is expedient to conserve and protect underground sources of water supply in the Union of Burma. This act prohibits sinking of a tube for the purpose of obtaining underground water except under and in accordance with the terms of a license granted by the water officer. Township Officer or sub-divisional officer had power to close a license tube after exercising jurisdiction over the local area concerned and the expense of such closure shall be recoverable from the owner of the tube as if it were an arrear of land-revenue.	
Myanmar Fire Brigade Law (2015)	
The Pyidaungsu Hluttaw enacted this law by Law No.11/2015 on the date of 17th March, 2015 with the following objectives: (a) to take precautionary and preventive measures and loss of state own property, private property, cultural heritage and the live and property of public due to fire and other natural disasters (b) to organize fire brigade systemically and to train the fire brigade (c) to prevent from fire and to conduct release work when fire disaster, natural disaster, epidemic disease or any kind of certain danger occurs (d) to educate, organize and inside extensively so as to achieve public corporation (e) to participate if in need for national security, peace for the citizens and law and order	
Section-8 Fire Safety Procedures	

Rule17	The relevant Government Department or organization shall, for the purpose of precaution and prevention obtain the approval of the Fire Force Department before granting permission for the following cases: a. Constructing three-storied and above buildings market and condominium buildings, b. Operating hotel, motel, guest house enterprise c. Constructing factory, workshop, storage facilities and warehouse d. Operating business expose to fire hazard by using in inflammable materials or explosive materials e. Producing and selling fire-extinguishing apparatuses f. Doing transport business, public utility vehicles train, airplane, helicopter, vessel, ship, tonkin tug
Rule18	The relevant government department or organization shall obtain the opinion of the Fire Services Department for the purpose of fire precaution and prevention, when laying down plans for construction for town, village and downtown or village development plans
The Electricity Law (2014)	
In 2014, the new Electricity Law, a comprehensive piece of legislation covering licensing, a new regulatory commission, standards, inspection, tariff, and restrictions, replaced the Electricity Law of 1984. The Electricity Law divides projects into “small” (up to 10 MW), “medium” (between 10 MW to 30 MW) and large (upwards of 30 MW); the states and regions can issue permits for small and medium power plants. In case these plants are not connected to the national grid, the Union Government Ministry is not the primary authority involved. The authorities have a legal right to use land for the purpose of power plants under the Electricity Law, and have the right to expand and maintain their facilities. The law also provides that the authorities can build transmission lines in accordance with existing laws.	
Boiler Law (2015)	
Chapter (2) Objective	The objectives of this law are as follows: (a) To obtain boilers in compliance with Myanmar Standards or International Standards (b) To prevent the country and citizens from hazards caused by boiler accidents (c) To use boilers in compliance with Myanmar Standards or International Standards within the country (d) To develop boiler technology and to produce experts capable of manufacturing, handling, repair, and maintenance of boilers (e) To optimize the use of boilers through effective utilization of fuel energy (f) To reduce the environmental, social and health impacts through long-lasting use of boilers.
Chapter (3) 4. With the permission of the Ministry, the inspector general can:	Notify the inspection methods and instructions according to the national or international standards for safe operations of boilers in line with this law, procedures and instructions Only the results obtained from the prescribed boiler standards and inspection methods will be approved.
Chapter (4). Boiler Registration	5. Anybody who would like to use a boiler in any kind of business should be registered. 6. Boiler should be manufactured according to Myanmar Standards or International Standards. 7. Those who would like to apply for boiler registration according to Section 5 should apply to the inspector with the application, documents and vouchers related to boiler

	8. If the application regarding registration of boiler according to Section 7, the Registration Officer should conduct necessary inspection and submit results of the findings to the Inspector General. 9. The Inspector General should assess and inspect the submission of the Registration Officer according to Section 8 and could allow or reject for registration of the boiler. 10. The Inspector General shall define boiler size according to heated surface area in accordance with adopted procedures.
Chapter (13) Prohibitions	59. According to Section 21, nobody must alter, change, deface, deform or make embossed registration unnoticeable illegitimately. 60. Nobody is allowed to repair a boiler without boiler repair certificate. 61. Nobody is allowed to maintain a boiler without boiler maintenance certificate. 62. Nobody must alter safety relief valve in order to exceed the allowable pressure due to his consent or direction given by the owner. 63. Nobody must manufacture boilers against Section 25, Subsection 25 (a) and (b) enacted.
Labor Dispute Settlement Law (28 Mar 2012 replacing 1929 version)	
The Pyidaungsu Hluttaw hereby enacts this Law for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly.	
The Social Security Law (2012)	
The Social Security Law, enacted in 2012, was amended the Social Security Act in 1954. It stipulates the formation and implementation of social security systems.	
Section 53(a)	The employers and workers shall co-ordinate with the Social Security Board or insurance agency in respect of keeping plans for safety and health in order to prevent employment injury, contracting disease and decease owing to occupation and in addition to safety and educational work of the workers and accident at the establishment;
Labor Dispute Settlement Law (28 Mar 2012 replacing 1929 version)	
This law was enacted for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. It stipulates that employer in which more than 30 workers are employed shall form the workplace coordinating committee consisting of the representatives of workers and the representatives of employer.	
Section 23	A party, employer or worker, may complain individual dispute relating to his grievance to the Conciliation Body and if he is not satisfied with the conciliation of such body in accord with stipulated manners, may apply to the competent court in person or by the legal representative.
Section 24	The relevant Conciliation Body shall, in respect of the collective dispute known or received by the complaint of either party, employer or worker, in respect of the dispute; information sent by the Minister or the Region or State Government or any other means, carry out as follows: (a) conciliating so as to be settled within three days, not including the official holidays, from the day of knowing or receipt of such dispute; (b) concluding mutual agreement if the settlement is reached in conciliating under sub-section (a), before the Conciliation Body.
Section 25	The Conciliation Body shall refer the collective dispute which does not reach settlement to the relevant Arbitration Body and inform the persons relating to the dispute.

Section 38	No employer shall fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause.
Section 39	No employer shall alter the conditions of service relating to workers concerned in such dispute at the consecutive period before commencing the dispute within the period under investigation of the dispute before the Arbitration Body or Tribunal, to affect the interest of such workers immediately.
Section 40	The project proponent has to not close the work without negotiation, discussion on dispute in accord with this law, decision by Tribunal
Section 51	The project proponent has to pay the compensation decided by Tribunal f violates any act or any emission to omission to damage the interest of labour by reducing of product without efficient cause.
Section 46	Any employer who violates any prohibition contained in sections 38 and 39 shall, on conviction, be punished with a fine for a minimum of one-lakh kyats.
The employment and skill development (2013)	
This law was enacted for safeguarding the right of workers or having skillful of workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. Employer shall conduct occupational training to enhance the skills of workers.	
Section 5	The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.
Section 14	Employer shall conduct occupational training to enhance the skills of workers who are to be employed as well as workers who are presently employed in accordance with the requirements of the enterprise and the policy of the Skills Development Agency.
The Worker's Compensation Act, 1923	It stipulates that employer is required to make payments to employees who become injured or who die in any accidents arising during and in consequence of their employment. Such compensation also must be made for diseases which arise as a direct consequence of employment, such as carpal tunnel syndrome.
The Payment of Wages Act, 1936	The Payment of Wage Act defines the payment obligation to the workers employed in the factories or railway administration. It stipulates the method of payment stating that the payment should be made in cash on a regular payday, and allows legal action against delayed payment or un-agreeable deduction.
The Leave and Holidays Act (1951, partially revised in 2014)	This act has been used as the basic framework for leaves and holidays for workers with minor amendment in 2006 and 2014. This defines the public holidays that every employee shall be granted with full payment. It also defines the rules of leaves for workers including medical leave, earned leave and maternity leave.
The Minimum Wage Law (2013)	The minimum wage law, passed in March 2013, was replaced the 1949 Minimum Wage Act. The law provides a framework for minimum wage determination: the presidential office establishing a tripartite minimum wage committee shall decide minimum wage with industrial variation based on a survey on living costs of workers possibly every two years. This also stipulates equal payment.
Public Health Law (1972)	**Chapter 2; Prevention of Public Health**
Objectives	To ensure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department. This law focuses as follows

	The project owner has to cooperate with the authorized person or organization in line with the section 3 and 5 of said law. The project proponent has to abide by any instruction or stipulation for public health under the section 3 of said law. The project proponent has to allow any inspection, anytime, anywhere if it is needed under the section 5 of said law.
Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011)	
Chapter 2 Prevention	4. When a Principal Epidemic Disease of a Notifiable Disease occurs; Immunization and other necessary measures shall be undertaken by the Department of Health, in order to control the spread there of; The public shall abide by measures undertaken by the Department of Health under sub-section (a).
Chapter 4 Environmental Sanitation	For prevention of the outbreak of Communicable Disease and effective control of Communicable Disease when it occurs, the public shall under the supervision and guidance of the Health Officer of the relevant area, undertake the responsibility of carrying out the following environmental sanitation measures; - Indoor, outdoor sanitation or inside the fence outside the fence sanitation; Well, ponds and drainage sanitation; Proper disposal refuse and destruction there of by fire; Construction and use of sanitary latrines; Other necessary environmental sanitation measures.
Occupational Safety and Health Law (2019)	
Purpose:	To effectively implement measures related to safety and health in every industry and to set occupational safety and health standards;
Section-26 Sub-section (e)	The project proponent has to provide adequate and relevant personal protective equipment to workers free of charge and make them wear it during work so as not to expose workers to any serious occupational diseases or hazards.
Section-26 Sub-section (1)	The project proponent has to arrange and display occupational safety and health instructions, warning signs, notices, posters, and signboards.
Section-30 Sub-section (a)	The worker shall wear or use at all times any protective clothes, equipment and tools provided by the employer for the purpose of safety and health.
Section-30 Sub-section (d)	The worker shall proper and systematic use any equipment and tools, machines, any parts of the machines, vehicles, electricity and other substances being used at the workplace.
Section-30 Sub-section (e)	The worker shall take reasonable care for the safety and health of himself/ herself and of other persons who may be affected by his/ her acts or omissions at work.
The law on Standardization	
Objectives	The Objectives of this Law are as follows: to enable to determine Myanmar Standard to enable to support export promotion by enhancing quality of production organizations and their product, production processes and services to enable to protect the consumers and user by guaranteeing imports and products are not lower than prescribed standard, and safe from health hazards

	to enable to support protection of environment related to products, production process and services from impact, and conservation of natural resources to enable to protect manufacturing, distributing and importing the disqualified goods which do not meet the prescribed standard and those which are not safe and endangered to the environment to support on establishing the ASEAN Free Trade Area and to enable to reduce technical barriers to trade to facilitate technological transfer and innovation by using the standards for the development of national economic and social activities in accordance with the national development programme.
Chapter 7 Taking Action by Committee No. 19	The committee may, if it is found out that holder of certificate of certification violates any term or condition contained in the relevant recommendation, pass any of the following administrative order: warning suspending the certificate of certification for limited period cancelling the certificate of certification
လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သောဥတ္ထုပစ္စည်းများဆိုင်ရာဥပဒေ (၂၀၁၈)	
ရည်ရွယ်ချက်	လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သော ဥတ္ထုပစ္စည်းများကို စနစ်တကျပြုလုပ်ခြင်း၊ တင်သွင်းခြင်း၊ သယ်ယူခြင်း၊ သိုလှောင်ခြင်းနှင်း သုံးစွဲခြင်းတို့ပြုနိုင်ရန်၊ ယမ်းဘီလူးနှင့် ဆက်စပ်သုံးပစ္စည်းများ အသုံးပြုသည့် လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်း၍ လုံခြုံမှုရှိစေရန်၊ လုပ်ငန်းခွင်သုံး ပေါက်ကွဲစေတက်သော ဥတ္ထုပစ္စည်းများ ပြုလုပ်သုံးစွဲမှုများကို စနစ်တကျ ကြီးကြပ်နိုင်ရန်။
အခန်း ၇ တားမြစ်ချက်များ အမှတ် ၁၈	လိုင်စင်ရရှိသူနှင့် ခွင့်ပြုချက်ရရှိသူ မည်သူမျှ စစ်ဆေးရေးအရာရှိချုပ် သို့မဟုတ် စစ်ဆေးရေးအရာရှိ၏ စစ်ဆေးခြင်းကို ခံယူရန် ငြင်းပယ်ခြင်းမပြုရ။
အမှတ် ၁၉ (ခ)	ပုဒ်မ ၈ အရ ကာကွယ်ရေးဌာနကောင်စီ အမှုဆောင်အဖွဲ့၏ အတည်ပြုချက်မရရှိဘဲ လုပ်ငန်းခွင် ပေါက်ကွဲစေတက်သော ဥတ္ထုပစ္စည်းများကို ဖျက်ဆီးခြင်းမပြုရ။
အမှတ် ၁၉ (ဂ)	ဤဥပဒေအရ ထုတ်ပြန်သည့် နည်းဥပဒေ၊ စည်းမျဉ်း၊ စည်းကမ်း၊ အမိန့်ကြော်ငြာစာ၊ အမိန့်နှင့် ညွှန်ကြားချက်များနှင့်အညီ ဆောင်ရွက်ရန် ပျက်ကွက်ခြင်း မရှိစေရ။
The Motor Vehicles Law (2015)	
Objectives	When the constructions periods and if it is needed in operation and production period for all vehicles • The project proponent has to promise to abide by the nearly all provisions of said law and rules, especially the provisions related to air pollution, noise pollution and life safety.
The Conservation of Water Resources and Rivers Law (2006)	
Aims	The aims of this Law are as follows: to conserve and protect the water resources and rivers system for beneficial utilization by the public; to smooth and safety waterways navigation along rivers and creeks; to contribute to the development of State economy through improving water resources and river system; to protect environmental impact.

Chapter 5 Prohibitions No. 8	No person shall: (a) carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks. (b) cause the wastage of water resources wilfully.
No. 10	No person shall anchor the vessels where vessels are prohibited from anchoring in the rivers and creeks.
No.11 (a)	No person shall: dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk.
No. 12	No person shall carry out growing of garden, digging, filling, silt trapping, closing pond, dyke building or erecting spur in the river-creek boundary, bank boundary and waterfront boundary without the permission of the relevant government department and organization.
No. 15	No person shall carry out the construction of switchback, dockyard, wet dockyard, water-tight dockyard, building of jetty, pier, landing stage or vessel landing by drainage in the river-creek boundary, bank boundary and waterfront boundary without the permission of the Directorate.
The Commercial Tax Law (1990) Amended 2014	
Chapter 5 Registration and Intimation of Commencement of Enterprise 11 (b)	Any Person who commences operation of a goods production enterprise or service enterprise shall furnish letter of intimidation on the commencement of the operation as such to the relevant Township Revenue Officer as stipulated by regulations.
Chapter 6 Monthly Payment of Tax and Sending of Three-Monthly Return 12 (a)	Any person who has taxable proceed of sale or receipt from service within a year, shall pay due monthly tax within ten days after the end of the relevant month. Moreover, a three-monthly return shall be furnished to the relevant Township Revenue Officer within one month after the end of relevant three-month.
12 (b)	The Township Revenue Officer may intimate any person to pay due monthly tax and send three-monthly return if there is cause to consider that he has taxable proceed of sale or receipt from service within a year.
12 (c)	If it is failed to pay tax under sub-section (a) or (b), or if there is cause to consider that the tax paid is less than the tax payable, the Township Revenue Officer may, based on the information received, estimate and claim the tax payable or the additional tax payable.
12 (d)	The tax paid under sub-section (a), (b) or (c) shall be set-off from the tax due in the assessment.
12 (e)	The tax payable on goods imported under sub-section (c) of section 4 of the Law shall be collected together with the customs duties by the Customs Department in accord with the manner of collecting customs duties.

2.2. NATIONAL ENVIRONMENTAL QUALITY (EMISSION) GUIDELINES

As specified in the EIA Procedure, all projects are obliged to use, comply with, and refer to applicable national guidelines or standards or international standards adopted by the Ministry. As specified in the EIA Procedure, following project approval a project shall commence implementation strictly in accordance with the project EMP and any additional requirements set out in the project ECC, which will encompass conditions relating to emissions. While these Guidelines generally apply to all

projects subject to the EIA Procedure, it is the prerogative of the Ministry to decide how the Guidelines should be applied to existing projects as referred to in the EIA Procedure.

According to the Environmental Conservation Law, MOECAF shall set standards of environmental qualities as agreed by the Union Government and the Environmental Conservation Committee to provide the basis for regulation and control of noise and vibration, air emissions and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.

2.2.1. General Guidelines

General guidelines of related environmental impact guideline for proposed project are -

2.2.1.1. Air emission

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that: (i) emissions do not result in concentrations that reach or exceed national ambient quality guidelines and standards, or in their absence current World Health Organization (WHO) Air Quality Guidelines1 for the most common pollutants as summarized below; and (ii) emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards (i.e. not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same air shed. Industry-specific guidelines summarized hereinafter shall be applied by all projects to ensure that air emissions conform to good industry practice. Reference should be made to WHO's Air Quality Guidelines for Europe2 for air pollutants not included in the following Table 2-2.

Table 2-2 WHO's Air Quality Guideline

Parameter	Averaging Period	Guideline Value
Nitrogen Dioxide	1-year 1-hour	40 200
Ozone	8-hour	100
Particulate Matter PM10[a]	1-year 24-hour	10 50
Particulate Matter PM2.5[b]	1-year 24-hour	10 25
Sulfur dioxide	24-hour 10-minute	20 500

[a] Particulate matter 10 micrometers or less in diameter

[b] Particulate matter 2.5 micrometers or less in diameter

2.2.1.2. Wastewater

Industry-specific guidelines apply during the operations phase of projects and cover direct or indirect discharge of wastewater to the environment. They are also applicable to industrial discharges to sanitary (domestic) sewers that discharge to the environment without any treatment. Wastewater generated from project operations includes process wastewater, wastewater from utility operations, runoff from process and storage areas, and miscellaneous activities including wastewater from laboratories, and equipment maintenance shops. Projects with the potential to generate process

wastewater, sanitary sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety, or the environment. Industry-specific guidelines summarized hereinafter shall be applied by all projects, where applicable, to ensure that effluent emissions conform to good industry practice.

For project types where industry-specific guidelines are not set out in these Guidelines, the following general guideline values, or as stipulated on a case-by-case basis, apply during project operations.

Table 2-3 Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges (general application)[1]

Parameter	Unit	Guideline Values
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH	S.U.[a]	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3[b]
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2

[1] Pollution prevention and abatement handbook. 1998. Toward cleaner production. World Bank Group in collaboration with United Nations Environment Programme and the United Nations Industrial Development Organization.

Total suspended solids	mg/l	50
Zinc	mg/l	2

a Standard Unit

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

2.2.1.3. Noise levels

Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive point of reception. Noise impacts should not exceed the levels shown below, or result in a maximum increase in background levels of three decibels at the nearest receptor location off-site.

Table 2-4 Noise Levels of National Environmental Quality (Emission) Guideline

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

[a] Equivalent continuous sound level in decibels

2.2.2. **Garment, Textile and Leather Products Manufacturing**

This guideline applies to textile manufacturing using natural fibers, synthetic fibers (made entirely from chemicals), and regenerated fibers (made from natural materials by processing these materials to form a fiber structure). It does not include polymer synthesis and natural raw material production.

2.2.2.1. Effluent levels

Parameter	**Unit**	**Guideline Value**
5-day Biochemical oxygen demand	mg/l	30
Absorbable organic halogens	mg/l	1
Ammonia	mg/l	10
Cadmium	mg/l	0.02
Chemical oxygen demand	mg/l	160
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Cobalt		0.5
Color		7 (436 nm[a], yellow) 5 (525 nm, red)

		3 (620 nm, blue)
Copper	mg/l	0.5
Nickel	mg/l	0.5
Oil and grease	mg/l	10
Pesticides		0.05-010[b]
pH	S.U. [c]	6-9
Phenol	mg/l	0.5
Sulfide	mg/l	1
Temperature increase	°C	<3 [d]
Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

a Nanometers
b 0-05 mg/l for total pesticides (organ phosphorus pesticides excluded); 0.10 mg/l for organo phosphorus pesticides
c Standard Unit
b at the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity; when the zone is not defined, use 100 meters from the point of discharge

2.2.2.2. Air emission levels

Parameter	**Unit**	**Guideline Value**
Ammonia	mg/Nm^{3a}	30
Carbon disulfide	mg/Nm^3	150
Chlorine	mg/Nm^3	5
Formaldehyde	mg/Nm^3	20
Hydrogen sulfide	mg/Nm^3	5
Particulates	mg/Nm^3	50[b]
Volatile organic compounds	mg/Nm^3	2/20/50/75/100/1 150 [c, d]

a Milligrams per normal cubic meter at specified temperature and pressure
b as the 30-minute mean for stack emissions
c Calculate as Total carbon
d As the 30-minute mean for stack emissions; 2 mg/Nm^3 for volatile organic compounds classified as carcinogenic or mutagenic with mass flow greater than or equal to 10 g/hr; 20 mg/Nm^3 for discharges of halogenated volatile organic compounds with a mass flow equal or greater than 100 g/hr; 50 mg/ Nm^3 for waste gases from drying of large installations (solvent consumption > 15 tons/year); 75 mg/Nm^3 for coating application processes for large installations (solvent consumption > 15 tons/year); 100 mg/Nm^3 for small installations (solvent consumption < 15 tons/year); if solvent is recovered from emissions and reused, the guideline value is 150 mg/Nm^3

2.3. **COMMITMENT OF JIN SEN MYANMAR COMPANY LIMITED**

JIN SEN MYANMAR COMPANY LIMITED has made the commitments and responsible for the preservation of the environment at and around the area of project site. In addition to this, it shall carry out as per instructions made by Ministry of MONREC in which to conduct an EMP which describe the measure to be taken for preventing, mitigation and monitoring significant environment impacts resulting from the implementation and operation of proposed project or business or activity has to be prepared

and submitted and to perform activities in accordance with this EMP and be abided by the environment policy, Environmental Conservation Law and other environmental related rules and procedures.

- Monitoring the factory area operations according to EMP and Environmental Monitoring Plan (EMoP)
- Submitting environmental monitoring reports to ECD
- Planning and implementation of CSR activities
- To set up welfare plan such as staff medical checkup, training program and Public talk for getting knowledge, risk prevention, bonus, and social security services
- To carry out fire safety assessment and ensure adequate and appropriate fire safety measures for employees.

2.4. DECOMMISSIONING PHASE

The proposed project investment duration is 50 years and they will close out the project according to their Mon State Investment Committee proposal.

3. PROJECT DISCRIPTION

3.1. LOCATION OF PROPOSED PROJECT

The proposed project is located at Latitude 16°53'37.75"N and Longitude 96° 2'20.12"E, Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region. The location map of the proposed project size is shown in

Figure 3-1.

3.2. OBJECTIVES OF PROPOSED PROJECT

The proposed project intends to manufacture Bag and Bag's Strings on CMP basic and to export 100% of the finished products. China will supply raw materials for Bag and Bag's Strings in People Republic of China. Tetrafab agree to supply to ready make products and pay CMP charges to JIN SEN MYANMAR COMPANY LIMITED.

3.2.1. Site Description of Proposed project site

The total land area is 1.429 acres and build main factory building, factory building, canteen, maintenance house, etc. which were built on its land area. Factory layout drawing is able to seen in Figure 3-2 **and** Figure 3-3**.**

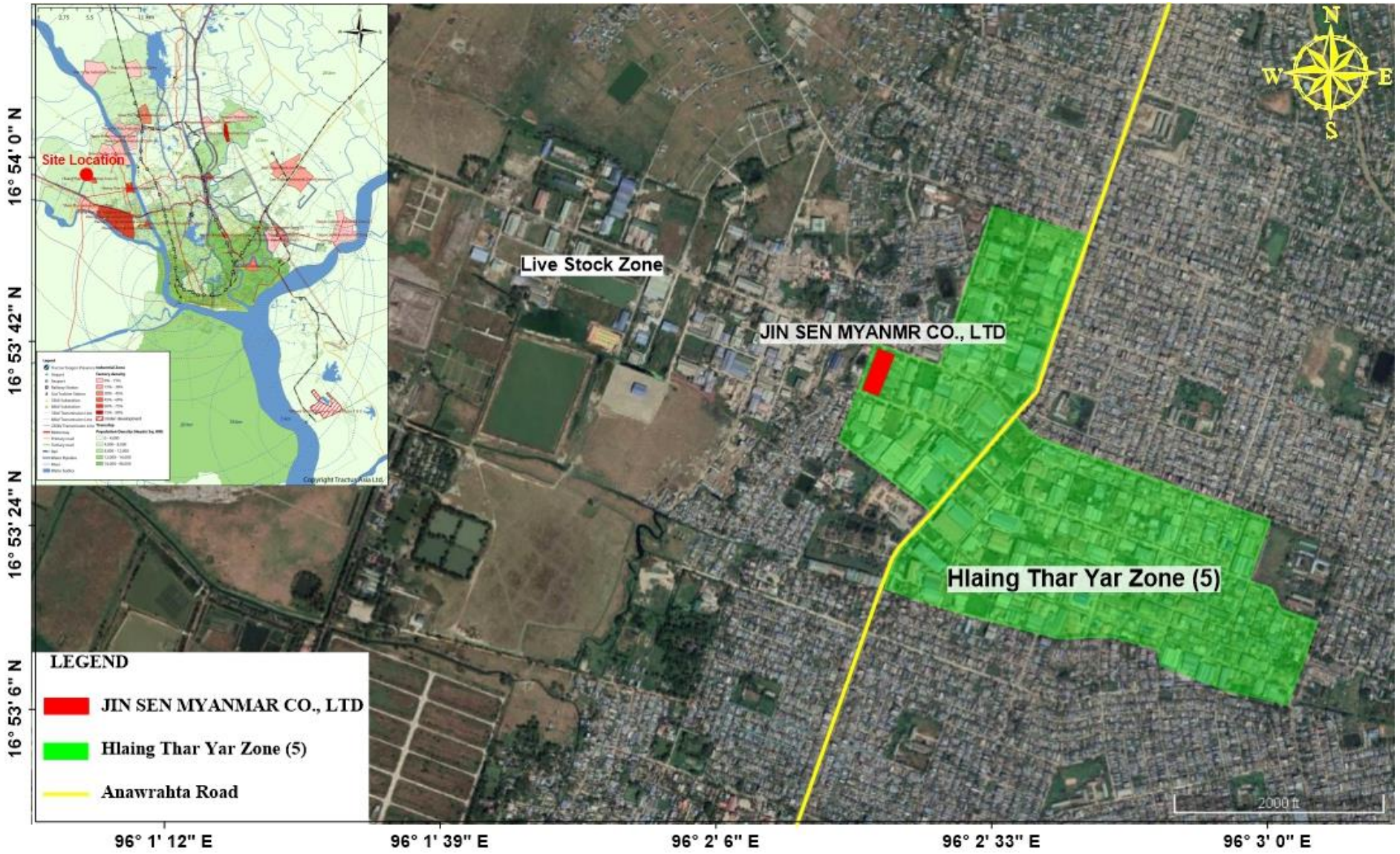


Figure 3-1 Location Map

Figure 3-2 Factory Layout Map

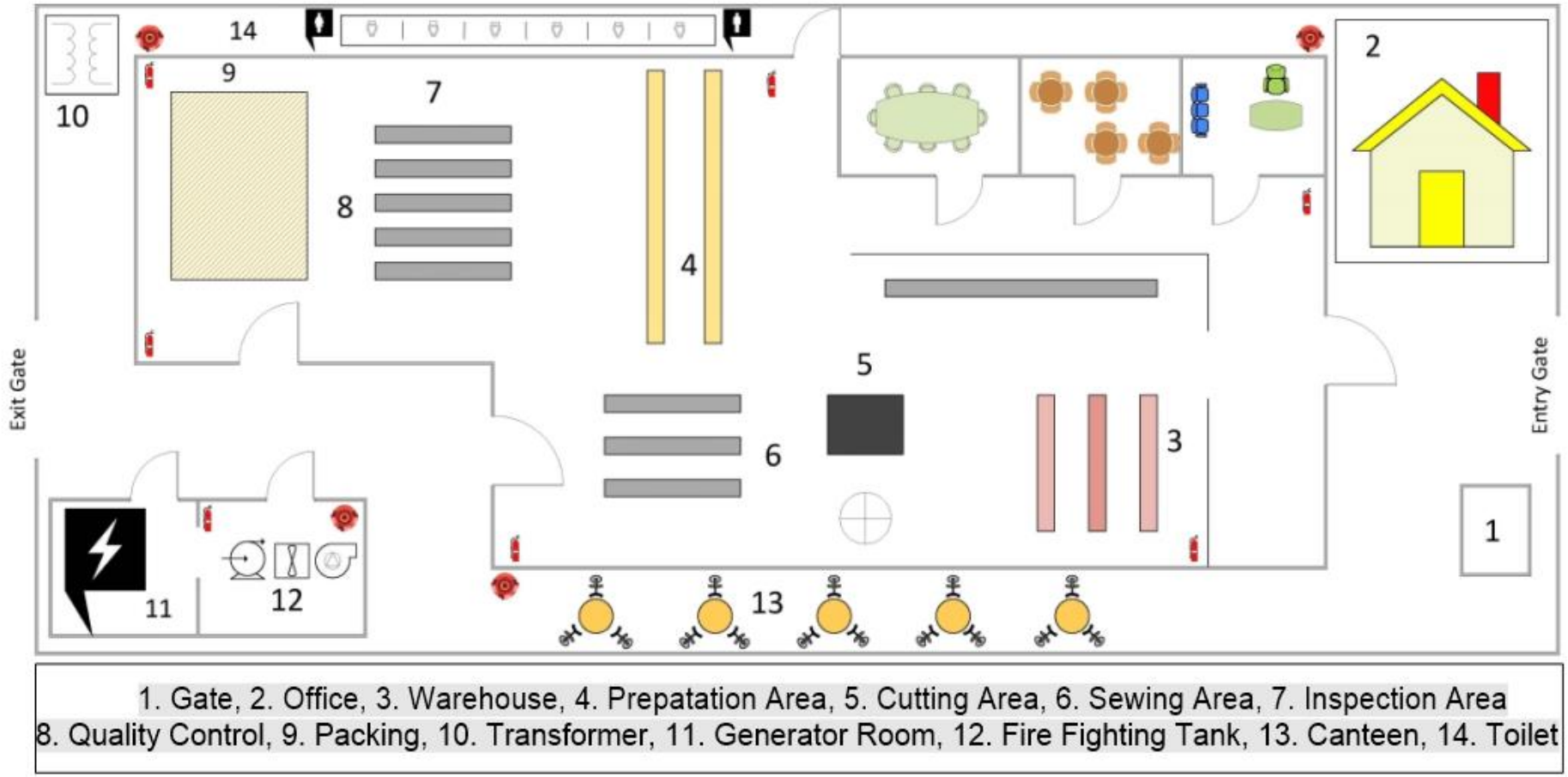


Figure 3-3 Factory Layout Drawing

3.2.2. Production Process

The polypropylene fabric is a fed into a slicing machine, where it's cut into shapes of specific measurements. The process by which the measurements are made is automatic, which ensures exact lengths for each cut. Strips of this material are then cut to precise measurements, which are determined by the size of the bags in production. At this stage, the various pieces that comprise the bag including both the square and rectangular pieces of polypropylene fabric, as well as the heavier lifting-loop strips are put together with an industrial sewing machine. Once a line of bags has been sewn together, each bag is inspected by quality control inspectors. The compression is done in a press, the result of which allow for the neat easy packing of the bags. The process flow diagram for Bag and Bag's Strings manufacturing is illustrated in Figure 3-4.

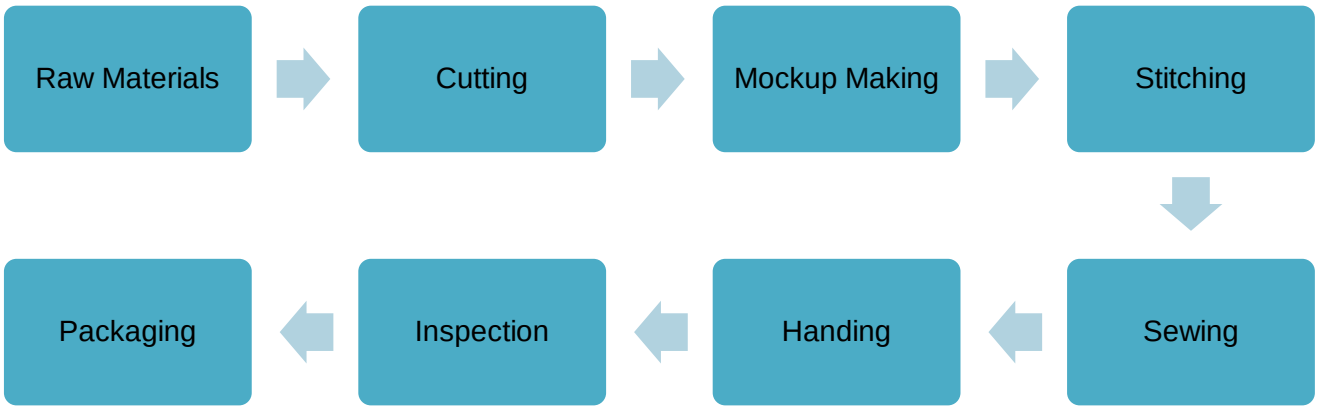


Figure 3-4 Production flow diagram of JIN SEN MYANMAR COMPANY LIMITED

Warehouse

Cutting

Mockup

Stitching

Sewing

Handing

Inspection

Packaging

Figure 3-5 Production Photos of JIN SEN MYANMAR COMPANY LIMITED

During operation, the proposed factory is expected to produce Bag and Bag's Strings products as per Table 3-1.

Table 3-1 Annual Production Rate

No	Particular	Unit	Year 1-3	Year 4-10
I	Production (Pcs)	**Pcs**	653,500	718,850
1	Strap 1	Pcs	250,000	275,000
2	Strap 2	Pcs	85,000	93,500
3	Tooling Case 1	Pcs	50,000	55,000
4	Tooling Case 2	Pcs	65,000	71,500
5	Tooling Case 3	Pcs	60,000	66,000
6	Tooling Case 4	Pcs	20,000	22,000
7	Tooling Case 5	Pcs	8,000	8,800
8	Tooling Case 6	Pcs	2,000	2,200
9	Tooling Case 7	Pcs	25,000	27,500
10	Pizza Bag	Pcs	3,500	3,850
11	Tooling Case 8	Pcs	3,000	3,300
12	Tooling Case 9	Pcs	50,000	55,000
13	Tooling Case 10	Pcs	3,000	3,300
14	Backpack 1	Pcs	5,000	5,500
15	Message Bag	Pcs	5,000	5,500
16	Middle Handle Bar Bag	Pcs	3,500	3,850
17	Small Handle Bar Bag	Pcs	3,500	3,300
18	Backpack 2	Pcs	7,000	7,700
19	Tooling Case 11	Pcs	1,000	1,100
20	Ff Case 1	Pcs	1,000	1,100
21	Dry Bag	Pcs	3,500	3,850
22	Ff Case 2	Pcs	20,000	22,000
23	Tooling Case 12	Pcs	5,000	5,500

Figure 3-6 Product photos and their product storage

3.3. UTILITIES

3.3.1. Raw Material

The main Raw Materials are Polyester Material, Synthetic Leather and Canvas are imported from China. List of Raw materials are described in Table 3-2.

Table 3-2 List of Raw Materials Requirement

No.	Particular	Unit	Year- 1-3	Year- 4-10
1	Polyster Material	YARDS	238,850	262,735
2	Synthetic Leather	SQFT	561,500	617,650
3	Canvas	YARDS	391,500	430,650
4	Denium	YARDS	402,000	442,200
5	Water Pu	YARDS	243,200	267,520
6	Weave	YARDS	239,000	262,900
7	Tpu	YARDS	306,000	336,600
8	Velvet	YARDS	310,200	341,220
9	Braid Material	YARDS	274,600	302,060
10	Fabric	YARDS	536,000	589,600
11	Polyster Lining	YARDS	476,300	523,930
12	Twill Lining	YARDS	375,800	413,380
13	TC Lining	YARDS	476,300	523,930
14	Linen	YARDS	342,300	376,530
15	Eva	YARDS	197,950	217,745
16	Salpa	YARDS	136,550	150,205
17	Pvc sheet	YARDS	259,350	285,285
18	Non-Woven Fabric	YARDS	325,750	358,325
19	Transparent Tape	YARDS	497,450	547,195

No.	Particular	Unit	Year- 1-3	Year- 4-10
20	Elastic Rubber	YARDS	426,250	468,875
21	Mesh	YARDS	422,050	464,255
22	Pep Foam	YARDS	470,400	517,440
23	Pu Foam	YARDS	430,450	473,495
24	Towels	YARDS	713,500	784,850
25	Velcro	YARDS	713,500	784,850
26	Metal Zipper	YARDS	888,000	976,800
27	Nylon Zipper	YARDS	888,000	976,800
28	Plastic Zipper	YARDS	888,000	976,800
29	Zipper	YARDS	888,000	976,800
30	Zip Head	PCS	2,155,000	2,370,500
31	Zip Puller	PCS	2,155,000	2,370,500
32	Lock	SETS	1,072,000	1,179,200
33	Plastic D Ring	PCS	2,102,000	2,312,200
34	Plastic buckle	PCS	2,203,000	2,423,300
35	Plastic code fastener	PCS	1,071,000	1,178,100
36	Plastic square ring	PCS	1,868,000	2,054,800
37	Lateral Stud	PCS	1,092,000	1,201,200
38	O Ring	PCS	1,767,000	1,943,700
39	Metal Hook	PCS	1,427,000	1,569,700
40	Square Ring	PCS	1,727,000	1,899,700
41	Buckle	PCS	1,706,000	1,876,600
42	Magnetic Button	SETS	1,427,000	1,569,700
43	Snap Button	SETS	1,427,000	1,569,700
44	Rivets	SETS	2,374,500	2,611,950
45	Rubber Gasket	PCS	2,374,500	2,611,950
46	Slider Buckle	PCS	1,071,000	1,178,100
47	Spring Buckle	PCS	715,000	786,50
48	Button	PCS	1,071,000	1,178,100
49	Studs	SETS	3,141,000	3,455,100
50	Handle	PCS	744,000	818,400
51	Decoration	PCS	826,500	909,150
52	Ring	PCS	2,102,000	2,312,200
53	Mold	PCS	1,153,000	1,268,300
54	Eyelet	SETS	4,129,000	4,541,900
55	PP Webbing	YARDS	1,477,500	1,625,250

No.	Particular	Unit	Year- 1-3	Year- 4-10
56	Cotton Webbing	YARDS	1,142,500	1,256,750
57	Nylon Webbing	YARDS	1,764,500	1,940,950
58	Webbing Binding	YARDS	2,599,000	2,858,900
59	Metal Logo	PCS	693,500	762,850
60	Metal Clip	PCS	1,071,000	1,178,100
61	Rubber Logo	PCS	693,500	762,850
62	Thread	ROLL	111,200	122,320
63	Elastic Strap	YARDS	713,500	784,850
64	Wheel	PCS	40,0003	44,000
65	Screw	PCS	3,375,000	3,712,500
66	Inviolable Tie	PCS	1,092,000	1,201,200
67	Fabric Labels	PCS	1,389,500	1,528,450
68	Hangtag	PCS	1,052,000	1,157,200
69	Sealing Tape	ROLL	73,350	80,685
70	Silica Gel	PCS	1,092,000	1,201,200
71	Sticker	PCS	1,052,000	1,157,200
72	Pe Bag	PCS	693,500	762,850
73	Carton	PCS	526,000	578,600
74	Cardboard	PCS	1,387,000	1,525,200
75	Stuffing Paper	KGS	1,052,000	1,157,200
76	Pvc Piping	YARDS	733,500	806,850
77	Pe Board	YARDS	285,750	314,325
78	Card Board	PCS	1,052,000	1,157,200
79	Chain	YARDS	715,000	786,500
80	Alarm	PCS	1,052,000	1,157,200
81	Dust Bag	PCS	693,500	762,850
82	Wax Cord	YARDS	1,092,000	1,201,200
83	Cotton Rope	YARDS	1,092,000	1,201,200
84	Copying Tissue	KGS	28,575	31,433
85	Arogel	KGS	71,350	78,485
86	Yellow Glue	KGS	71,350	78,485
87	Universal Glue	KGS	71,350	78,485
88	Edge Oil	KGS	145,050	159,555
89	Woven Label	PCS	1,052,000	1,157,200
90	Label	PCS	1,052,000	1,157,200
91	Air Bag	PCS	378,500	416,350

No.	Particular	Unit	Year- 1-3	Year- 4-10
92	Glue	KGS	71,350	78,485
93	Foam	YARDS	286,100	314,710
94	Cord	PCS	1,052,000	1,157,200
95	Micro Pack	PCS	1,052,000	1,157,200
96	Antimock Sticker	PCS	1,052,000	1,157,200
97	Paper	KGS	25,225	27,748
98	Paper Pattern	PCS	693,500	762,850
99	Reinforcement	YARDS	377,800	415,580
100	PP Board	YARDS	324,300	356,730
101	Packing Box	PCS	693,500	762,850
102	Reinforcing Band	YARDS	713,500	784,850
103	The Oil of Machine	KGS	256,250	281,875
104	Thread Oil	KGS	256,250	281,875
105	Chip Board Paper	KGS	87,350	96,085
106	Paper Pipe	KGS	87,350	96,085
107	Masking Tape	PCS	693,500	762,850
108	Self Adhesive Paper	PCS	693,500	762,850
109	Cleaning Agent	KGS	256,250	281,875
110	Polyester Fabric	KGS	256,250	281,875
111	Plastic Oilcan	PCS	693,500	762,850
112	Edge Painting Box	PCS	693,500	762,850
113	Drying Agent	PCS	693,500	762,850
114	Poly Tube	KGS	256,250	281,875
115	Thermal formed EVA case	PCS	717,000	788,700
116	Plastic tray	PCS	358,500	394,350
117	Carabiner	PCS	713,500	784,850
118	Neoprene	YARDS	173,200	190,520
119	Base plate	PCS	713,500	784,850
120	Rubber sheet	YARDS	264,600	291,060
121	Jersey	YARDS	536,000	589,600
122	Lycra	YARDS	536,000	589,600

Figure 3-7 Raw Materials Storage Photos

3.3.2. Machinery and Equipment

List of machinery and equipment required for JIN SEN MYANMAR COMPANY LIMITED is following in Table 3-3.

Table 3-3 List of Machinery

No.	Description	Unit	Quantity
1.	Pounch Machine	Set	6
2	Coding Machine	Set	2
3	Cloth Inspection Machine	Set	1
4	Cutting Machine	Set	2
5	Electric Cutting Machine1	Set	2
6	Staking Machine	Set	5
7	Sewing Machine	Set	250
8	Zigzag Machine	Set	10
9	Twin Needle Machine	Set	15
10	Column Sewing Machine	Set	10
11	High Chariot Sewing Machine	Set	40
12	Computer Sewing Machine	Set	20
13	Locking Machine	Set	10
14	High Frequency	Set	2
15	Cutting Ribbing Machine	Set	4
16	Nailing Machine	Set	20
17	Flip Strap Machine	Set	4
18	Air Brush Tool	Set	20
19	Dryer Machine	Set	20

No.	Description	Unit	Quantity
20	Punch Machine	Set	4
21	Packing Machine	Set	3
22	Thread Cutting Machine	Set	10
23	Wire Cutter	Set	10
24	Porber Machine	Set	2
25	Gluding Machine	Set	5
26	Porber By Hand Machine	Set	5
27	Floder Material Machine	Set	8
28	Strip Cutting Machine	Set	1
29	Embossed Machine	Set	3
30	Pressure Line Machine	Set	4
31	Paper Pattern Machine	Set	2
32	Laser Machine	Set	2
33	Electronic Scale	Set	10
34	Bagger	Set	10
35	Edge Painting Dryer	Set	4
36	Edge Painting Machine	Set	10
37	Gule Sprayer	Set	5
38	Vacuum Cleaner of Staking Machine	Set	5
39	Agitator Machine	Set	2
40	Floor Stand Grinder	Set	2
41	Color Light Box	Set	1

3.3.3. Human Resource

Human resource required by foreign experts/technicians and local persons for administrative and production process are about 446 persons which are also described in Table 3-4. Working shift 9:00 PM to 5:00 AM daily and estimated working days are 262days per year. Currently there are 189 employees are running the whole industry.

Table 3-4 Employment Schedule of JIN SEN MYANMAR COMPANY LIMITED

No	Position	Local Staff	Foreign Technician
1	General Manager		1
2	Production Manager		1
3	Financial Manager		1
4	Technical guidance		3

No	Position	Local Staff	Foreign Technician
5	Quality Inspection Manager	1	1
6	Warehouse Supervisor	2	1
7	Machine Repair		1
8	Office Clerk		1
9	Secretary		1
10	Shipping Manager		1
11	Human Resource Manager		1
12	Warehouse In and Out of the Clerk	1	
13	Driver	1	
14	Security	4	
15	Cleaner	3	
16	Skilled Worker	299	
17	Unskilled Worker	100	
18	Translator	6	
19	Technician	10	
20	Fire Safety Officer	1	
Total		446	

3.3.4. **Water Requirement**

Hlaing Thar Yar Zone (5) has no centralized water supply system and the factory gets water from the tube wells installed inside the factory compound. Groundwater from this tube well is pumped into the storage tanks for the factory and domestic use. The main water use in the proposed project is for domestic usage such as for personal washing, food preparation, and washing of utensils. Drinking water will be provided by outsource suppliers.is described by water storage tank and drinking water supply for JIN SEN MYANMAR COMPANY LIMITED. The project was use groundwater for domestic use and firefighting. The groundwater store in the two storage tanks on ground tanks with capacity of 2,250 liters for fire-fighting and two overhead tanks with capacity of 1,200 gallons for domestic use (See in Figure 3-8). Estimated water utility is 500 gallons per week.

Figure 3-8 Water supply system photo

3.3.5. Electricity and Fuel Requirement

The proposed project intended to get required electricity supply form Yangon City Electricity Supply Board (YESB) and distributed by 500kVA of Transformer and another sources of energy 400 kVA generators which also be kept as the emergency generator if normal electricity supply could not provide for the proposed project. Estimate electricity usage is 123.75 Unit (six working days per week) and annual electricity consumption is 71,280 Unit. Estimated amount of electricity utility is 1,600,000 kwh per year. Essential element of diesel fuel will be consume200 gallons per month.

Figure 3-9 Electricity Facilities at JIN SEN MYANMAR COMPANY LIMITED

3.3.6. Solid waste and liquid waste emission and management plan

Status of the Factory

Jin Sen (Myanmar) Company Limited is using ground water for both industrial and household purpose, which is utilizing by a deep tube well. The factory also has generators and transformers for electricity generation. The fuel used in the industry is Diesel. The sanitary liquid waste of the factory is storing in septic tanks and the wastewater discharges from the well-installed drains.

Solid waste (recycle waste) such as broken machine parts, paper box, fabric scraps, foam scraps, food waste, etc., are collect and will be waste to dumping site connecting with YCDC. Although the factory causes some pollutions but has a positive side and that is the factory has created employment for many people, due to this factory local community has built up daily. Total amount of solid waste discharge from factory is maximum 1.2 ton (1200 kg) per week and handover to YCDC a twice per month.

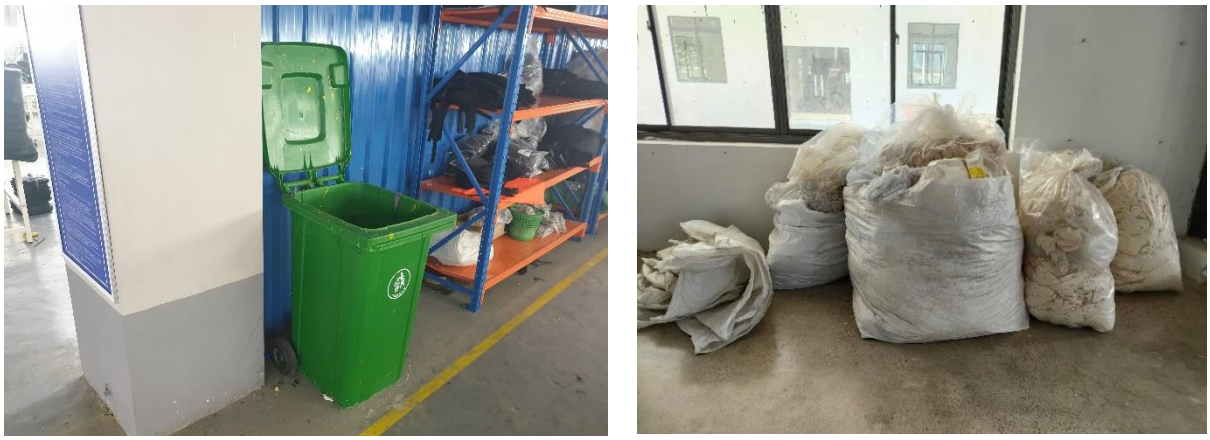


Figure 3-10 Solid Waste Disposal at Proposed Project

Figure 3-11 Water Drainage for Wastewater Discharge

Waste Disposing

The project will be discarding solid waste, liquid waste, and hazardous waste from the operation of the Jin Sen (Myanmar) Company Limited detail descriptions of waste disposal and waste amount shown in Table 3-5.

Table 3-5 Waste Generation & Waste Amount

Waste		Type of wastes	Estimated waste amount	Source of generation
Solid waste	Re-usable	Residual pieces of clothes scraps	10% a roll of fabric (kg)	Production line and cutting line
		Raw material wastes	200 kg / month	Warehouse
		Disposed packaging materials, paper or plastic wrapping	800 kg / month	Materials store and packaging
	Non re-usable	Food residues, domestic waste	200 kg / month	Canteen, Kitchens, dormitory

Liquid waste	Sanitary discharge water	Estimated 50 m^3 /day*	Toilet facility, kitchen and canteen
Hazardous waste	Residual chemicals, use chemical container		Chemical usage and store area
	Oil leakage and spills	-	Operation of generator and movements of vehicles

* The Yangon City solid waste generation rate as of 2012 is 0.39 kg per person per day (Pollution Control and Cleansing Department, Yangon City Development Committee, 2014).

*The domestic wastewater generation was based on typical wastewater generation rate of 0.1 m3 per person per day (Metcalf & Eddy, 2004

Figure 3-12 Waste Storage Point out Photo

4. BRIEF DESCRIPTION OF SURROUNDING ENVIRONMENT

The purpose of this Chapter is to predict how environmental and socio-economic conditions will affect because of the implementation of the proposed Project. This requires a sound understanding of the baseline conditions at the project site, which established through desktop study research, site surveys, primary data collection and projections for future developments. Findings provide the current and future characteristics of the project site and the value and vulnerability of the key environmental and socio-economic resources and receptors. The following sections provide a description of the environmental and socio-economic aspects of the project.

4.1. METHODOLOGY FOR DATA COLLECTION AND ANALYSIS

The followings methodologies are used for Environmental Management Plan (EMP) for this report preparation;

- Onsite Measurements and Analysis – Baseline parameters such as Indoor temperature, humidity, operation light conditions, and noise and water quality of the project site during operation phase were measured onsite. The analyzed results are mentioned in this chapter.
- Secondary data collection of proposed project site area – Socio economic condition, physical/biological environment, and weather data are collected from official township data of Hlaing Thar Yar Township, Yangon Region.

4.2. ENVIRONMENTAL BASELINE STUDY

The field observation for determining the environmental baseline of the proposed project area was undertaken during construction period. The survey team consists of the senior consultant and environmental quality team. The baseline data collected regarding the environmental condition of the project area was conducted in the following section.

4.3. PHYSICAL COMPONENT IN PROJECT AREA

4.3.1. Topography

Yangon area is the largest; most populated and urbanized area in Myanmar. There are thirty-three townships in Yangon City where located at the convergenceon the Yangon and Bago River region about 34km away from the Gulf of Martaban. The proposed project area is situated at Kyi Su Industrial Zone, Hlaing Thar Yar Township, and its topographic condition is flat. The proposed project site is primarily agricultural land, but now is initiated into the industrial zone area.

4.3.2. Geology

In Yangon area mainly composed of Pegu Group, Irrawaddy Formation and Alluvium. Alluvial deposits (Pliestocene to Recent), the non-marine fluvialtile sediments of Irrawady formation (Pliocene), and hard, massive sandstone of Pegu series (early-late Miocene) underlie the Yangon area. Alluvial deposits are composed of gravel, clay, silts, sands and laterite which lie upon the eroded surface of the Irrawaddy formation at 3-4.6 m above mean sea level (MSL). The rock type in Yangon is mainly soft rocks, which consist of sandstone, shale, limestones and conglomerate. Geological map of Yangon Regional area is shown in Figure 4-1.

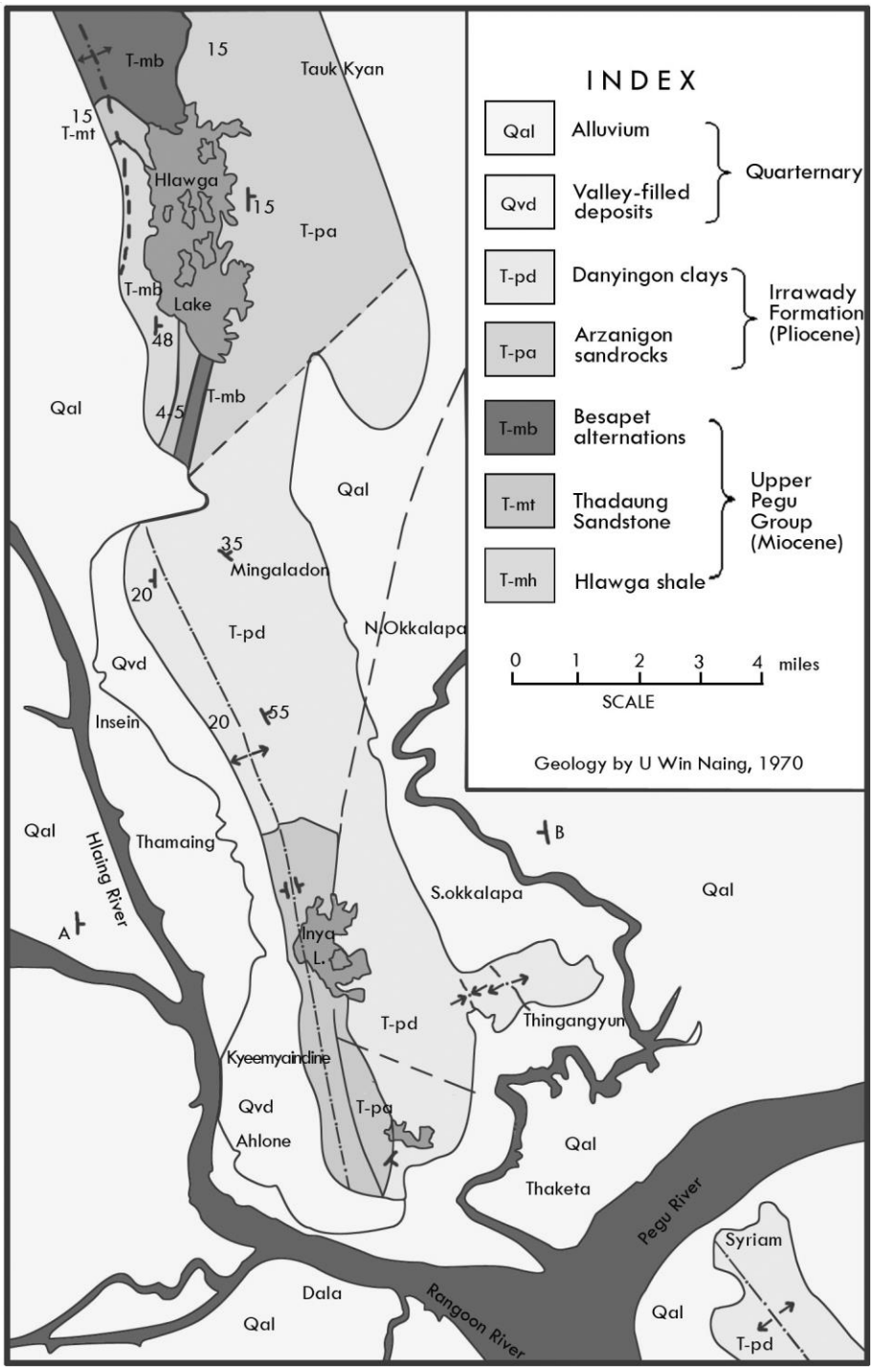


Figure 4-1 Geological Map of Yangon Region

4.3.1. **Tectonics**

Yangon is situated in the southern part of the Central Lowland which is one of the three major tectonic provinces of Myanmar. The Taungnio Range of the Gyophyu catchments area of Taikkyi District, north of Yangon, through the Thanlyin Ridge, south of Yangon forming a series of isolated hills probably resulted from the progressive deformation of the Upper Miocene rocks as the eastern continuation of the

subduction or stretching and compression along the southern part of the Central Basin and regional uplifting of the Pegu Yoma (Aung Lwin 2012).

4.3.2. **Soil**

The underlying soil type at the Project Site and its surroundings is characterized as the Meadow and Meadow Alluvial Soil. Meadow Soil is soil, which occurs near the river plains exposed to occasional tidal floods, is non-carbonate and usually contains a large amount of salt. Both materials mainly comprise salty clay loam and neutral soil rich in plant nutrient. The upper layers (approximately 0 to 7 m) of the soil at the Project Site comprise largely of cohesive layers with traces of sand and gravel, followed by sand layers with low silt content and trace gravel from 7 to 35 m. The lower layers comprise denser silt layer with traces of sand and gravel from approximately 57 to 70 m. Standard Penetration Test (SPT) results obtained from testing at the Project Site indicate that the soil strength generally increases with depth. The STP results showed that the current soil quality could accommodate the construction of the Project.

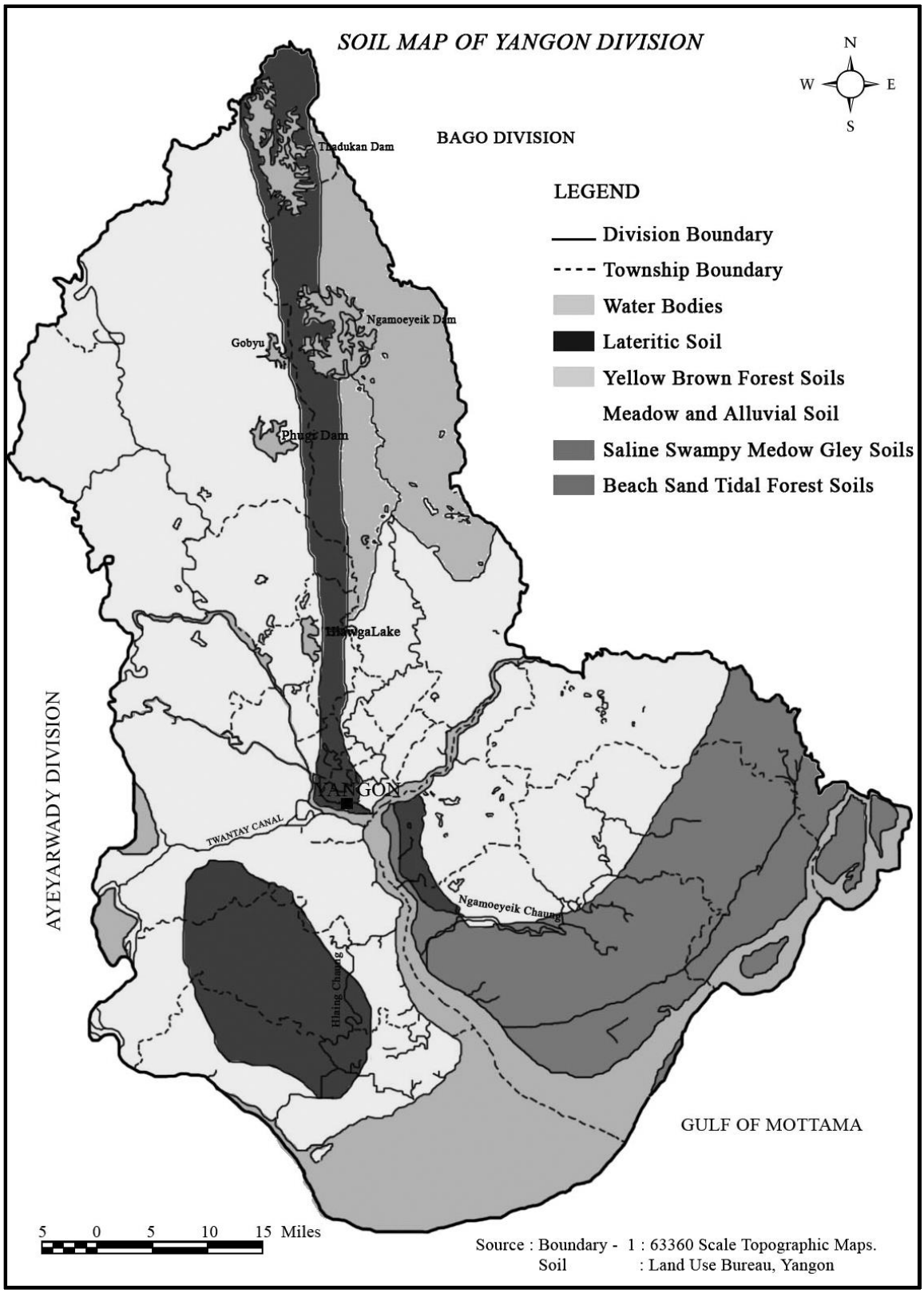


Figure 4-2 Soil Map of Yangon (Source: Land use of Bureau of Yangon)

4.3.3. **Hydrogeology**

Yangon is rich in groundwater resources conserved by unconsolidated Tertiary-Quaternary deposits. In Yangon, groundwater is mostly extracted from Valley filled deposits and Ayeyarwady sandstones.

Groundwater: Groundwater availability is generally based on the distribution of permeable and relatively impermeable rocks. The nature of openings in the rocks determines permeability of rocks. Based on local geological considerations, potential groundwater source of Yangon can be roughly divided into two sub regions, namely the low potential area and high potential area. Low potential areas are areas with those rock units of Hlawga Shale, Thadugan Sandstones and Basepet Alternation of upper Pegu Group (Miocene epoch) and Danyingon Clays of Irrawaddy rocks. These rocks and formations are a dense, massive and consolidated nature and have impervious characteristic. High potential areas are underlain by Pliocene Series and recent Formations. High potential area covers approximately 85 percent of the Yangon city including Pabedan. Stand pipe piezometers were installed at a depth of up to 30 m from the existing ground level while a pumping well was installed upon completion of the soil investigation works. Based on the results recorded up to the 8th of December 2012, stabilized groundwater level was observed to range between 0.49 m MSL to -1.81 m MSL4.

Water Supply: The Yangon City Development Committee (YCDC) has an overall responsibility for the management and distribution of water for Yangon City. Presently, YCDC's water supply is obtained from two main sources: (1) reservoir (Hlawga, Gyobu, Pugyi and Ngameoyeik reservoirs) and, (2) groundwater from YCDC's tube wells. Water from these sources is utilized to varying degrees. Areas not supplied with water from the YCDC rely on shallow surface wells and private boreholes. Water supply for the Project Site will be obtained from onsite borewells for both construction and operations due to the poor reliability of municipal supply. Permitting is part of the Planning Consent Application currently underway. The boreholes will be provided and operated by the Developer.

Hydrology: The Project Site lies along the catchment of the Hlaing River which flows north to south. The Yangon River (also known as the Rangoon River or Hlaing River) is formed by the confluence of the Pegu and Myitmaka rivers and flows into the Gulf of Martaban which is part of the larger Andaman Sea. The river flows along a 40 km stretch flowing from southern Myanmar as an outlet of the Ayeyarwady River into the Ayeyarwady delta. A small portion of the Bago River (the estuary) lies within the Yangon Division. The Pazundaung Creek and Bago River joins the Yangon River and from there, flow towards the Southwestern direction into Andaman Sea.

4.3.4. **Climate and Meteorology**

4.3.4.1. Average Weather in Yangon

In Yangon, the wet season is oppressive and overcast, the dry season is muggy and partly cloudy, and it is hot year-round. Over the course of the year, the temperature typically varies from 67 °F to 97 °F and is rarely below 62 °F or above 101 °F. [6]

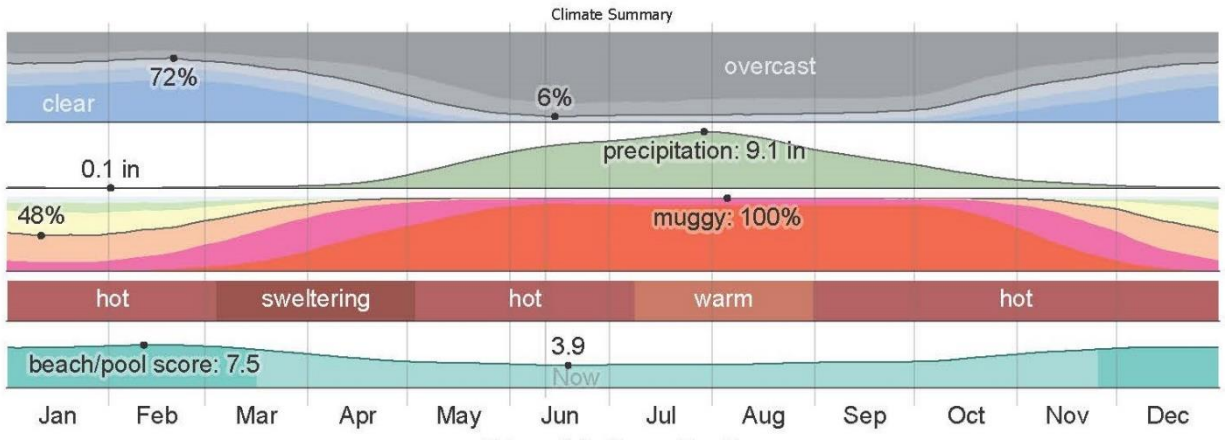


Figure 4-3 Climate Summary of Yangon Region

4.3.4.2. Temperature

The hot season lasts for 2.0 months, from March 2 to May 3, with an average daily high temperature above 95 °F. The hottest day of the year is April 11, with an average high of 97 °F and low of 78 °F.

The cool season lasts for 3.9 months, from June 2 to September 29, with an average daily high temperature below 87 °F. The coldest day of the year is January 10, with an average low of 67 °F and high of 88 °F.

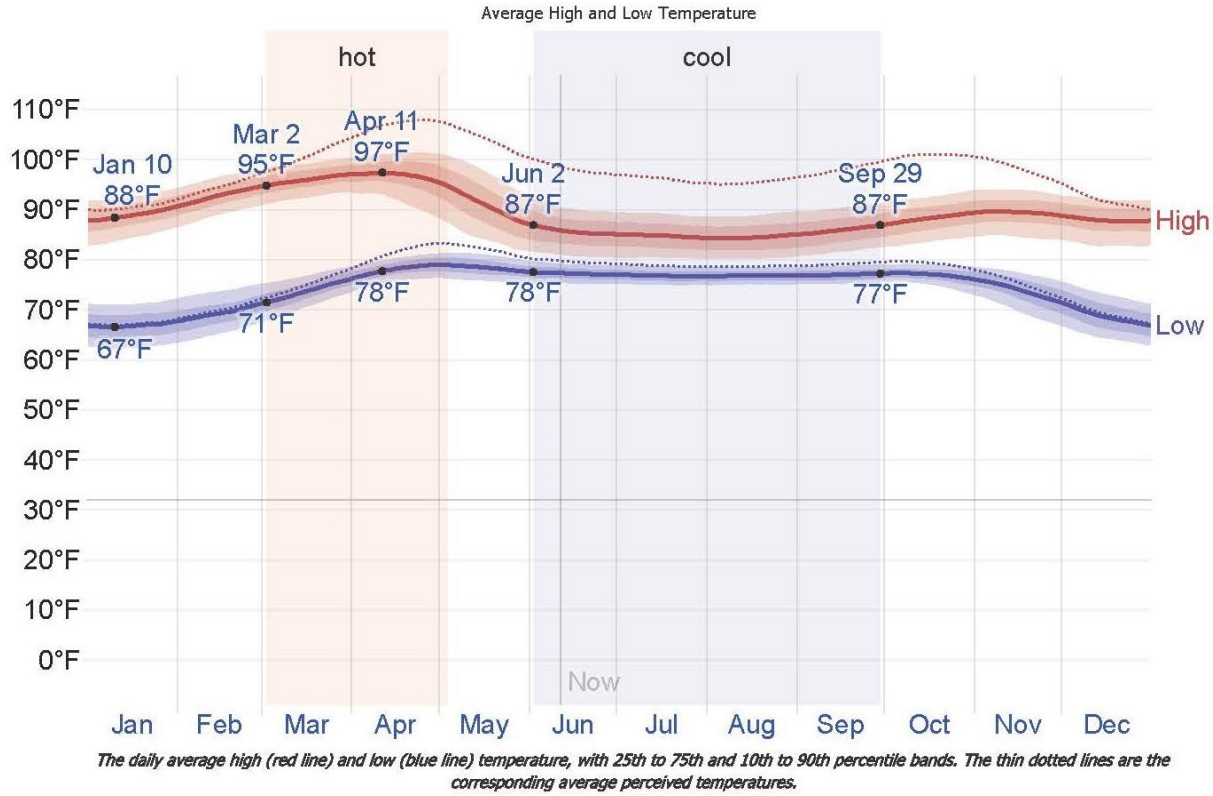


Figure 4-4 Average Temperature of Yangon Region

4.3.4.3. Clouds

In Yangon, the average percentage of the sky covered by clouds experiences extreme seasonal variation over the course of the year. In clearer part of the year in Yangon begins around November 2 and lasts for 5.6 months, ending around April 22. On February 20, the clearest day of the year, the sky is clear, mostly clear, or partly cloudy 72% of the time, and overcast or mostly cloudy 28% of the time.

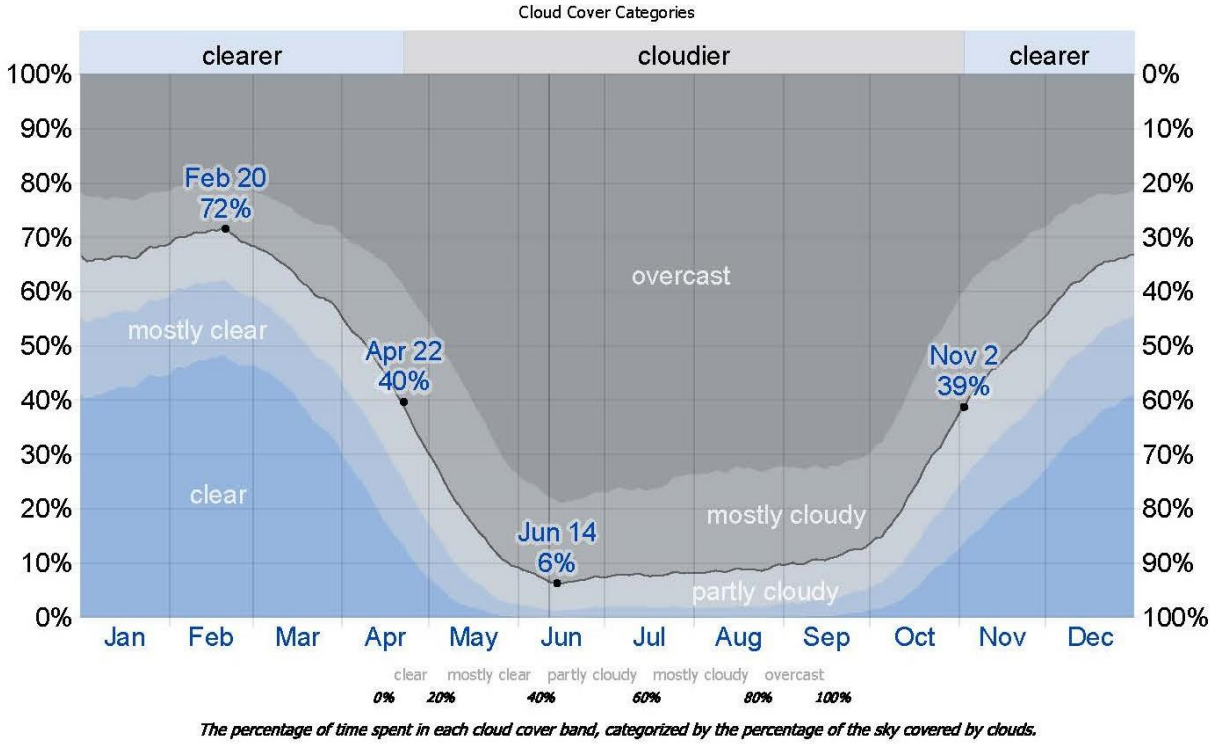


Figure 4-5 Cloud Cover Categories

4.3.4.4. Rainfall

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Yangon experiences extreme seasonal variation in monthly rainfall. The rainy period of the year lasts for 7.7 months, from April 5 to November 28, with a sliding 31-days rainfall of at least 0.5 inches. The most rain falls during the 31 days centered around July 30, with an average total accumulation of 9.1 inches. The rainless period of the year lasts for 4.3 months, from November 28 to April 5. The least rain falls around February 1, with an average total accumulation of 0.1 inches.

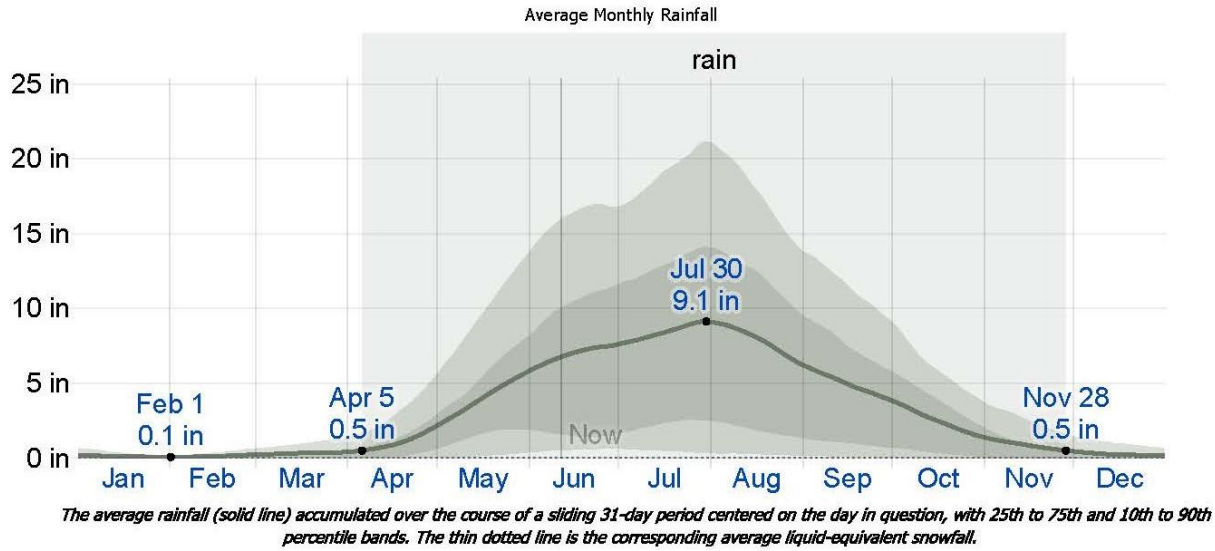


Figure 4-6 Average Monthly Rainfall at Yangon Region

Table 4-1 Annual rainfall and temperature

Year	Rainfall		Temperature	
	Raining day	Rainfall value (Inches)	Summer season Max (°C)	Winter season Min (°C)
2017-2018	102	105.4	41°C	27°C
2018-2019	88	84.8	40°C	26°C

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.3.4.5. Humidity

We base the humidity comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies significantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night.

Yangon experiences extreme seasonal variation in the perceived humidity. The muggier period of the year lasts for 10 months, from February 22 to December 23, during which time the comfort level is muggy, oppressive, or miserable at least 61% of the time. The muggiest day of the year is August 5, with muggy conditions 100% of the time. The least muggy day of the year is January 11, with muggy conditions 48% of the time. In March 30, 2020, the weather condition of prosed project is 41.2 °C average temperature and 69.1 % average humidity.

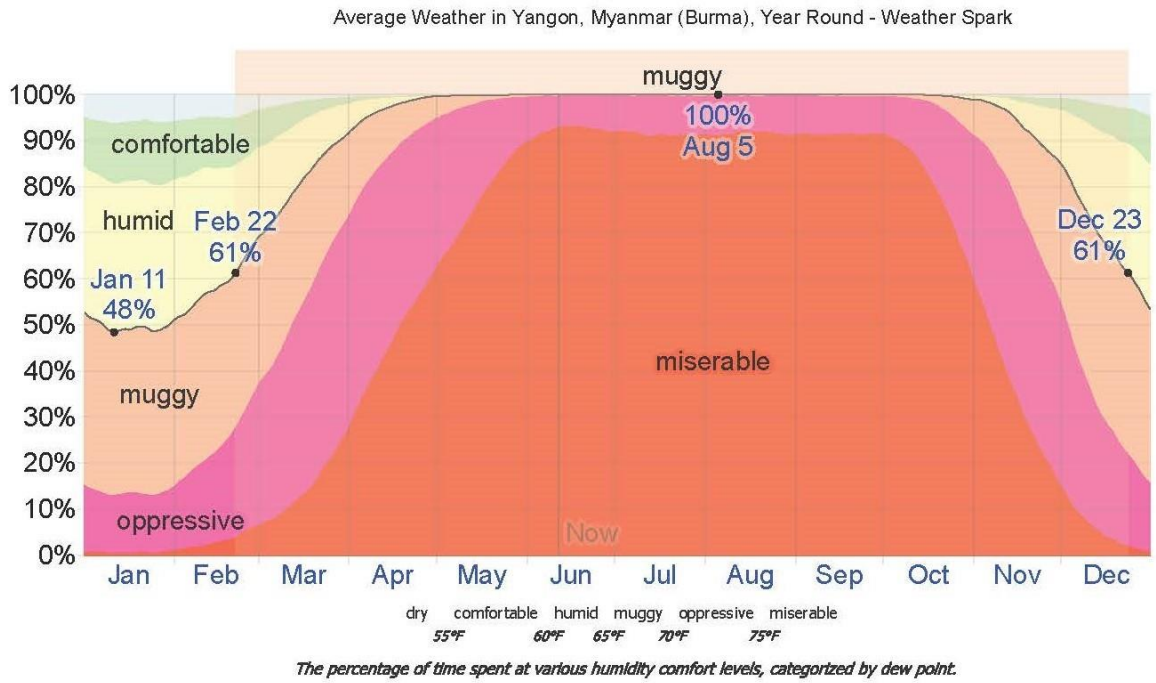


Figure 4-7 Humidity of Yangon

4.3.4.6. Wind

This section discusses the wide-area hourly average wind vector (speed and direction) at 10 meters above the ground. The wind experienced at any given location is highly depended on local topography and other factors, and instantaneous wind speed and direction vary more widely than hourly averages. The average hourly wind speed in Yangon experiences significant seasonal variation over the course of the year. The winder part of the year lasts for 4.1 months, from May 1 to September 4, with average wind speeds of more than 8.2 miles per hour. The windiest day of the year is June 24, with an average hourly wind speed of 10.6 miles per hour. The calmer time of year lasts for 7.9 months, from September 4 to May 1. The calmest day of the year is January 9, with an average hourly wind speed of 5.8 miles per hour.

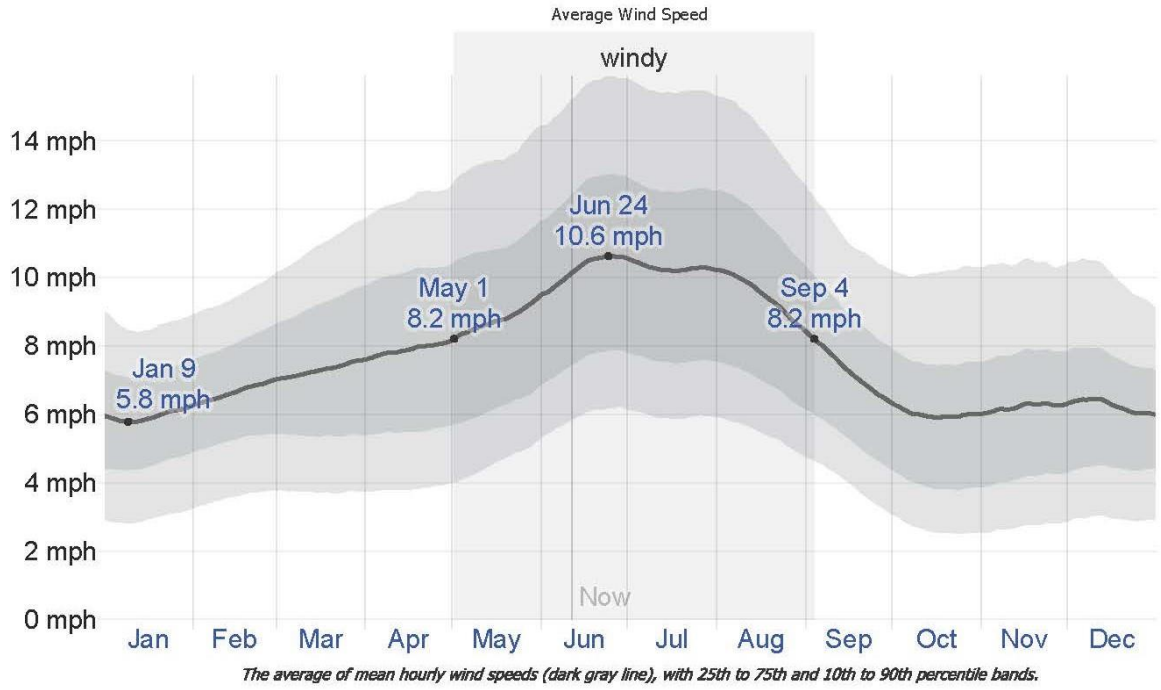


Figure 4-8 Average Wind Speed in Yangon

4.4. BASELINE ENVIRONMENTAL MONITORING

The baseline environmental quality at the Project Site and its immediate surroundings was established by groundwater, wastewater and ambient air quality samples; as well as noise measurements at immediate surrounding areas. The data is presented below.

4.4.1. Temperature & Humidity

On 17 June, 2020 the temperature of proposed project is 33.93 ˚C and the humidity is 78.61%.

Table 4-2 Relative Humidity and Temperature Measure at Proposed Project

Date and Time	Description	Result value	Environmental parameter air station guideline
17 June 2020 (10:00 am to 4:00 pm)	Relative Humidity RH %	78.61 (%)	Present condition
	Temperature	33.93 °C	Present condition

Figure 4-9 Temperature and Humidity Measure Photo at Min Fai Factory

4.4.2. Air Quality

To determine the existing baseline ambient air quality status within the project site on 17, June 2020, 8-hours of working period air pollutants level, which include dust (PM_{10} and $PM_{2.5}$) were measured at the selected site using the OCEANUS-AQM09 air monitoring station. To reveal the existing status of baseline air quality, the average ambient air qualities measured compared with National Environmental Quality (Emission) Guideline. The measurement location point is situated at latitude 16°52'20.65"N and longitude 96°16'34.87"E.

It was observed that the air quality of concentration level is within the limit of NEQ (emission) guideline but particulate matter (PM_{10}, $PM_{2.5}$) are also within the National Environmental Quality (Emission) Guideline.

Table 4-3 Observed air quality results

Parameters	Observed value	Guideline value	Unit	Organization	Period
PM_{10}	45.7	50	$\mu g/m^3$	NEQG	8 hrs
$PM_{2.5}$	36.4	25	$\mu g/m^3$	NEQG	8 hrs

NEQ = National Environmental Quality (Emission) Guideline

Figure 4-10 Air Quality Measurement Photos

4.4.3. Noise

The Noise level was measured by using Digital Sound Level Meter for working hours on 17 June 2020. The average noise level in the project site area is presented in Table 4-4 compared with NEQ guideline. However, according to the Noise source monitoring at operation area (inside the production sector) of noise level is exceeding the acceptable level of National Environmental Quality (Emission) Guideline. [4]

Table 4-4 Noise level measurement result

Date and Time	Location	GPS value	Result value	NEQ Guideline
12.6.2020 (1:00 to 4:00)	Weaving Area	16°53'37.75"N 96°2'20.72"E	63.34 dBA	70 dBA

Figure 4-11 Noise Measurement Graph

Figure 4-12Noise Level Measurement

According to the monitoring results, JIN SEN MYANMAR COMPANY LIMITED the noise level is higher a bit than the NEQ guideline. Therefore, in that factory ought to use the ear protection to all labors. In this way can reduce the noise level.

4.4.4. Light

Activities of the workers in the Bag and Bag's Strings factory are highly dependent on the quality of light. Therefore, the consultant conducted the light measurement in the Bag and Bag's Strings factory is presented in Table 4-6. The illustrates the recommended illumination and limiting glare index applicable to typical works (fairly severe to very severe tasks) in Bag and Bag's Stringss factory is provided in Table 4-5.

Appropriate lighting is the need for every department, irrespective to the task being handled. Although, there are some areas where focus on maintaining proper illumination is very crucial in a Bag and Bag's Strings factory, like the inspection points (on-floor and in stores), sampling, and the finishing section, as these areas are crucial for the quality of the production. The tasks involved in these areas require high levels of worker focus and accurate lighting to ensure lower errors and defects passing on to the next stage.

However, according to the result of light measurement at operation area (inside the production sector) is in good condition and at the acceptable level of standard.

Table 4-5 Recommended illumination and limiting glare index based on IES Code, 1968

Visual test	Illumination (lux)	Glare index
Casual seeing	100	28
Rough task with large detail	200	25-28
Ordinary task medium detail	400	25
Fairly severe task, small detail (e.g. drawing office, sewing)	600	19-22
Severe, prolonged task, very small detail (e.g. fine assembly, hand tailoring)	900	16-22

Very severe, prolonged task, very small detail (e.g. gem cutting, hosiery mending, gauging very small parts)	1,300 -2,000	13-16

Source: Koenigsberger, et al. 1975

Figure 4-13 Light quality measurement

Table 4-6 Result of light measurement in JIN SEN MYANMAR COMPANY LIMITED

No	Location	Measure value (Lux)	Standard*
1	Warehouse	214	600
2	Cutting Area	815	600
3	Sewing Area	777	600
4	Inspection Area	940	900
5	Packaging Area	956	600

* Lighting standards and codes usually provide recommended illuminance ratios between the task area and its surroundings (EN 12464-1 2002) (CIBSE 1997) (IESNA 2000, 676708).

According to the monitoring results, JIN SEN MYANMAR COMPANY LIMITED light level is a little bit higher than the NEQ guideline that's why some places need to reduce the light level and ought to put on the electricity bulb more over the higher places. On the other hand, some places are a bit lower than the NEQ guideline that is why which need to change like a more powerful light bulb in that light level lower places. In this way are able to adjust the light pollution of this factory.

4.4.5. Reverse Osmosis Water Quality

The baseline data on reverse osmosis water quality were collected and measured on 17 June 2020 with respect to WHO Guidelines for Drinking Water Standard and Laboratory analysis results can be seen in (**Appendix**) for reverse osmosis water. The water quality of the nearest water features that are likely to be affected by the project, was studied with the aim of understanding, preventing and

minimizing water pollutions in the public water sources so as to ensure human health and biodiversity. Water quality is one of the key factors affecting the environment and health. Analyzed results of result compare with NEQG, reverse osmosis water effluent results of the whole factory. The collected samples factory reverse osmosis water was tested at ISO Tech Laboratory.

Table 4-7 Water quality result compare with guideline

Parameter	Unit	Result	Guideline
pH		7.3	6.5-8.5
Colour	TCU	Nil	15
Turbidity	NTU	Nil	5
Conductivity	Micro S/cm	50	
Total Hardness	mg/l as $CaCO_3$	4	500
Calcium Hardness	mg/l as $CaCO_3$	2	
Magnesium Hardness	mg/l as $CaCO_3$	2	
Total Alkalinity	mg/l as $CaCO_3$	16	
Phenolphthalein Alkalinity	mg/l as $CaCO_3$	Nil	
Carbonate ($CaCO_3$)	mg/l as $CaCO_3$	Nil	
Bicarbonate (HCO_3)	mg/l as $CaCO_3$	16	
Iron	mg/l	0.05	0.3
Chloride (as CL)	mg/l	6	250
Sodium Chloride (as NaCL)	mg/l	10	
Sulphate (as SO_4)	mg/l	Nil	500
Total Solids	mg/l	26	1500
Total Suspended solids	mg/l	1	
Total Dissolved solids	mg/l	25	1000
Manganese	mg/l	Nil	0.05
Phosphate	mg/l	Nil	
Phenolphthalein Acidity	mg/l	2	
Methyl Orange Acidity	mg/l	Nil	
Salinity	ppt	0.1	

4.5. BIOLOGICAL COMPONENT

The proposed project site is not located in or near a sensitive ecosystem as the proposed project area is situated in the Hlaing Thar Yar zone (5). The Project Site is a built-environment and the species of flora surveyed at the site are native species uncommon to the Yangon area. There were no protected species or species of conservation value identified.

4.6. SOCIO-ECONOMIC COMPONENT

4.6.1. Population

JIN SEN MYANMAR COMPANY LIMITED is located across Hlaing Thar Yar Township in Yangon Region. In September 2019, the population of Hlaing Thar Yar Township is about 187,891 people as present in Table 4-8.

Table 4-8 Population of Males and Females at Hlaing Thar Yar Township (2019)

Item	Older 18 year			Younger 18 year			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Urban	**110,193**	**125,186**	**235,379**	**49,964**	**55,193**	**105,157**	**160,157**	**180,379**	**340,536**
Rural	**34,642**	**32,707**	**67,349**	**16,488**	**16,576**	**33,065**	**51,130**	**49,283**	**100,413**
Total	**144,835**	**157,893**	**302,728**	**66,452**	**71,769**	**138,221**	**211,287**	**229,662**	**440,949**

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.6.2. Religion

The different kinds of religion present in Hlaing Thar Yar Township are shown in

Table 4-9. More than 90% of the people living in the township are Buddhists.

Table 4-9 Religion in Hlaing Thar Yar Township (2019)

Township	Buddhist	Christian	Hindu	Muslim	Other	Total
Hlaing Thar Yar	422,529	6,400	8,320	3,700	-	440,949

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.6.3. Local Economy

Among regional towns, Hlaing Thar Yar Township has a variety of businesses and services operating in the community with other businesses/services, based in the region. Most of the source of livelihood in the Township is employment of factory. Services and facilities available include:

- post office
- beauticians
- butcher
- hairdressers
- furniture and electrical store
- restaurants
- cafes
- shoe and clothing shops
- industrial services
- pharmacy
- veterinarian
- bus service
- gift stores
- music store
- pubs and bars

- florist

4.6.4. Public Infrastructure and Access

4.6.4.1. Communication and Transportation

Major transportation route in Hlaing Thar Yar Township are car roads as presented in Table 4-10.

Table 4-10 Transportation route

Categories	Township		Miles
	From	to	
Hlaing River	Pun Hlaing River & Hlaing Myitsone	Ngwe Pin Lal Industrial Zone	8 miles
Aung Zay Ya Bridge Road			(0/4) mile
Yangon-Pathein Road (B.O.T Road)			(0/7) miles

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.6.4.2. Electricity

The electricity demand of Hlaing Thar Yar Township is higher and higher due to the normally increased in population and infrastructure.

4.6.4.3. Education

Location of major schools were situated i.e., basic education primary school (B.E.P.S), basic education middle school (B.E.M.S), basic education high school (B.E.H.S) and university in the Hlaing Thar Yar Township. The name and the located village tract/ ward of schools are described in Table 4-11.

Table 4-11 List of major school in Hlaing Thar Yar Township

No.	Name of School	Location
1	West Yangon Technological University	Apyinbadan Village
2	BEHS (1)	(2) Ward
3	BEHS (2)	(12) Ward
4	BEHS (3)	(17) Ward
5	BEHS (4)	(5) Ward
6	BEHS (5)	(7) Ward
7	BEHS (6)	Yay Oakkan
8	BEHS (7)	(16) Ward
9	BEHS (8)	(20) Ward
10	BEMS (1)	(6) Ward
11	BEMS (2)	Nyaung Village
12	BEMS (3)	DySu Nyaung Ywar

No.	Name of School	Location
13	BEMS (4)	(6) Ward
14	BEMS (5)	(1) Ward
15	BEMS (6)	(10) Ward
16	BEMS (7)	Apyinbadan Village
17	BEMS (8)	(18) Ward
18	BEMS (9)	Shwe Lin Ban Village
19	BEMS (10)	(9) Ward
20	BEMS (11)	(12) Ward
21	BEMS (12)	(18) Ward
22	BEMS (13)	(15) Ward
23	BEMS (14)	(14) Ward
24	BEMS (15)	(13) Ward
25	BEMS (16)	(11) Ward
26	BEMS (17)	(7) Ward
27	BEMS (18)	(11) Ward
28	BEPS (Total)-31	

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.6.4.4. Health Status

The diseases of high prevalence reported in 2019 are Tuberculosis (TB), followed by Acute Respiratory Infection (ARI), Diarrhea, TB and snakebites. With reference to the Township Health Profile 2019 of Hlaing Thar Yar Township, no accidental work injuries reported to the township hospital in 2019. The common diseases are shown in Table 4-12.

Table 4-12 Common Diseases in the Hlaing Thar Yar Township

Disease	Morbidity	Mortality
Malaria (Per 100000P)	-	-
Dysentery	21	-
Diarrhea (Per 100000P)	37	-
TB (Sputum+)(Per 10000P)	67	-
Hepatitis	5	-

Table 4-13 Lists of hospital in the Hlaing Thar Yar Township

Hospital Name	Beds/Services	Responsible
Hlaing Thar Yar	200	Government
Administrative (Shwe Lin Ban)	16	Government
Pun Hlaing	95	Public
Htun Foundation	20	Public

Source: Department of Administrative Hlaing Thar Yar Township, Regional data (www.gad.gov.mm.com)

4.7. CULTURAL AND VISUAL COMPONENTS

Hlaing Thar Yar Township is growing into a busy and vibrant community. The population fluctuates; however, there has been steady growth over the last decade. It tends to be a stopover on a journey rather than a destination. It has a number of sites that are interesting; however, there is no main attraction. Visitors to the town are generally visiting for work, investment, or family reasons.

5. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

5.1. METHODOLOGY FOR THE ASSESSMENTS

The assessment of each impact is based on consideration of the magnitude, duration, spatial and frequency of activities, which are going to be carried out during three phases and characteristics of the project site. The assessment is qualitative and the significance of each impact is classified into 5 categories in overall.

The following methodology has been applied to assess the environmental impacts of the factory mainly on air, water, land, biodiversity, including human beings. Each source of impact has been assessed by four parameters, magnitude, duration, extent, and probability and each assess point have 5 scales as mentioned in Table 5-1.

Table 5-1 Impact assessment parameters and its scale

Assessment	Scale				
	1	2	3	4	5
Magnitude (M)	Insignificant	small and will have no effect on working environment	Moderate and will result in minor changes on working environment	High and will result in significant changes on working environment	Very high and will result in permanent changes on working environment
Duration (D)	0 - 1 year	2 - 5 year	6 - 15 year	Life of operation	Post Closure
Extent (E)	Limited to the site	Limited to the local area	Limited to the region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probable	Definite

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

Significant Point (SP) = (Magnitude + Duration + Extent) * Probability

Impact Significance: Based on calculated significant point, impact significance can categorize as follows:

Significant Point (SP)	Impact Significance
<15	Very Low
15-29	Low
30-44	Moderate
45-59	High
60	Very high

5.2. IMPACT IDENTIFICATION

The development of infrastructure for the proposed project likely to happen changes in the local environment in terms of physical, biological, and socio-economic aspects along with the perspective on both positive and negative impacts. The potential environmental impacts brought by various activities of proposed factory project will be identified and judged by site surveying with checklist, meeting with client team, including plant manager and supervisor, representatives from the factory operators and assessing the environmental baseline information for operation and decommissioning phases along with its mitigation measure.

5.2.1. Positive Impact

During the project implementation, local people can get job opportunities in administrative sectors, office works, transportation sectors, skill, and unskilled workers, etc. Due to the implementation of the project, there will be employment opportunities especially for workers from the local community. Employees will also improve more in their professional knowledge and skills. The net effect of job creation is the improvement of the livelihoods and living standards of the beneficiaries and poverty reduction, development of local people's livelihood. Cause of the proposed project is located in Hlaing Thar Yar Zone (5), there may have business opportunities to local people. Local people can have a market by selling foods, snacks, and drinks nearby the factory.

5.2.2. Negative Impact

The following Figure 5-1 briefly described the potential negative impacts of the proposed project. There are four main types of impacts; impact on environmental resources, impact on ecological resource, impact on human and impact of waste generation.

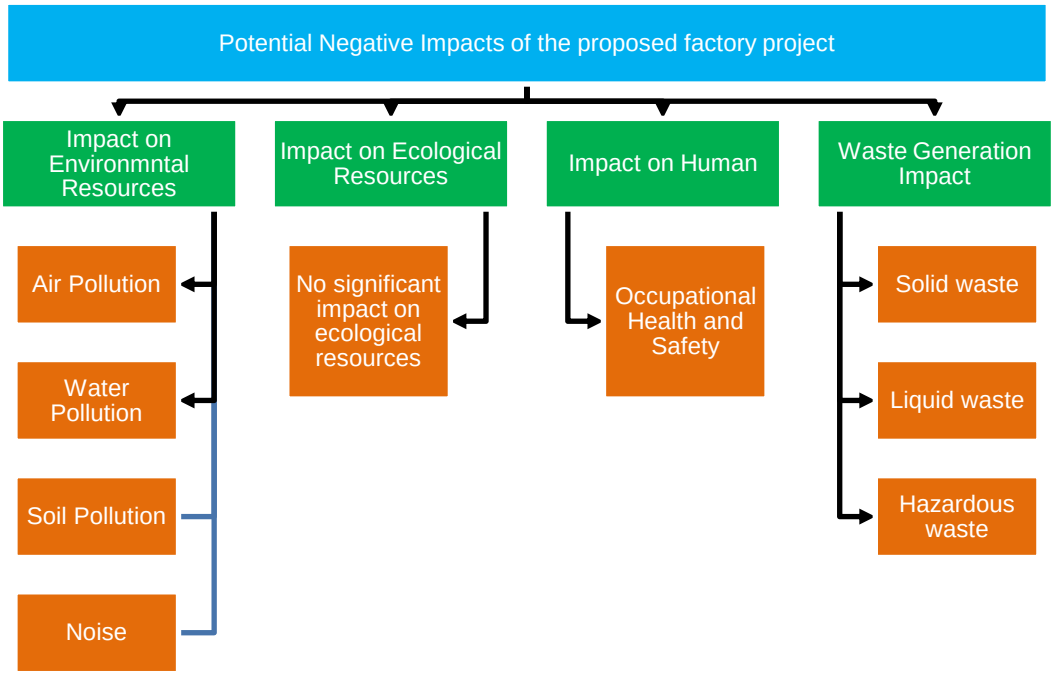


Figure 5-1 Potential negative impact affect from proposed factory project

5.3. IMPACT ON ENVIRONMENTAL RESOURCES

5.3.1. Impact on Air Quality

The project factory is already constructed during environmental assessment study and site visit. During construction phase, dust emission was addressed as potential environmental impact and is expected to be non-significant because the construction phase is a short-term affect. So, we are not assessed potential environmental impact during construction phase.

During the operation phase, there is no emission of smoke from the process of production. Various activities as cooking from kitchen, using air conditioners in office building, storage of raw materials, vehicles movements, operating diesel generators and boiler combustion would also be a factor slightly affecting to air quality.

Though main electricity source for the factory is the national grid line, sound-proof diesel generators will be set-up in case of electricity shortages. So, 500KVA of standby generator will be used for both operation and administration appliances. The proposed project will use annually 200 Liters of diesel for vehicles such as transportation vehicle and emergency use of a generator. The following table shows the amount of CO_2 emission coming from the combustion of fuels.

Burning diesel or other fuels creates exhaust gasses. Diesel generators produce carbon dioxide (CO_2), nitrogen oxide (NOx), and particulate matter. These generators release this into the atmosphere and substantially reduce air quality in the nearby regions. Every liter of fuel has 0.73 kg of pure carbon, 2.6 kg of carbon dioxide released per liter of diesel fuel.

Table 5-2 Category of GHGs Assessment

Category	Range
Negligible	no GHG assessment necessary
Low	< 20 kt/y CO_2-equivalent per year
Medium-Low	20 – 100 kt CO_2- equivalent per year
Medium-High	100 kt – 1 Mt CO_2- equivalent per year
High	>1 Mt CO_2-e equivalent per year

Source: EBRD GHG Assessment Methodology, 2010

Table 5-3 CO_2 Emission by the Uses of Fuel

No.	Type	Amount (Liter /year)	Equivalent CO2 emission (Kilotons)	Status
1	Diesel for generator	200	0.00014	Negligible

Furthermore, likewise the construction phase, negative impact on ambient air quality such as emissions of dust particles emission from the movement of vehicles used for carrying decommissioned materials and gaseous emission from these vehicles and machines can be expected during the decommissioning phase of the proposed project after its lifespan, 30 years.

5.3.2. Impact on Water Quality

During the construction period, water consumption is for implementation of the construction works and domestic water usage by construction workers. Surface water and ground water could be contaminated from the several activities of construction works such as mixing of the concrete, wetting of dry surfaces, washing of the equipment, etc. Moreover, oil spill from the vehicles and machinery can pollute water quality and can enter into the ground water and run into near river during the rainy season. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, impact on water quality is not assessed for this project.

During operation phase of Bag and Bag's Strings manufacturing factory, there is no water use for processing purpose. Tube well is the main source of raw water for factory waster use. The raw water is provided for the whole factory use of general office facilities such as canteen, toilets and kitchen. Moreover, sewage disposed from the employees, staffs, oils spill and grease leakage from transporting vehicles and machinery equipment used in operating the production of Bag and Bag's Strings can seriously pollute the quality of underground water source. But the factory plans to use separate waste water channels, septic type toilet system and sewage treatment plants in accordance with YCDC guidelines to avoid potential contaminations and hazards by waste water and sewages. So, it can cause low impact to the water quality.

During the decommissioning phase, oil spill from the demolished vehicles and machinery can penetrate into the ground water quality. Water can also be contaminated by activities related with decommissioning works and waste disposed by workers.

5.3.3. Impact on Soil Quality

During the construction phase, the excavation works from the construction activities must be the major impact on soil. The soil is compacted by the vehicles and the solid waste disposal improperly by the workers can affect the soil quality. Oil spillage from the vehicles could be also polluted to the soil. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, impact on water quality is not assessed for this project.

During the operational phase, there is no significant impact on soil quality due to Bag and Bag's Strings manufacturing activities because concrete road facilities have been implemented at the whole project site area. However, there may be effect on soil if wastes from the operation period are disposed improperly.

During the decommissioning phase, transportation of decommissioning materials and transferred of heavy machinery may happen oil leakage and lubricants, and thus it can lead to impact on soil. Moreover, hazardous releases of materials or oil utilized in the infrastructure can contaminate the existing soil during the decommissioning phase.

5.3.4. Impact of Noise

During the construction phase, significant impact on noise and vibration to surrounding environment must be generated from the movements of vehicles, operating the machinery, excavation activities and transportation of equipment and construction materials by heavy trucks. However, the project factory is already constructed during environmental assessment study and site visit. Therefore,

the proposed project is located in industrial zone and already finished the construction, the potential impact on noise and vibration is not assessed and short-term affect must be caused the construction period is temporary.

During the operation phase, noise impact may be a significant impact for Bag and Bag's Strings production sectors. The significant sources of noise impact activities are the operation of various machinery and equipment listed in for extrusion line, weaving line and the emergency used of generator, vehicles and automobile movements (long-term noise) will be noise impacts sources. According to the noise results of 8 hours continuously measurement, at the source of operation area inside the factory and within the factory area are slightly exceeding the noise level of 70 dB of NEQ (emission) guideline. Therefore, no obvious influence can be caused expected to environment.

During the decommissioning phase, the heavy vehicles, machineries and equipment used for decommissioning activities can affect the noise level and vibration of the area.

5.4. IMPACT ON ECOLOGICAL RESOURCES

The proposed project is located in the industrial zone. Therefore, there is no wildlife, forests, protected area, coastal resource or mangrove area and rare and endangered species are found around the project area. The nearest water body is Bago River which is running north to south and later join into the Hlaing River in the east.

5.5. IMPACT ON HUMAN

5.5.1. Socio-economic

The proposed project is the long-term investment in the industrial sector. Most of the impacts of the proposed project on socio-economic environment may be positive. Implementation of proposed project may create temporary employment during construction and decommissioning phases and permanent jobs in the operation phase. Subsequently, socio-economic standards of local people will be increased and eventually it may lead to the economic growth at local and regional level.

5.5.2. Occupational Health and Safety

During the construction phase, significant accidents and injuries like electric shocks, falling from heights, chemical exposure, crushing injury, fire hazards can be occurred due to the construction activities including metal grinding and cutting, concrete work and welding the metals. Moreover, accidents and injuries to workers and local communities could be caused from heavy vehicles movement for the transport of construction materials and equipment. Small injuries due to slips, headache and sickness must be caused of the noise, air pollution and odor could also be affected to the workers and local people. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, impact on water quality is not assessed for this project.

During the operation phase, using the machinery for production process can get injuries. Noise from the generating of the machine and generator may also affect the health of people working in the project area. Fire and explosion hazards are mainly cause from the storage of raw materials and poor management of waste disposal. The usage of fuel must carefully handle because spillage and leakage of oil and grease can cause ignition of fire. Domestic wastewater or grey water produced from canteen,

kitchen and toilets will cause enormous breeding of mosquitos, which can lead to diseases like malaria and dengue fever, if not carefully managed.

During the decommissioning phase, activities related with decommissioning process can cause injuries and can affect the health of decommissioning workers.

5.5.3. **Waste Disposal**

5.5.3.1. Solid Waste

During the construction and decommissioning phase, various kinds of solid wastes will be generated. These wastes will be collected and clean every day to avoid any undesirable working condition and environmental impacts. Based on their types (glass, metal, plastic, wood, cement residues, oil spills and paper based), these solid wastes will be collected separately in rubbish bins and regular and proper disposal will be done in accordance with YCDC guidelines.

In the operation phase, major solid wastes of the proposed Bag and Bag's Strings factory may be generated form production lines, weaving and packaging. Factory shall use textile, thread and carton box as raw materials. The residual pieces of the fabric scraps from the production lines and weaving line used carton box, plastic sheet from the packaging are the main source of solid waste. In addition to factory solid waste, canteen, kitchen and dormitory will produce solid wastes mainly personal remnants, household wastes and food residues. Wastes generated from the factory are plastic goods and packing materials of plastic sheet and carbon box in the operation section. Total amount of waste about maximum 226.79 kg per day has generated from operation process.

5.5.3.2. Liquid Waste

There may be expected no significant liquid waste from the construction and decommissioning phase. The main source of the liquid waste of these two phases may be from the sanitary wastewater.

During the operation phases, sanitary wastewater from the usage of toilet facilities, kitchen and canteens will be discharged as liquid waste. All of the liquid waste will be collected in septic tanks which are attached with proper sewage treatment tanks (as mentioned in factory site plan) and regular monitoring should be done in cooperation with YCDC and follow the YCDC guidelines for proper disposal.

5.6. PROJECT ACTIVITIES AND ITS SIGNIFICANT IMPACTS

The relative importance of each impact is assessed based on the understanding that general mitigation measures will be integrated into the baseline project. Therefore, when the general mitigation measures reduce impacts to the point of rendering them negligible they are excluded from further analysis. Once the significance of the impact is established as more than negligible, it is described and additional, specific mitigation measures may be proposed to allow optimal integration of the project into the environment.

Table 5-4 Evaluation and Perdition of Significant Impacts

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	SP			
Impact on Environmental Resource									
Air	Dust and GHGs emission from vehicles used for transporting raw materials, final products and the running of emergency diesel generators and vehicles.	2	4	1	3	21	Low	Air pollution and inhaling them can increase the chance of health problems such as cancer, respiratory diseases and environmental issues such as ozone depletion, ecosystem degradation and global warming.	To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. Ensuring vehicles, compressor and generator are well maintaining. Avoid the opening burning of clothes and fabric scraps.
Water	Poorly planned the ditches where flows the liquid waste from dormitory and toilets.	2	4	1	2	14	Very Low	Bad smell and getting block the drains.	The factory not generated hazardous wastewater from production process on CMP basic. No mitigation measures for water.
Soil	Engine oil leaks, spills at diesel storage and during fuel refuelling.	1	4	1	1	6	Insignificant	Degrade the soil level if properly not built the factory ground.	No Mitigation Measure
Noise and Vibration	Generating noise from the production machineries.	2	4	1	3	21	Low	Intense of noise and vibration can cause nuisance on working environment.	No Mitigation Measure
Impact on Ecological Resources									
Flora and fauna on terrestrial and aquatic life	Operation of the garment factory	1	4	1	1	6	Insignificant	Not Significant Impact on Ecological Resources	No Mitigation Measure
Impact on Human									

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	SP			
Fire	Raw material, foam is easily combustible.	3	4	2	3	27	Low	Serious damage to property and even injury and death	Proposed factory is well preparing the fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. Regular inspection for existing firefighting equipment should be and of fire emergency, water storage tanks are well prepared. The emergency fire alarms are installing at the factory for alerting the workers in case of fire. The main entrances and route for emergency cases of the factory must not block with materials or machines for fire emergency cases.
Occupational Safety	Accidental cases cause by operating of machines.	3	4	1	3	24	Low	Accidents in workplace (physical injuries or even death) can occur during operation.	First aid training, safety training, firefighting training or other essential training for machinery handling provided for emergency cases of workers. To prevent electric shock hazards, electrical maintenance staffs (repairperson) are to assign to do regular inspections and take preventive measures.
Health	Influx of people accelerates the rate of infections.	2	4	1	2	14	Very Low	COVID-19 may be disclosure the factory and losses in the properties of business.	Prepare the preventive measures such as follow the social distancing, wear the masks, spraying with hand sanitizers and avoid the grouping.
Waste Generation Impact									

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	SP			
Solid Waste	Residual pieces of fabric scraps from the production lines Waste from packaging Waste from kitchen, dormitory and office.	3	4	1	4	32	Moderate	Environmental pollutions, health problems and accidental fire cases	All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area. Final wastes should be disposed by using YCDC's service.
Liquid Waste	Domestic liquid wastes from kitchen, dormitory and sewage system.	2	4	2	2	16	Low	Contamination of soil, surface water and ground water	Proposed factory well planned the sewage and septic tanks system. Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.
Hazardous Waste	Used of oil and lubricant discharged from the maintenance of vehicles and machines. Use of chemicals in the planned production processes.	2	4	1	3	21	Low	Soil Contamination, water pollution, slippery accidents of vehicles and fire burning.	Using of hazardous chemicals and discharging of used chemicals in accordance with occupational health, safety and environmental requirements. The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty (e.g., DOWA and YCDC)
Natural Hazardous	Climate change and natural phenomenon might be happening of droughts, tropical storms, heat waves, earthquakes and floods.	4	4	3	3	33	Moderate	Disruptions of basic buildings, injuries to death, capital loss of investments in supply chain and changes in demographic situation of ecosystem.	Providing relevant rescue trainings, preparing the preparedness plans such as firefighting plans, safety training and essential equipment, and comprising the natural disaster response team.
Crisis Situation	Destroying the public infrastructures either purposive or accidentally.	4	4	2	4	40	Moderate	Damaging to employees or factory and make get the loss of financial investments and even disclosure the project.	Promote the full-time guards and alert system during the crisis situation period Comprise the fire safety team, and emergency response team for crises and criminal cases.

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	SP			
	Poor planning and functioning of COVID-19 preventive measures.								

Table 5-5 Evaluation and Predication of Significant Impacts and Mitigation Measures on Decommissioning Phase

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	S			
Air pollution	Demolishing of buildings and transportation of residual parts	2	4	1	3	21	Low	Emission of particulate matters (PM 2.5 & 210) and GHGs.	Hire the professional demolishing company. Carry broken material with cover by canvas.
Water pollution	Blocking of ditches with demolished materials	2	1	1	3	12	Very Low	Bear the undesired health problems and may be floods by blocking of drains.	Systematically decommission and assembly the fragments in a particular place and this will not to block the water flow ditches.
Noise Pollution and Vibration	Decommission activities and transportation of demolished materials	3	4	2	3	27	Low	Noise pollution and nuisance on surrounding environments.	Carry out the activities during daytime. Maintain the machines and vehicles to reduce noise pollution. Provide the earmuffs to the workers.
Waste disposal	Demolished debris such as bricks, concrete materials without dumping to the landfill site	2	1	1	3	12	Very Low	May cause adverse impacts on clean and tidy industrial area and other health problems.	Reusable materials and dispose to the define areas or discard contacting with YCDC.
Hazardous waste	Open burning the unclassified wastes and materials	2	1	1	3	12	Very Low	Explosions, loss in recycle materials and enhance the	Classify the waste types and discard as to their kinds of waste.

Categories	Source of Impact	Significant of Potential Impacts					Impact Significance	Potential Adverse Impact	Mitigation Measure
		M	D	E	P	S			
								air pollution due to open burning.	
Occupational Health and Safety (Accidents, Injuries)	Decommissioning activities and transportation of demolished materials	3	3	1	3	21	Low	Injuries and accidental cases.	Provide protective fencing or demarcation with tape at the boundaries of dangerous / hazardous zone and the appropriate warning signs, marking and safety signs and installation of the lost time injury notice board. Use the third-party expert assisted by trained personnel to identify and remove hazardous materials.

According to the result of analysis, it can be concluded that most of the project activities have low significance on environment, in all phases. Project activities that can produce solid waste and liquid waste are moderate significance. Moreover, project activities that emit dust and GHGs and accidental cases are moderately significant. Fire hazard potential of the proposed project and noise pollution are highly significant. But this can be prevented or mitigated by using the following mitigation measures. The following figure shows the impact significance of the proposed project.

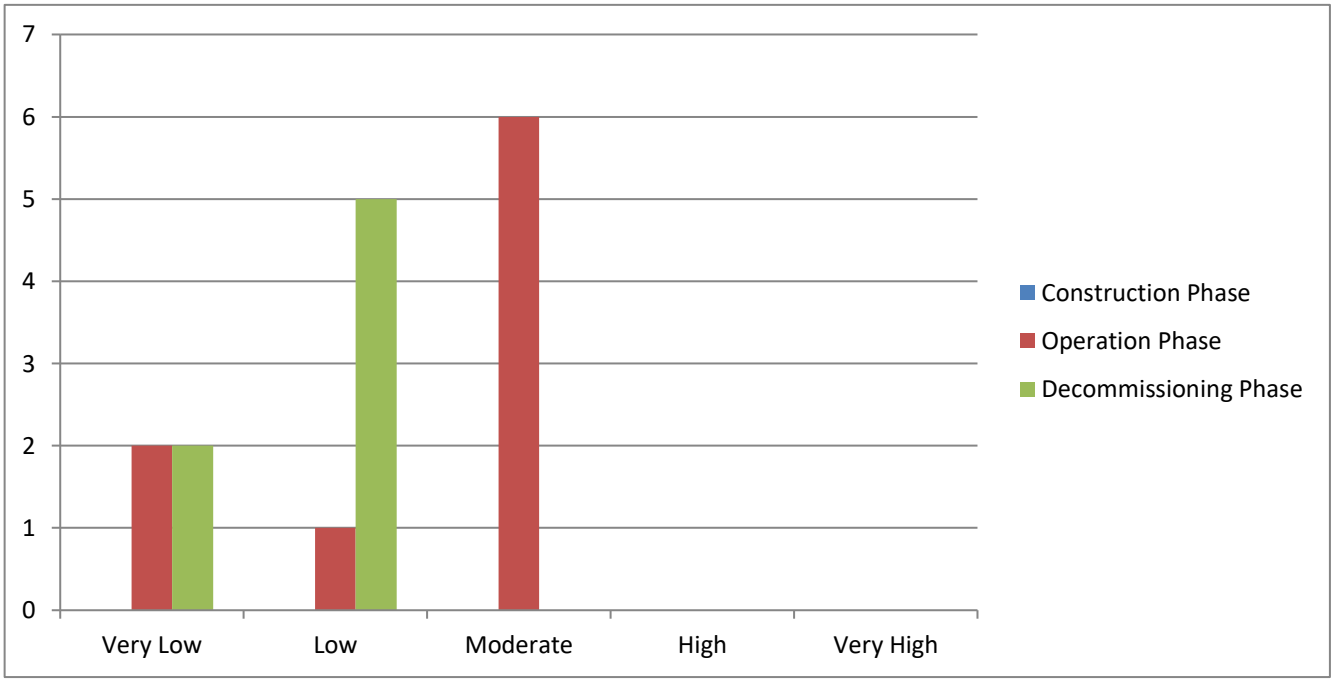


Figure 5-2 Impact significance of the proposed factory project

5.7. MITIGATION MEASURES OF IMPACT ON ENVIRONMENTAL RESOURCES

5.7.1. Recommended Air Impact Mitigation Measures

During the operation phases, ventilation system of the factory is enough for the workers cause the proponent has installed Moist Fan around the factory building. To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. Since the factory compound area is paved with concrete, dust emission from the movements of vehicles and cars is not significant. The project proponent must install good exhaust system at the kitchen to reduce adverse impacts of indoor air quality. The factory uses chimney for generator and steam boiler through which the flue gas are emitted for reducing the impact of stack emission on environment. Monitoring and check installed cyclones and ventilation system. The factory has planted trees in its premises to reduce carbon emission and thus minimize air pollution. Ensuring vehicles, compressor and generator are well maintained.

During the decommissioning phases, the impact on air quality can be controllable and reduced to minimum level and minimized dust emissions from material handling sources. Sprinkling water on the top soil can reduce dust emission from the demolishing activities. In the proposed project area, vehicle movements should be limit and maintain and check the vehicles and machineries regularly. Burning the demolished materials and residual wastes must not be allowed.

5.7.2. Mitigation Measure of Impact on Water

During the operation phase, water discharge from the factory site will be treated by silts track tank before discharging. Water effluent levels should be within acceptable limit of the National Environmental Quality (Emissions) Guidelines values. The factory plan has kitchen, canteen and toilet facilities attached in various buildings of the factory. In the kitchen, separated drainage lines are provided to flow wastewater from the activities washing and cooking, etc. And around the compound area of the project area, drainages are also provided and maintain to flow storm water (rain water, snow and surface water). The compound area of the factory is paved with concrete and the drainages are covered and holes are there to flow the storm water. The existing drainage at the project area can be seen in Figure 5-3. Besides, the factory plans to use separate wastewater channels, septic type toilet system. Wastewater from the dining room, canteens and toilet facilities are collected in septic tanks which are attached with sewer treatment plant and the proponent will connect and cooperate with YCDC to be carried out for disposing of these septic tank wastes. To mitigate the impact on water, the drainages around the compound area of the factory have to maintain and clean regularly. Spillage and leakages of oil and grease should also be minimized.

Figure 5-3 Drainage and Septic tank in project area

During the decommissioning phases, appropriate sanitary facilities should be provided for demolishing workers. An accidental spill of fuel and oil should be avoided. Wastes generated from the demolishing activities should not be disposed directly into the drainage channels.

5.7.3. Mitigation Measure of Impact on Soil Contaminate

During the operation phase, the compound area of the factory area will be paved with concrete and hence, contamination due to the oil spillage at this area is insignificant. But refilling fuel must be done with great care for preventing spillage.

During the decommissioning phase, impact on soil can be mitigated by using modernized machineries, these machines would be maintained regularly and isolated maintenance area would be identified. Any accidental spills of fuel, oil or other hazardous waste must be avoided. Construction wastes and demolishing debris should be disposed properly.

5.7.4. Mitigation Measure of Impact on Noise

During the operation phase, the regular maintenance plans for vehicles, machines generators should be provided to mitigate impact on noise. Using modernized low noise machines should be used if possible. Noise impact to employees shall be minimized by providing earmuffs and ear plugs to those working near the noisy machines.

During the decommissioning phases, temporary noise pollution can be controlled by planning regular maintenance for decommissioning vehicles and machines. Moreover, construction and decommissioning activities should not be worked during nighttime.

5.8. MITIGATION MEASURES OF IMPACT ON HUMAN

5.8.1. Mitigation Measures on Fire Hazard

The project proponent has provided fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for fire frightening is also constructed with the capacity of 25,000 gallons at the proposed area. The emergency contact numbers of township and district fire services department must be printed and tagged at easily visible places for fire emergency cases. The emergency fire alarms are installed at the factory for alerting the workers in case of fire. The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases. In addition, the project proponent has plans to provide trainings on firefighting for the workers by a professional or otherwise by sending to training courses. The plan to install fire alarm system and fire-frightening system are mentioned in Figure 5-4.

Figure 5-4 Firefighting plan at Jin Sen Myanmar Bag and Bag's Strings Factory

5.8.2. Mitigation Measure for Occupational Health and Safety

The proposed project has a clinic and a nurse. Medicines and first aid kits are provided in this clinic. Moreover, these medicines and first aid kits are provided for emergency cases of workers. First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for workers. According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers. Personal Protective Equipment (PPEs) like earmuffs, safety gloves, helmets and goggles are provided for each department. To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures. The project proponent must manage the drainage systems of the factory to prevent health risk of the workers.

Figure 5-5 First Aids Photo

5.8.3. Mitigation Measure of Noise Generation

The Occupational Safety and Health Administration (OSHA) have recommended permissible noise exposure limit for industrial workers, which is based on 90 dB (A) for 8 hours exposure a day with 5dB trading rates. The limits are mentioned in Table 5-6. According to OSHA, the maximum allowable noise level for workers is 90 dB (A) for 8 hours exposure a day. Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas, need to provide if actual noise level monitoring results are more than 90 dB (A) at the work site for working time hours for 8 hours.

Table 5-6 Permissible exposure of noise limits

Total Time of Exposure Per Day in Hours	Noise Level dB(A)
8	90
6	92
4	95
3	97
5	100
1	105
½	110
¼	115

5.8.4. Mitigation Measure of Waste Generation

During the operation phase, the project proponent provides separate garbage bins at each building. All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste houses: Non-hazardous Waste Production related house, Hazardous Waste Production related house, Non- Hazardous Waste Non-Production related house and Hazardous Waste Non-Production related house and final wastes will be disposed by using YCDC's service.

Figure 5-6 Waste storage garbage bins

During the decommissioning phase, some of demolished solid wastes must be recycled and the other solid wastes should be stored in dedicated waste storage area in the project site and transferred to YCDC for final disposal.

6. ENVIRONMENTAL MANAGEMENT PROGRAM

6.1. OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

An Environment Management System (EMS) is a framework that helps an organization achieves its environmental goals through consistent review, evaluation, and improvement of its environmental performance. The assumption is that this consistent review and evaluation will identify opportunities for improving and implementing the environmental performance of the organization. The EMS itself does not dictate a level of environmental performance that must be achieved; each organization's EMS is tailored to its own individual objectives and targets.

An EMS encourages an organization to continuously improve its environmental performance. The system follows a repeating cycle the organization first commits to an environmental policy, then uses its policy as a basis for establishing a plan, which sets objectives and targets for improving environmental performance. The next step is implementation. After that, the organization evaluates its environmental performance to see whether the objectives and targets are being met. If targets are not being met, corrective action is taken. The results of this evaluation are then reviewed by top management to see if the EMS is working. Management revisits the environmental policy and sets new targets in a revised plan. The company then implements the revised plan. The cycle repeats, and continuous improvement occurs.

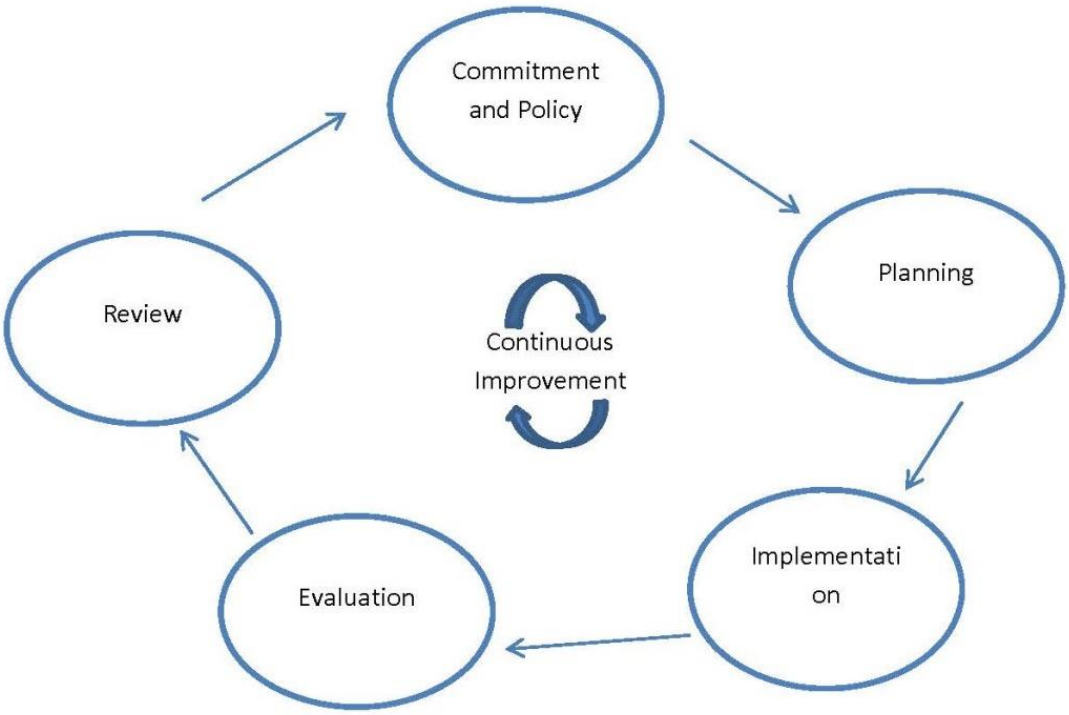


Figure 6-1 Continuous Improvement Circle

- **Commitment and Policy** – Top management commits to environmental improvement and establishes the organization's environmental policy. The policy is the foundation of the EMS.
- **Planning** – An organization first identifies environmental aspects of its operations. Environmental aspects are those items, such as air pollutants or hazardous waste that can

have negative impacts on people and the environment. An organization then determines which aspects are significant by choosing criteria considered most important by the organization. For example, an organization may choose worker health and safety, environmental compliance, and cost as its criteria. Once significant environmental aspects are determined, an organization sets objectives and targets. An objective is an overall environmental goal (e.g., minimize use of chemical X). A target is a detailed, quantified requirement that arises from the objectives (e.g., reduce use of chemical X by 25% by September 1998). The final part of the planning stage is devising an action plan for meeting the targets. This includes designating responsibilities, establishing a schedule, and outlining clearly defined steps to meet the targets.

- **Implementation** – An organization follows through with the action plan using the necessary resources (human, financial, etc.). An important component is employee training and awareness for all employees. Other steps in the implementation stage include documentation, following operating procedures, and setting up internal and external communication lines.
- **Evaluation** – A company monitors its operations to evaluate whether targets are being met. If not, the company takes corrective action.
- **Review** – Top management reviews the results of the evaluation to see if the EMS is working. Management determines whether the original environmental policy is consistent with the organization's values. The plan is then revised to optimize the effectiveness of the EMS. The review stage creates a loop of continuous improvement for a company.

6.1.1. Institutional Requirement

JIN SEN MYANMAR COMPANY LIMITED will manage the development of the proposed project. The project proponent should appoint Health, Safety and Environment (HSE) issues throughout the duration of the project phases. HSE team is responsible for implementation and monitoring of EMP and Environmental Monitoring Plan (EMP) as well as coordination with local authorities and the nearby communities. The HSE Team also makes regular review of EMP to cover all potential impacts, amendments, and modifications.

6.1.2. Responsibilities of the EMP

In order to ensure the sound development and effective implementation of the EMP, it will be necessary to identify and define the responsibilities. The environmental management practices, procedures, and responsibilities are defined herein to get full compliance with the existing environmental policy, laws, rules and regulations of the Republic of the Union of Myanmar. The following entities should be involved in the implementation of this EMP:

JIN SEN MYANMAR COMPANY LIMITED: The proponent will be charged with the responsibility for ensuring that the proposed development has been accomplished in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender specifications, selection of environmentally conscious contractors, and supervision to ensure that the objectives of this EMP are met. The implementation of Environmental Management Plan (EMP) process will prepare and follow up by appointed persons for health, safety, and environmental management under the instruction of management team of JIN SEN MYANMAR COMPANY LIMITED for EMP implementation facilities.

ECD (Yangon Region): The responsibility of ECD is to exercise general supervision and coordinating over all matters relating to the environment and to be instrumental in providing guidance for recognized regulatory frameworks.

Third-Party Environmental Consultant: The environmental consultant will have to ensure that the proposed EMP is up to date and is being followed properly by the proponent. Periodic audits of the EMP will have to be done to ensure that its performance is as expected, by comparing with operating standards so that any corrective actions can be taken.

6.1.3. Structure and Responsibilities for the EMP Development and Implementation

The HSE officer is responsible to the HSE components of the project and on matters relating to the implementation of the EMP throughout operation life. The S&E officer will have responsibilities that include:

- Ensure a monitoring system is in place to track and report all health, safety, and environmental incidents;
- Carry out a thorough initial site inspection of environmental controls prior to work commencement;
- Record and provide a written report to the General Manager and production team of non-conformances with the EMP and require the HR supervisor to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

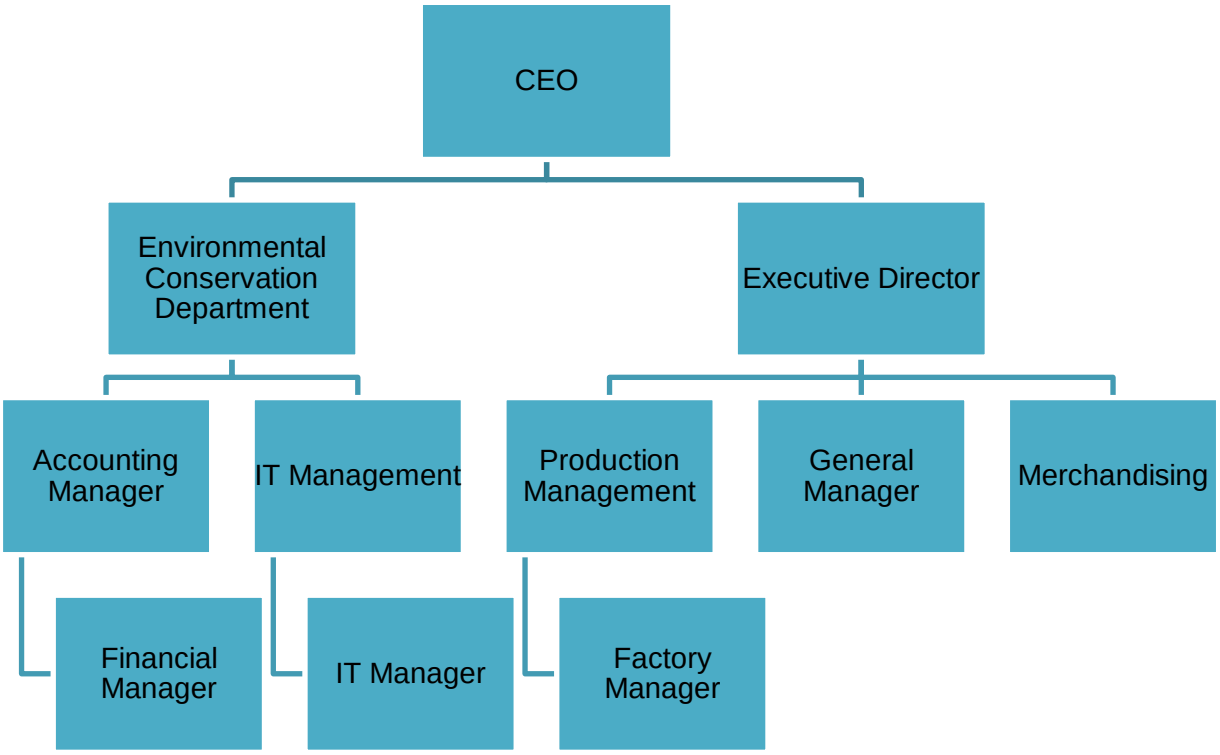


Figure 6-2 Organization Structure of Environmental Management

6.2. ENVIRONMENTAL MANAGEMENT PLAN

The EMP for JIN SEN MYANMAR CO., LTD. has been prepared to address potential issues based upon discussion with factory management, workers, local community view, and stakeholder

consultation and from the site visit of experts. The EMP is additional to and compliments the factory's safety management system. The following environmental issues that require environmental management plans based upon the potential impacts of activities by JIN SEN MYANMAR CO., LTD. are as follows:

6.2.1. Air Pollution/Dust Management Plan

Objective	➢ To minimize the adverse impact to air quality caused by stack gas emission from generator and also dust management generated from vehicular movement. ➢ To comply with relevant government rules	
Relevant Government Law and Rule	➢ National Environmental Quality (Emission) Guideline 2015, ➢ Motor Vehicles Act (2015), ➢ Boiler Law (2015)	
Time Frame	➢ Entire life spans of proposed project operation	
Management Action	➢ Must be establish plants and garden around the proposed project to reduce carbon emission ➢ Should be prohibited burning of waste material at the proposed project site ➢ Must be control air pollution, the vehicles, generators and machineries have to check and maintain regularly. ➢ The factory should use chimney for generator through which the flue gas is emitted for reducing the impact of stack emission on environment. ➢ Must be ensuring vehicles, compressors and generators are well maintained.	
Monitoring and Reporting	Frequency	Biannually
	Monitoring Point	Outdoor of proposed project
	Parameters	$PM_{2.5}$, PM_{10}, SO_2, NO_2, CO
Estimated Cost	1000000 Kyats per year	
Responsible Person	Management of the proposed factory; ▪ Head of maintenance: Total implementation of above of air pollution management plan ▪ Production manager: Air quality in the production area is good enough ▪ Manager: To hire organization/ independent third-party analysing air quality	

	▪ EHS officer: Monitor the cleanness o1f ambient air quality in surrounding of the factory

6.2.2. **Wastewater Management Plan**

Objective	➢ To implementation plan for the management of liquid waste from collection, through treatment and resource recovery, to residual disposal	
Relevant Government Law and Rule	➢ Yangon City Development Committee Law (2018), National Environmental Quality (Emission) Guidelines (2015), Underground Water Act	
Time Frame	➢ Entire life spans of proposed project	
Management Action	➢ Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.	
Monitoring and Reporting	Frequency	Biannually
	Parameters	pH, Turbidity, Conductivity, Iron, Sulphate, TSS, TDS, Manganese, COD, BOD, Cyanide, Copper, Zinc, Carbonate
	Proper maintenance of drainage and sewerage system will be conducted periodically	
Estimated Cost	500000 Kyats per year	
Responsible Person	Manager: To hire organization/ Independent third-party testing wastewater quality EHS officer: Monitor the condition of factory's drainage and sewerage system	

6.2.3. **Solid waste management Plan**

Objective	➢ To assess the activities involved for the proposed and determine the type, nature and estimated volumes of waste to be generated ➢ To identify any potential environmental impacts from the generation of waste at the site
Relevant Government Law and Rule	➢ Yangon City Development Committee Law (2018), National Waste Management Strategy and Action Plan (Draft 2018)
Time Frame	➢ Entire life spans of proposed project

Management Action	➢ Must be provides separate garbage bins at each building. ➢ All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area ➢ Final wastes should be disposed by using YCDC's service.
Monitoring and Reporting	➢ Daily waste has to be collected and handover to YCDC waste collector ➢ The inventory record of waste disposal will be maintained as proof for proper management as designed
Estimated Cost	50000 Kyats per month
Responsible Person	Manager (HR) ▪ Responsible for overall site cleanliness and waste management ▪ Regular waste collection to minimize excessive waste storage

6.2.4. **Noise Management Plan**

Objective	➢ To maintain low noise exposures, such that human health and well-being are protected. The specific objectives of noise management are to develop criteria for the maximum safe noise exposure levels, and to promote noise assessment and control as part of environmental health programmes.	
Relevant Government Law and Rule	➢ National Environmental Quality (Emission) Guideline 2015	
Time Frame	➢ Throughout the project life	
Management Action	➢ Building noise insulated generator room and ensure satisfactory maintenance of relevant equipment ➢ Prohibit speed limit to track and vehicles at the transportation route. ➢ Provide sufficient personal protective equipment (PPE) at the work place ➢ All the related personnel will be provided proper trainings about the relevant issues and ensure PPE wear during working in noisy area.	
Monitoring and Reporting	Frequency	Biannually
	Monitoring Point	Two points in operation area (especially Foam cutting and warehouse)
	Parameters	Sound Decibel
Estimated Cost	500000 Kyats per year	

Responsible Person	HSE Manager or Environmental Management Team of Glory Home (Myanmar) Limited

6.2.5. Occupational Health and Safety Management Plan

Objective	➢ To provide a broad framework for improving standards of workplace health and safety to reduce work-related injury and illness.
Relevant Government Law and Rule	➢ Public Health Law (1972), Prevention and Control of Communicable Diseases Law 1995 (Amendment 2011), Occupational Safety and Health Law (2019)
Time Frame	➢ Entire life spans of proposed project
Management Action	➢ First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for emergency cases of workers. ➢ According to the observed light intensity values, the proponent should provide sufficient lighting for workers for safe working and reducing optical problems of the workers. ➢ Personal Protective Equipment (PPE) like earmuffs, safety gloves, helmets and goggles are provided for each department. ➢ To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures. ➢ Manage the drainage systems of the factory to prevent health risk of the workers. ➢ The maximum allowable noise level for workers is 90dB(A) for 8hours exposure a day. Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas.
Monitoring and Reporting	➢ Weekly check fire extinguishers and water hydrant in position ➢ Daily inspect that all fire exist are open ➢ Servicing fire extinguisher and records accidents
Estimated Cost	1000000 Kyats per year
Responsible Person	HSE Manager, Operation Manager or Environmental Management Team of Glory Home (Myanmar) Limited

6.2.6. **Energy Management Plan**

Objectives:	➢ To improve energy efficiency, reduce cost, optimize capital investment, reduce environmental and greenhouse gas emissions, and conserve natural resources
Relevant government law and rule	➢ National Energy Management Committee (Myanmar Energy Master Plan 2015)
Time Frame	Once in a year throughout the factory life
Management Action	➢ Installation of timers and thermostats to control heating and cooling ➢ Energy saving light installed in different area of the factory for saving energy ➢ Used of energy saving devices must be installed ➢ Ensure that good housekeeping measures such as turning off equipment and lights when not in use
Monitoring & Reporting	Conduct annual energy efficiency of adult to find out the scope for energy saving
Estimated cost	Approximately 1000000 Kyats per year
Responsibility	Manager ➢ To arrange energy, audit technical personnel ➢ To monitor and record electricity consumption, other related energy issues and take necessary actions if any problem arises

6.2.7. **Fire Management Plan**

Objective	➢ To ensure that fire control practices are implemented on site to minimise the risk of fire from site operations and bush fires
Relevant Government Law and Rule	➢ Myanmar Fire Brigade Law 2015
Time Frame	➢ Entire life spans of proposed project operation
Management Action	➢ Must be provide fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases. ➢ Must be indicated the emergency exit and assembly point in public area. ➢ Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for fire frightening. ➢ The emergency fire alarms are installed at the factory for alerting the workers in case of fire.

	➢ The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases.
Monitoring and Reporting	To check monthly Visual inspection, Firefighting equipment (fire extinguishers, firefighting hose, portable fire pumps, fire hose reels, fire monitor alert system) and firefighting tanks.
Estimated Cost	1200000 Kyats per year
Responsible Person	HSE Manager, Operation Manager or Environmental Management Team of Glory Home (Myanmar) Limited

6.2.8. **Disaster Management Plan**

Objectives:	➢ To reduce the harmful effects of all hazards, including disasters. The World Health Organization defines an emergency as the state in which normal procedures are interrupted, and immediate measures (management) need to be taken to prevent it from becoming a disaster, which is even harder to recover from.
Relevant government law and rule	➢ Natural Disaster Management Law (2013)
Time Frame	➢ Entire life spans of the factory operation
Management Action	➢ The factory management has taken proper measures to handle any emergency situation like fire, earthquake, flood and storm ➢ Provision and inspection of firefighting equipment and fire hydrant system in all the sections ➢ A detail evaluation plan (fire exist, emergency exit door, etc.) is established and communicated with workers ➢ Periodic inspection of safety relief valve provided with pressure vessels and equipment, preventive maintenance; aware the workers about electric shock by necessary training. ➢ Regular fire drill operation is conducted ➢ Workers are informed about what to do in earthquake like stay in a safe place such as under table of desk, not to try move outside during earthquake, workers who will be outside during earthquake shall remain stay out of the building, trees, lump post, etc. Other relevant safety instruction of emergency situation it informed to workers by training ➢ Workers are aware of dangers from physical hazards such as obstacles covered by floodwater (storm debris, drainage opening, ground erosion) and from displaced reptiles (Snake) or other animals. ➢ A medical team has been prepared for primary treatment (First Aid) ➢ Prepare an emergency contact directory consisting contact numbers of nearest fire service, local police station, hospitals, etc. and display it in a place that everybody can see it easy.

	➢ Build a safety committee which from firefighting team, rescue team. The committee arrange a meeting every month to discuss about safety management ➢ Ensure proper training of the employees about the disaster management, fire safety as well as occupational health and safety
Monitoring & Reporting	Weekly check fire extinguishers and water hydrant in position Daily inspect that all fire exist are open Servicing fire extinguisher and records accidents,
Estimated cost	Approximately 1500000 Kyats per year
Responsibility	Manager and EHS officer ➢ Arrange firefighting training after every 3 months ➢ Responsible for fire control and response ➢ Monitoring daily danger warning and bans

6.2.9. **Crisis Situation Management Plan**

Objectives:	➢ To reduce the harmful effects of all crisis situations. The World Health Organization defined an emergency as the state in which normal procedures are interrupted, and immediate measures (management) need to be taken to prevent it from becoming accidental or crisis issues, which are even harder to recover from.
Relevant government law and rule	➢ Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011), Myanmar Fire Brigade Law (2015), Occupational Safety and Health Law (2019), Social Security Law (2012)
Time Frame	➢ Entire life spans of the factory
Management Action	➢ The factory management has taken appropriate escape ways to handle any emergency situations like crisis, political cases and other criminal cases. ➢ Strictly Follow the prevention measures of COVID-19 during pandemic periods ➢ Prepare the factory from losing of unexpected adverse offensive and move all easily flammable materials are in or not in free crisis area ➢ Build a safety committee which from firefighting team, rescue team. The committee arrange a meeting every week to discuss about safety management of the factory within crisis periods. ➢ Ensure proper training of the employees about the crisis management, fire safety as well as l health and safety.
Monitoring & Reporting	Daily check fire fighting equipment and water hydrant in position Daily care the health of workers in order not to spread the infection Ready position in fire fighting equipment, COVID-19 preventive measures and records accidents,
Estimated cost	Approximately 1500000 Kyats per year
Responsibility	Manager, OHS team, and fire fighting officer.

6.3. ENVIRONMENTAL MONITORING SCHEDULE AND REPORTING

The EMoP cell members responsible may conduct daily, weekly, or monthly general inspections of the project area and facilities. The objectives are to identify non-compliances to EMoP. Table 6-1 is provided the environmental monitoring schedule for JIN SEN MYANMAR COMPANY LIMITED. The factory submits monitoring report to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP,

Table 6-1 Environmental monitoring schedule for JIN SEN MYANMAR COMPANY LIMITED

Issues	Parameter	Frequency	Area to be monitored	Monitoring coast	Responsible Organization
Operation Phase					
Common	Monitoring of mitigation measures	Yearly (3 years after operation)	The project	2500000 Kyats	Environmental Management Team's Jin Sen Myanmar Co., Ltd.
Air quality	SO2, NO2, CO, CO2, PM2.5, PM10	Biannually monitoring and reporting to ECD (first 3 years after operation)	Outdoor of proposed project	500000 Kyats	Environmental Management Team's Jin Sen Myanmar Co., Ltd.
Waste Generation	Solid waste, Liquid waste and Hazardous waste	Weekly	Recycle house and temporary storage area at the factory office	1000000 Kyats	Environmental Management Team's Jin Sen Myanmar Co., Ltd.
Fire Hazardous	Visual inspection, firefighting equipment	Monthly	At the factory	500000 Kyats	Environmental Management Team's Jin Sen Myanmar Co., Ltd.
Light intensity	Illuminance	Monthly	At the production line (especially cutting and QC)	500000 Kyats	Environmental Management Team's Jin Sen Myanmar Co., Ltd.
Decommissioning Phase					
Air quality	SO2, NO2, CO, CO2, PM2.5, PM10	One time during this phase	One point in the production area	1000000 Kyats	Land Owner
Noise	Noise level in decibel (dBA)	One time during this phase	One points in demolishing area	1000000 Kyats	Land Owner
Rehabilitation	Recovering and Revegetation		All decommissioning area	Depends on ability and situation	Land Owner

6.4. CORPORATE SOCIAL RESPONSIBILITY (CSR) PLAN

The CSR activities have the objective to uplift quality of life and gain favorable relations from all communities in the operation area. The CSR program for Jin Sen Myanmar Company Limited consists of three main sectors; Health, Education and Community Development Sector. CSR activities must be conduct in compliance with MIC's guideline for implementation of CSR program.

JIN SEN MYANMAR COMPANY LIMITED will contribute 2% of our Net Profit to social welfare activities that will help society and country of Myanmar. Our social welfare activities shall include training of our employees such as on job training to be more qualified, language training on weekends with experienced teachers and providing necessary healthcare such as medical checkups and giving proper medical knowledge about deceases and its prevention. Part of our CSR activity such as donations will also contribute to public school around our factory Table 6-2.

Table 6-2 CSR plan at JIN SEN MYANMAR COMPANY LIMITED

No	Particle	Contribution
1	Public school	0.5%
2	Non-profit training	1
3	Employees healthcare	0.5%

6.4.1. Public School

We will contribute 0.5% of our net profit to the public school near the factory to be a part of creating the better community. We will also work together with the school to understand more about the needs and we will also ensure that our contributions will be used in the most effective and efficient way for the society.

6.4.2. Non-profit Training

We will contribute 1% of our net profit for the trainings of our Employees. Our trainings include job-related trainings, language trainings and safety trainings. The main objective of our trainings are that we want our Bag and Bag's Strings with their work but also improving their other skills such as language and promoting knowledge about safety measures and occupational health employees to be not only become more productive and more qualified.

6.4.3. Healthcare

One of our main concern is the well-being of our employees. We will contribute 0.5% of our net profit for the healthcare which includes medical checkup for the employees and providing health education to our workers.

6.5. BUDGET PLAN FOR ENVIRONMENTAL MANAGEMENT AND MONITORING

This section describes the budget plans for the environmental management and environmental monitoring by the project proponent. On the other hand, JIN SEN MYANMAR COMPANY LIMITED will take necessary environmental mitigation measures and its expenses for the environmental management not only at the construction and operation phases but also at the closing phase in accordance with their responsibility for the studies of recommendation.

The following table shows the expenditures for the implementation of Environmental Management Plan for operation phase annually. Estimation cost for EMP implementation is presented in Table 6-3.

Table 6-3 Cost estimation for EMP implementation

No	Item	Frequency/Times	Cost (USD)
Mitigation Plan			
1	Maintenance of air ventilation system	Once per year	200 per year
2	Grass plantation within the area of factory compound	Once per three months	70 per three months
3	Solid waste disposal	12	1000 per year
4	Purchase of Personal Protective Equipment (PPE)	Once per half a year	150 per half a year
5	Medical Check-up and Health Insurances	Once per year	500 per year
Emergency Preparedness			
1	Fire extinguisher	Once per month	300 per month
2	Fire alarm system	Once per month	
3	First Aid Fits	Once per month	
Monitoring Plan			
1	Air Quality	2	1000 per year
2	Water Quality	2	200 per year
3	Noise level	2	300 per year
4	Environmental compliance auditing	1	1,000 lump sum

6.6. GRIEVANCE REDRESS MECHANISM (GRM)

People who live near the project affected area or stakeholders can complain about the problems and impacts that they suffer; they can complain though Grievance Committee, which includes the responsible persons of JIN SEN MYANMAR COMPANY LIMITED representative from Kyi Su Industrial Zone and representative from General Administration Department (Hlaing Thar Yar Township). Small issues will be solved at the Grievance Committee stage and other unsolved problems will be submitted to higher responsible authorities and finally the responsible person decided by the court in legal terms. The following diagram (Figure 6-3) show steps of Grievance Redress Mechanism of Proposed Factory Project.

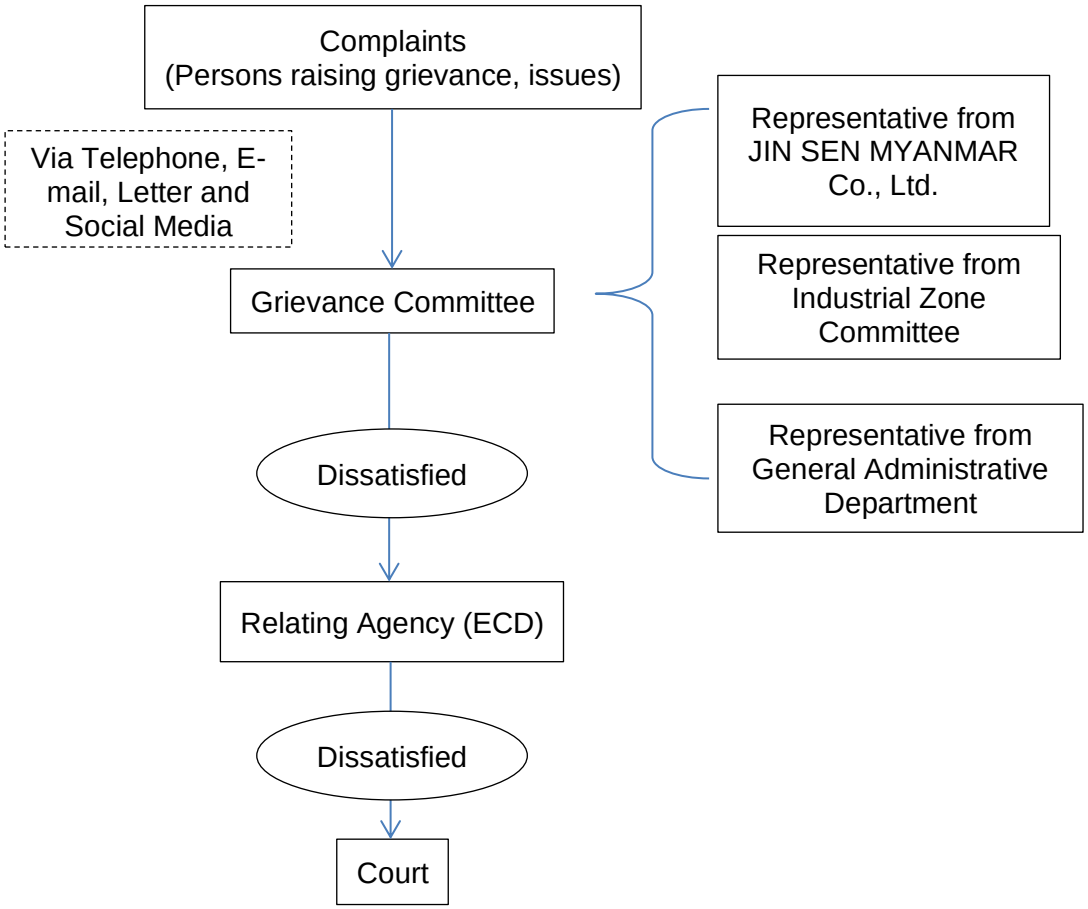


Figure 6-3 Grievance Redress Mechanism flow diagram

7. PUBLIC CONSULTATION

7.1. PUBLIC CONSULTATION PROCESS

This chapter presenting the results of public consultation and information disclosure conducted for the JIN SEN MYANMAR COMPANY LIMITED. Public participation can be considered as the required element of the EMP process. In this study various stakeholder's participation were made.

Public consultation during preparation of EMP report was conducted on 9, July 2020, following the EIA procedure.

The project's stakeholders in this category are key officials or representatives of the regional and local authorities who have direct responsibilities for the administration of the EMP process for environmental and social clearance and issuing operation permits for proposed development projects.

For this factory, relevant key offices at the national level are Environmental Conservation Department (ECD) and Industry Supervision and Inspection Department.

Relevant key office at the regional level is Yangon City Development Committee (YCDC), General Administrative Department, Fire Department, Factories and General Labor Law Inspection Department, Public Health Department, Industrial Supervision, and Inspection Department.

Public consultation carried out after the presentation on the project, followed by questions, answers and discussion. Myat Ko Ko presented the EMP studies, findings and assessments of proposed projects and opened the question-and-answer section. Summary of public consultation meeting is presenting in Figure 7-1 and mentioning the consultation meeting photo.

Table 7-1 Summary of public consultation meeting

Time and Date	Thursday,9 July 2020 10:30-12:30
Venue	Sky Hotel Meeting Room, Hlaing Thar Yar Township, Yangon Region.
Agenda	Presentation on the Background Information of Project, Project Description, Impact Assessment, Environmental Mitigation Environmental Management Plan and Monitoring Plan Received and Answer from feedback of participants

7.2. RECOMMEND SUGGESTION AND COMMENT

After the presentation, the floor opened for questions and answers. There is no suggestion and comment for presentation and EMP draft report, because the project is sample manufacturing of Bag and Bag's Strings (CMP basic). In addition,

Suggestion; U Myint Soe; Assistant supervisor (Environmental Conservation and Cleaning Department-Industrial Section) YCDC

- To compliance with YCDC procedure for solid waste management and disposed process
- To implement the sufficient septic tank design for workers

Suggestion; U Than Htike Aung; Public Health Department

- Factory workers shall be aware for using the person protective equipment
- To provide long time care of medical checking for workers
- To provide the medicines for aliment and must be enough the medicines for injuries
- To provide the PPE to the employees who work in that factory and
- To provide the nurse who is not only reality nurse but also got the experience in concerning filed.

Suggestion; U Kyaw Lwin Htay; YCDC

- To provide the waste tank for waste water and some used oils
- To plant some plants in this factory and
- To make when they wasted at that time to get a bail

U Myat Ko Ko (Associate Environmental Specialist, Myanwei Environmental Solutions Co., Ltd)

(Closing Speech)

We will explain the detail of impact assessment and mitigation plan of factory in the nest meeting. I do expect you all to discuss candidly. Thanks all the attended the meeting and for your suggestion.

Figure 7-1 Public Consultation Meeting

8. CONCLUSION & RECOMMENTATION

8.1. CONCLUSION

Environmental Management Plan (EMP) has been prepared for JIN SEN MYANMAR COMPANY LIMITED factory is located at Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon region. The main objective of the study is focused specially on the required environmental management measures or creating environmentally friendly workplace. An EMP has been carried out for the factory according to the requirement of the proponent as it has been made for Bag and Bag's Strings product manufacturing factory.

Thus, the factory management can take proper mitigation steps against adverse environmental impacts by following this EMP. The necessary measure to mitigate impact regarding different environmental parameter such as air, water, waste, noise has been proposed in this EMP.

However, all necessary implementation measures to mitigate adverse environmental, health and safety impacts have already been taken to meet National Environmental Quality (Emission) Guideline (2015). On the other, the factory has positive impacts in terms of environmental in the operation phase. Further, this will indirectly help in boosting up the national economic condition through foreign investment. An outline of EMP has been given in the present report to mitigate/enhance the impacts, which occurs during operation phase of the factory.

The effective implementation of the mitigation measures proposed will ensure towards good environmental management within the proposed project area. Furthermore, the environmental monitoring plan prepared as part of the EMP will provide adequate opportunities to address any residual impacts during the operation phase.

In conclusion, it has been figured out that, the proposed Bag and Bag's Strings factory is going to generate local employment opportunities and enhance capabilities and working skills of employees. Consequently, their socio-economic standard is expected to be improved and undertaking corporate social responsibilities (CSR) as recommended. The study further concluded that positive impacts will be of immense benefit to the local community and national development as well.

8.2. RECOMMENTATION

This is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to dispose according to YCDC rules and regulation
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.
- Daily, monthly and annual action plan shall be formulated based on this EMP and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third party environment audit.

- Abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EMP report. Once concerned authorities approve EMP, effective implementation of EMP by the project proponent is essential. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

9. REFERENCE

[1] General Administrative Department (Hlaing Thar Yar Township), Hlaing Thar Yar Township Data (2013).

[2] Hla Hla Aung, “Potential Seismicity of Yangon Region (Geological Approach), “Yangon Surface Displacement as Detected by Insar Time Series Analysis” July 2011.

[3] Ministry of Natural Resources and Environmental Conversation (MONREC), “Environmental Impact Assessment Procedure” December 2015.

[4] Ministry of Natural Resources and Environmental Conversation (MONREC), “National Environmental Quality (Emission) Guidelines’’ December 2015.

APPENDIX A
Company Document's JIN SEN MYANMAR COMPANY LIMITED

Form (5-B)

THE REPUBLIC OF THE UNION OF MYANMAR

Yangon Region Investment Committee

ENDORSEMENT

Endorsement No. YGN –320/2019 Date 27 December 2019

This endorsement is issued by Yangon Region Investment Committee in accordance with Section 25(d) of the Myanmar Investment Law–

(1) **Name of Investor** MR. XIAO XIANGWU

(2) **Citizenship** CHINESE

(3) **Residence Address** CHASHAN TOWN, SUBIAN INDUSTRIAL AREA, DONGGUAN CITY, GUANGDONG PROVINCE, THE PEOPLE'S REPUBLIC OF CHINA

(4) **Name and Address of Principal Organization** HONG KONG JIN SEN LTD, RM 1502–A, EASY COMM BLDG, 253–261, HENNESSY RD, WANCHAI, HONG KONG

(5) **Place of Incorporation** HONG KONG

(6) Type of business MANUFACTURING OF VARIOUS KINDS OF BAGS AND BAG'S STRINGS ON (CMP) BASIS

(7) **Place(s) of investment Project** PLOT NO. (154,171), MYAY TAING NO. PART (5), SETHMU MYO, HLAING THAR YAR, TOWNSHIP, YANGON REGION

(8) **Foreign Capital Amount** US$ 0.936 MILLION

(9) **Period for Foreign Capital to be brought in** WITHIN 1 YEAR FROM THE DATE OF ISSUANCE OF ENDORSEMENT

(10) **Total Amount of Capital (Kyat)** EQUIVALENT IN KYAT OF US$ 0.936 MILLION

(11) **Construction/ Preparation Period** 1 YEAR

(12) **Validity of Endorsement** 30 YEARS

(13) **Form of Investment** WHOLLY FOREIGN OWNED

(14) **Name of Company Incorporated in Myanmar** JIN SEN MYANMAR COMPANY LIMITED

YRIC 3202019

27/12/2019

(Phyo Min Thein)

Chairman

YANGON REGION INVESTMENT COMMITTEE YRIC

ပုံစံ (၅-ခ)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်တိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ

အတည်ပြုမိန့်

အတည်ပြုမိန့်အမှတ် ရကတ-၃၂၀/၂၀၂၀ ၂၀၁၉ ခုနှစ် ဒီဇင်ဘာလ ၂၇ ရက်

ရန်ကုန်တိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှု ကော်မတီသည် မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ ပုဒ်မ-၂၅(ဃ) အရ ဤအတည်ပြုမိန့်ကိုထုတ်ပေးလိုက်သည် -

(၁) ရင်းနှီးမြှုပ်နှံသူ/ကမကထပြုသူအမည် MR. XIAO XIANGWU

(၂) နိုင်ငံသား CHINESE

(၃) နေရပ်လိပ်စာ CHASHAN TOWN, SUBIAN INDUSTRIAL AREA, DONGGUAN CITY, GUANGDONG PROVINCE, THE PEOPLE'S REPUBLIC OF CHINA

(၄) ပင်မအဖွဲ့အစည်းအမည်နှင့်လိပ်စာ HONG KONG JIN SEN LTD, RM 1502-A, EASY COMM BLDG, 253-261, HENNESSY RD, WANCHAI, HONG KONG

(၅) ဖွဲ့စည်းရာအရပ် HONG KONG

(၆) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား CMP စနစ်ဖြင့် အိတ်နှင့် အိတ်ကြိုး အမျိုးမျိုး ချုပ်လုပ်ခြင်း လုပ်ငန်း

(၇) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) မြေကွက်အမှတ်(၁၅၄၊ ၁၇၁)၊ မြေတိုင်းရပ်ကွက်အမှတ်အပိုင်း(၅)၊ စက်မှုမြို့၊ လှိုင်သာယာမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

(၈) နိုင်ငံခြားမတည်ငွေရင်း ပမာဏ အမေရိကန်ဒေါ်လာ ၀.၉၃၆ သန်း

(၉) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ အတည်ပြုမိန့် ရရှိသည့် နေ့မှ ၁ နှစ်အတွင်း

(၁၀) စုစုပေါင်း မတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၀.၉၃၆ သန်း နှင့် ညီမျှသော

(၁၁) တည်ဆောက်မှုကာလ ၁ နှစ်

(၁၂) ရင်းနှီးမြှုပ်နှံမှုခွင့်ပြုသည့်သက်တမ်း ၃၀ နှစ်

(၁၃) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ရာခိုင်နှုန်းပြည့်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု

(၁၄) မြန်မာနိုင်ငံတွင်ဖွဲ့စည်းမည့်ကုမ္ပဏီအမည် JIN SEN MYANMAR COMPANY LIMITED

YRIC 320201 9

(ဖြိုးမင်းသိန်း)

ဥက္ကဋ္ဌ

Confidential

THE REPUBLIC OF THE UNION OF MYANMAR
YANGON REGION INVESTMENT COMMITTEE
Plot No. 49, Seinlae May Street,
Kabar Aye Pagoda Road, Yankin Township, Yangon
Tel : 01- 658263
Fax: 01- 658264

Our ref : YRIC -1 /E-320/2019(1410-a)

Date : 27 December 2019

Subject: **Decision of the Yangon Region Investment Committee regarding an Endorsement for manufacturing of various kinds of bags and bag's strings on (CMP) basis under the name of Jin Sen Myanmar Company Limited**

Reference: Jin Sen Myanmar Company Limited's letter dated 17/12/2019

1. The Yangon Region Investment Committee, at its (21/2019) meeting held on 18/12/2019, approved the Endorsement for investment for manufacturing of various kinds of bags and bag's strings on (CMP) basis under the name of Jin Sen Myanmar Company Limited summited by Hong Kong Jin Sen Ltd (100%) from the Hong Kong as a wholly foreign owned investment in accordance with the Myanmar Investment Law and Rules.

2. The terms and conditions of the Endorsement are as follows:

   (a) The term of an Endorsed project shall be thirty (30) years commencing from the date of the issuance of the Endorsement by the Yangon Region Investment Committee.

   (b) The term of the land and building Lease Agreement shall be an initial ten (10) years commencing from the date of the agreement between Daw Li Shin Phein (Lessors) and Jin Sen Myanmar Company Limited (Lessee) and shall be extendable for a period of ten (10) years, and a further consecutive period of ten (10) years by mutual agreement between the Lessor and the Lessee subject to the approval of the Yangon Region Investment Committee.

(c) The annual rent for land and building shall be Kyats 60 million (Kyats sixty million only) for the total area of the land measuring 1.429 acres.

(d) Jin Sen Myanmar Company Limited may submit an application form for the right to use land under Chapter XII and exemptions and reliefs under Sections 75, 77 and 78 of the Chapter XVIII of Myanmar Investment Law.

(e) Jin Sen Myanmar Company Limited shall use its best efforts to achieve a timely realization of the work stated in the Endorsement application.

(f) Jin Sen Myanmar Company Limited shall obey and respect the responsibilities of investors under Section 65 of Myanmar Investment Law and Chapter XX of Myanmar Investment Rules.

(g) Jin Sen Myanmar Company Limited shall carry out of prevention, mitigation and monitoring of significant environmental impacts according to the type of investment activities in accordance with the relevant laws, rules, regulations and procedures.

(h) Jin Sen Myanmar Company Limited shall abide by the FireServices Department's rules, regulations, directives and instructions. Moreover, Jin Sen Myanmar Company Limited shall undertake fire prevention measure such as the appropriate placement of water storage tank, fire hooks, sand bags, and fire extinguishers , and training will be provided to all employees regarding the use of fire fighting equipment. Jin Sen Myanmar Company Limited shall also appoint a specific individual who shall be called the fire Safety Officer (FSO) who shall be designated responsible for on-site safety and coordination within the organization.

(i) Jin Sen Myanmar Company Limited shall submit to the Myanmar Investment Commission any sublease,mortgage, transfer of shares

or transfer of the business to any person during the investment period in accordance with Section 72 of Myanmar Investment Law and Rule 191 of Myanmar Investment Rules.

(j) Jin Sen Myanmar Company Limited shall submit an annual report in the prescribed form to the Myanmar Investment Commission within three months of the end of the financial year in accordance with Rule 196 of Myanmar Investment Rules and shall disclose a summary of the report on its website or the Myanmar Investment Commission's website.

(k) Jin Sen Myanmar Company Limited must, during the operation period under the Endorsement of the Yangon Region Investment Committee, submit its operating report quarterly in the prescribed form in accordance with Rule 197 of Myanmar Investment Rules.

3. Jin Sen Myanmar Company Limited shall carry out in accordance with the laws, regulations and stipulations of relevant Union Ministries, governmental department and governmental organizations the obtaining of any licence, permit or registration as per Section 65(d) of Myanmar Investment Law.

4. Jin Sen Myanmar Company Limited shall submit five (5) copies of all approvals, licences, permits and similar authorizations relevant to the initial implementation of the investment and Lease Agreement to the Yangon Region Investment Committee.

(Phyo Min Thein)

Chairman

Jin Sen Myanmar Company Limited

cc: 1. The Office of the Union Government

2. Ministry of Home Affairs

3. Ministry of office of the Union Government
4. Ministry of Natural Resources and Environmental Conservation
5. Ministry of Labour, Immigration and Population
6. Ministry of Commerce
7. Ministry of Planning, Finance and Industry
8. Ministry of Investment,Foreign Economic Relations
9. Central Bank of Myanmar
10. Office of the Myanmar Investment Commission
11. Chairman, CMP Enterprises Supervision Committee
12. Director General, Department of Environmental Conservation
13. Director General, Directorate of Labour
14. Director General, Department of Immigration
15. Director General, Directorate of Industrial Supervision and Inspection
16. Director General, Department of Trade
17. Director General, National Archives Department
18. Director General, Customs Department
19. Director General, Internal Revenue Department
20. Director General, Directorate of Investment and Company Administration
21. Monitoring and Supervision Division, Directorate of Investment and Company Administration

APPENDIX B
Transitional Consultant Registration Certificate

THE REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

Environmental Conservation Department

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 00068 Date 24 MAY 2019

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

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို ထုတ်ပေးလိုက်သည်။)

(a)	Name of Organization (အဖွဲ့အစည်းအမည်)	Myanwei Consulting Co., Ltd.
(b)	Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏အမည်)	U Nyan Lynn Aung
(c)	Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏နိုင်ငံသား)	Myanmar
(d)	Identity Card /Passport Number of the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်)	12/Sakhana(N)056196
(e)	Address of organization (ဆက်သွယ်ရန်လိပ်စာ)	No. 28, Myay nu street, Sanchaung Township, Yangon, Myanmar. Mobile phone: 09440251888 E mail: ceo@myanweiconsulting.com
(f)	Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Organization
(g)	Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 December 2019

Director General

Environmental Conservation Department

Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting,
2. Land use,
3. Legal analysis,
4. Geology and soil,
5. Occupational Safety and Health,
6. Public Health

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

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

REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 10048 Date

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၅၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a)	Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	U Lin Htet Sein
(b)	Citizenship (နိုင်ငံသား)	Myanmar
(c)	Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	7/ Tha Ka Na (N) 101377
(d)	Address (ဆက်သွယ်ရန်လိပ်စာ)	No.54, Room No.704, Waizayantar Tower, Waizayantar Road, Thingangyun Township, Yangon. lin.tbs@gmail.com , 09 421137569
(e)	Organization (အဖွဲ့အစည်း)	Total Business Solution Co., Ltd.
(f)	Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g)	Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။
17.10.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Geology and Soil

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉)
ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

APPENDIX C
Mornitoring Result

Light Result

MYANWEI ENVIRONMENTAL SOLUTIONS
Plot No. (36,38), Room No.9A, 9th floor, Grand Myay Nu Condominium, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.
Office: (+95)9775405118, 9792528877, 9449251888; Website: www.myanweiconsulting.com

Project Name:	Jin Sen Myanmar Company Limited
Project Location:	Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region.
Sampling Date:	17 June, 2020
Sampling Time:	1:00 pm to 4:00 pm
Sampling Condition:	-
Sampling By:	Myanwei Environmental Solution Company Limited.

Instrument	Type	Sampling Rate	Location
Uni-T (Luminometer)	UT380 Series	100 times/second	16°53'37.75"N 96°2'20.12"E

No	Measure area	Unit	Result	Standard	Remark
1	Warehouse	Lux	214	600	Below
2	Cutting Area	Lux	815	600	Above
3	Sewing Area	Lux	777	600	Above
4	Inspection Area	Lux	940	900	Above
5	Packing	Lux	956	600	Above

IESNA Lighting Handbook

Area / Task / Process	Illuminance levels (lux)
Exterior calculating, walkways, stores, main entrances and exit roads, car parking, internal factory roads, etc.	20-50
Boiler house, transformer yards, furnace rooms, entrances, corridors, stairs, etc.	70-100
Calculation area in industry, stores, stock rooms and canteen.	100-150
Coarse Work	200-300
Medium work	300-500
Fine Work	500-1500
Very fine minute and precise work	1500-3000

Department	Type of Light	Wattage of Light	Lux Level
Fabric store	Fluorescent tube light	40 W	300
Sewing floor	LED tube light	20 W (T8)	400
Cutting floor	LED tube light	22 W (T8)	1000
Finishing	LED tube light	28 W (T8)	600
Inspection points	LED tube light	28 W (T8)	900 (except 1500 at

			audit tables)
Sampling	LED tube light	22 W (T8)	500
Office areas	Fluorescent tube light	36 W (T)	300

Noise result

MYANWEI
ENVIRONMENTAL SOLUTIONS
Plot No. (36,38), Room No.9A, 9th floor, Grand Myay Nu Condominium, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar. Office: (+95)9775405118, 979258677, 944925188; Website: www.myanweiconsulting.com

Project Name:	Jin Sen Myanmar Company Limited.
Project Location:	Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region.
Sampling Date:	17 June, 2020
Sampling Time:	1:00 pm To 4:00 pm
Sampling Condition:	-
Sampling By:	Myanwei Environmental Solution Company Limited.

Instrument	Type	Sampling Rate	Location
Digital Sound Level Meter	GM 1356 USB	30 -130 dB	16°53'37.75"N 96°02'20.12"E

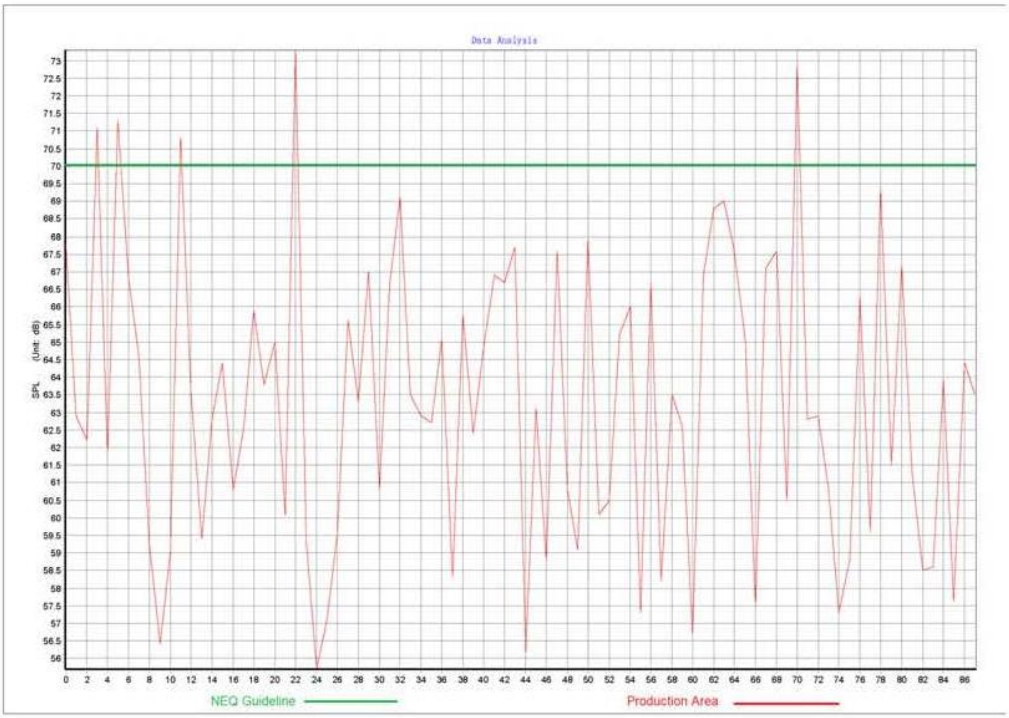
No	Place	Unit	Result	Standard	Remark
1	Operation Area	dBA	63.34	70 dBA	Slightly Above

National Environmental Quality (Emission) Guideline

Receptor	One Hour Laeq (dBA)	Guideline value
	Daytime	Nighttime
	7:00 – 22:00 (10:00 – 22:00 for Public holidays)	22:00 – 07:00 (22:00 – 10:00 for Public holidays)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED.

Monitoring Graph



Air result

MYANWEI
ENVIRONMENTAL SOLUTIONS
Plot No. (36,38), Room No.9A, 9th floor, Grand Myay Nu Condominium, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.
Office: (+95)9775485118, 9792528677, 9449251888; Website: www.myanweiconsulting.com

Project Name:	Jin Sen Myanmar Company Limited.
Project Location:	Plot No. (154,171), Myay Taing No. Part (5), Sethmu Myo, Hlaing Thar Yar Township, Yangon Region.
Sampling Date:	17 June, 2020
Sampling Time:	1:00 am to 4:00 pm
Sampling Condition:	-
Sampling By:	Myanwei Environmental Solution Company Limited.

Instrument	Type	Sampling Rate	Location
OCEANUS-AQM-09	PM, O_3, NO_2, SO_2, CO Detector	0-999.9 (µg/M^3)	Operation Area (Indoor)

National Environmental Quality (Emission) Guideline

Parameter	Averaging period	Guideline value	Unit
PM 10[a]	1-year 24-hour	20 50	(µg/M^3)
PM 2.5[a]	1-year 24-hour	10 25	(µg/M^3)
O_3[a]	8-hour	100	(µg/M^3)
NO_2[a]	1-year 1-hour	40 200	(µg/M^3)
SO_2[a]	24-hour 10-min	20 500	(µg/M^3)
CO[b]	15-min 30-min 1-hour 8-hour	100 60 30 10	(µg/M^3)

a. Values from air quality guidelines-global update 2005: particulate matter, ozone, nitrogen dioxide and sulfur dioxide.
b. Values from air quality guidelines for Europe, 2nd edition.

Monitoring Result

Location	GPS Value	Parameters	Observed Value	Unit	Guideline Value
Production Area	16°53'37.75"N 96°02'20.12"E	PM10 PM2.5	45.7 36.4	µg/m3 µg/m3	50 25

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED.

Reverse Osmosis Water Result

ISO TECH LABORATORY

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

ISO 9001:2015 Cert. No. 688500

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

W0120 574

WATER QUALITY TEST RESULTS FORM

Client	JIN SEN MYANMAR CO.,LTD. (MYANMAR WATER)
Nature of Water	RO Water
Location	Hlaing Thar Yar, Zone (5)
Date and Time of collection	20.1.2020
Date and Time of arrival at Laboratory	20.1.2020
Date and Time of commencing examination	21.1.2020
Date and Time of completing	23.1.2020

Results of Water Analysis

			WHO Drinking Water Guideline (Geneva - 1993)
pH	7.3		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	Nil	NTU	5 NTU
Conductivity	50	micro S/cm	
Total Hardness	4	mg/l as $CaCO_3$	500 mg/l as $CaCO_3$
Calcium Hardness	2	mg/l as $CaCO_3$	
Magnesium Hardness	2	mg/l as $CaCO_3$	
Total Alkalinity	16	mg/l as $CaCO_3$	
Phenolphthalein Alkalinity	Nil	mg/l as $CaCO_3$	
Carbonate ($CaCO_3$)	Nil	mg/l as $CaCO_3$	
Bicarbonate (HCO_3)	16	mg/l as $CaCO_3$	
Iron	0.05	mg/l	0.3 mg/l
Chloride (as CL)	6	mg/l	250 mg/l
Sodium chloride (as NaCL)	10	mg/l	
Sulphate (as SO_4)	Nil	mg/l	500 mg/l
Total Solids	26	mg/l	1500 mg/l
Total Suspended Solids	1	mg/l	
Total Dissolved Solids	25	mg/l	1000 mg/l
Manganese	Nil	mg/l	0.05 mg/l
Phosphate	Nil	mg/l	
Phenolphthalein Acidity	2	mg/l	
Methyl Orange Acidity	Nil	mg/l	
Salinity	0.1	ppt	

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

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

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

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