

INITIAL ENVIRONMENTAL EXAMINATION (IEE) REPORT
FOR
RICE, CORN AND BEAN MILLING, PRODUCTION AND
EXPORTING PROJECT
OF
GREEN SHINE CO., LTD.

14/01/2025	00	1 st Issue	U Soe Min	U Aye Thiha	U Ye Wai Phyo
Date	Version	Status	Prepared By	Approved By	Approved by Client

Proposed by



Green Shine Co., Ltd.

Prepared by



E Guard Environmental Services

Version 00
January, 2025

DISCLAIMER

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Data analysis, impact assessment, devising mitigation measures and report formulation were carried out based on the information/plan/processes provided by the project proponent, available secondary data and information, and onsite observation and measurement of E Guard's environmental study team in line with the relevant national and international guidelines and standards. While we do take effort to ensure that the information contained in this report is reliable and accurate, we disclaim no responsibility for errors and omissions which might occur despite of our reasonable skill and care.

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Report Review Form

Report Review Form

Report Title: Initial Environmental Examination (IEE) Report For Rice, Corn and Bean Milling, Production and Exporting Project	
Report Version: Revised Version 00	
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Submitted Date: 26 /12/2024	Signature: 
Checked by: Dr. Myint Oo	Position: Advisor
Checked Date: 27 /12 /2024	Signature: 
Summary: IEE Report This document presents the Initial Environmental Examination (IEE) report as required for Rice, Corn and Bean Milling, Production and Exporting Project.	Approved by:  Aye Thiha

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- Internal
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Commitment Letters



E GUARD ENVIRONMENTAL SERVICES

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Commitment for Compliance of IEE Report with Environmental Conservation Law, Rules, Environmental Impact Assessment Procedure, National Environmental (Quality) Emission Guidelines, Standards

With regard to the above matter, we, E Guard Environmental Services, has prepared the Initial Environmental Examination (IEE) Report for **Rice, Corn and Bean Milling, Production and Exporting Project by Green Shine Co., Ltd.** Our company strongly commits that this IEE report has been prepared by the following Environmental Conservation Law (2012), Environmental Conservation Rules (2014), National Environmental Quality (Emission) Guideline (2015) and relevant environmental standards for the proposed project.


Aye Thiha
Managing Director
E Guard Environmental Services



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Commitment to follow Environmental Conservation Law, Rules, Standards and Mitigation and Management Measures Stated in the Initial Environmental Examination (IEE) Report

With regards to the above matter, we **Green Shine Co., Ltd**, strongly commits that all our operations will be performed in an environmental friendly manner by following existing laws and regulations, especially Environmental Conservation Law (2012), Environmental Conservation Rules (2014), Environmental Impact Assessment Procedure (2015), National Environmental Quality (Emission) Guidelines (2015) and other relevant environmental standards through successful implementation of mitigation measures and environmental monitoring plans stated in the Initial Environmental Examination (IEE) Report.



Ye Wai Phyo
Ye Wai Phyo @ Ye Htut
General Manager
Green Shine Co., Ltd.



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List of Abbreviations

CSR	Corporate Social Responsibility
DICA	Directorate of Investment and Company Administration
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EPAS	Environmental Perimeter Air Station
ERT	Emergency Response Team
FRI	Forest Research Institute
GAD	General Administrative Department
GRM	Grievance Redress Mechanism
KVA	Kilo-volt-amperes
KW	Kilowatt
MMK	Myanmar Kyat
MONREC	Ministry of Natural Resources and Environmental Conservation
NEQEG	National Environmental Quality (emission) Guidelines
OHS	Occupational Health and Safety
PIP	Pathein Industrial Project
PPE	Personal Protective Equipment
RC	Reinforced Concrete
RO	Reverse Osmosis
SHM	stakeholder meeting
SOP	standard operation procedures

အကျဉ်းချုပ်အစီရင်ခံစာ

ဤအစီရင်ခံစာသည် Green Shine Co., Ltd. ၏ ဆန်၊ ပြောင်း၊ ပဲ အမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအတွက် ရေးဆွဲထားသော ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာဖြစ်ပါသည်။ ဤအစီရင်ခံစာသည် ဆန်၊ ပြောင်း၊ ပဲ အမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ခွင့်ပြုချက်နှင့် သဘောထားမှတ်ချက်များရယူရန် ရည်ရွယ်ပါသည်။ ထို့ကြောင့် အီးဂတ်ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှု ကုမ္ပဏီသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) တို့နှင့်အညီ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာကို Green Shine Co., Ltd. အတွက် ပြင်ဆင်ဆောင်ရွက်ခဲ့ပါသည်။ ဤအစီရင်ခံစာအကျဉ်းချုပ်သည် အကဲဖြတ်မှု၏ နယ်ပယ်၊ နည်းစနစ်များ၊ အချက်အလက် ခွဲခြမ်းစိတ်ဖြာခြင်းနှင့် ကောက်ချက်ချခြင်းများ၊ တွေ့ရှိချက်များနှင့် အကြံပြုချက်များကို ခြုံငုံသုံးသပ် တင်ပြထားပါသည်။

အဆိုပြုစီမံကိန်းသည် နိုင်ငံခြားရင်းနှီးမြုပ်နှံမှု၊ ပြည်တွင်းရင်းနှီးမြုပ်နှံမှုတို့ဖြင့် ဖက်စပ်ရင်းနှီးမြုပ်နှံခြင်းဖြစ်ပြီး Green Shine Co., Ltd. အမည်ဖြင့် ၂၀၂၂ ခုနှစ်၊ အောက်တိုဘာလ ၇ ရက်နေ့တွင် ရင်းနှီးမြုပ်နှံမှုနှင့် ညွှန်ကြားမှုဦးစီးဌာန၏ ခွင့်ပြုချက်ရရှိထားသည့် အများနှင့်မသက်ဆိုင်သော ပုဂ္ဂလိကကုမ္ပဏီ တစ်ခုဖြစ်ပါသည်။ စီမံကိန်း၏ အဓိက ရည်ရွယ်ချက်သည် နိုင်ငံအတွက် နိုင်ငံခြားဝင်ငွေ ရရှိစေရန်၊ စက်ရုံမှ အရည်အသွေးမြင့်ထုတ်ကုန်များ ထုတ်လုပ်ခြင်းနှင့် အရည်အသွေးမြင့်ထုတ်ကုန်များကို ပြည်တွင်းနှင့် နိုင်ငံတကာသို့ တင်ပို့ရောင်းချရန်၊ စိုက်ပျိုးရေးစက်မှုလုပ်ငန်း ဖွံ့ဖြိုးတိုးတက်မှုမြှင့်တင်ရန်၊ ဒေသခံ လယ်သမားများ၏ လူမှုစီးပွားအခြေအနေများ ပြောင်းလဲတိုးတက်စေရန်နှင့် ဒေသခံပြည်သူများအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများ ဖန်တီးပေးရန် စသည်တို့အတွက် ရည်ရွယ်ပါသည်။ စက်ရုံသည် ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ပုသိမ်-ပုတောက်လမ်း၊ ပုသိမ်စက်မှုမြို့တော်၊ အမှတ် (၅၃-စီ) ရှိ မြေ ၃.၃၆ ဧက ပေါ်တွင် တည်ရှိပါသည်။ စီမံကိန်းသည် ပုသိမ်စက်မှုမြို့တော်မှ ငှားရမ်းထားသော စက်ရုံတွင် အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိပါသည်။ စီမံကိန်း၏ အဆိုပြု အစီရင်ခံစာတွင် စီမံကိန်း တည်နေရာသည် အမှတ် (၂၈-စီ) အဖြစ် ကနဦး အဆိုပြုထားသော်လည်း လက်ရှိတွင် အမှတ် (၅၃-စီ) တွင် လုပ်ငန်းများ ဆောင်ရွက်လျက်ရှိပါသည်။ အဆိုပြု အစီရင်ခံစာတွင် နေ့စဉ် ဆန် ၂၀၀ တန် နှင့် ပြောင်း ၇၀ တန် ကြိတ်ခွဲထုတ်လုပ်မည်ဟု ဖော်ပြထားသော်လည်း လက်ရှိတွင် ဆန်ကြိတ်ခွဲခြင်းလုပ်ငန်းများသာ လုပ်ဆောင်နေပြီး စုစုပေါင်းရင်းနှီးမြုပ်နှံမှု မြန်မာကျပ်ငွေ သန်းပေါင်း ၆၂၀၀ ကျပ်ဖြင့် လည်ပတ်ဆောင်ရွက်နေပါသည်။ စီမံကိန်း၏ လုပ်ငန်း သက်တမ်းမှာ ၁၀ နှစ်ဖြစ်ပြီး ရေရှည် စီမံကိန်းအဖြစ် သက်တမ်းတိုး၍ တိုးချဲ့ဆောင်ရွက်ရန် စီစဉ်ထားပါသည်။ လက်ရှိ အမှတ် (၅၃-စီ) တွင် ငှားရမ်းခြင်း မရှိတော့ပါက အခြားနေရာ တစ်ခုတွင် ပြောင်းရွှေ့ ဆက်လက်ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

စက်မှုဇုန်မှ ငှားရမ်းထားသော အဆောက်အဦတွင် ရုံးခန်း၊ ဝန်ထမ်းအိပ်ဆောင်နှင့် ဆန်စက်လုပ်ငန်းအတွက် အသုံးပြုထားပါသည်။ ပင်မအဆောက်အဦဘေးတွင် လျှပ်စစ်ဓာတ်အားရရှိရေးအတွက် အသုံးပြုသော

ဂက်စီဖိုင်ယာ ၊ စွန့်ပစ်ရေဆိုးများအတွက် အနည်ချရေစစ်ကန် နှင့် ရေသိုလှောင်ကန်တို့ ရှိပါသည်။ ဆန်စက် လုပ်ငန်းအတွက် ကုန်ကြမ်းအဖြစ် အလယ်အလတ်ဆန် (အလျား ၅.၅ မီလီမီတာနှင့် ၆.၅ မီလီမီတာ ကြား) နှင့် ဆန်ရှည် (အလျား ၆.၅ မီလီမီတာအထက်) ဆန်ကြမ်းများကို အနီးအနားရှိ ဆန်စက်များ၊ ကျေးရွာများမှ ဝယ်ယူ စုဆောင်း၍ ဆန်ဖြူချောရသည်အထိ လည်ပတ်ဆောင်ရွက်လျက်ရှိပါသည်။ ၅၃-စီ စက်ရုံတွင် ဆန်စက် လည်ပတ်မှုနှင့် ရုံးလုပ်ငန်းများအတွက် ဝန်ထမ်း ၂၃ ယောက်ရှိပြီး ကုန်တင်ကုန်ချများသည့် နေ့များတွင် နေ့စား အလုပ်သမားများ ခေါ်၍ ဆောင်ရွက်လျက်ရှိပါသည်။ အရင်းအမြစ်သုံးစွဲမှုအနေဖြင့် လျှပ်စစ်ဓာတ်အားအတွက် ၅၀၀ ကေဗီအေ တစ်လုံးရှိပြီး ဂက်စီဖိုင်ယာ လည်းအသုံးပြုထားပြီး အရံအနေဖြင့် ဒီဇယ်ဂျင်နရတာ တစ်လုံး ထားရှိ သုံးစွဲလျက်ရှိပါသည်။ ရေသုံးစွဲမှုအနေဖြင့် မြေအောက်ရေ တစ်မျိုးတည်း ကိုသာ သုံးစွဲလျက်ရှိပါသည်။

ဤကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအစီရင်ခံစာပြင်ဆင်မှုကို အီးဂတ်ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုကုမ္ပဏီမှ Green Shine Co., Ltd. ကိုယ်စား ဆောင်ရွက်ခဲ့ပါသည်။ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာ ပြင်ဆင်မှု တွင် ပါဝင်သည့် အဖွဲ့ဝင်များသည် ပညာရပ်ဆိုင်ရာ ကျွမ်းကျင်မှုစံနှုန်းရှိခြင်း၊ ပတ်ဝန်းကျင်ထိခိုက်မှု အကဲဖြတ်ခြင်းဆိုင်ရာ အတွေ့အကြုံများစွာရှိခြင်း၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စောင့်ကြည့်လေ့လာခြင်း အစီအစဉ်ရေးဆွဲခြင်းများကို ဆောင်ရွက်ရန် လုံလောက်သော ကျွမ်းကျင်ပညာရှင်များ ပါဝင်သည်။

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲရာ၌ မြန်မာနိုင်ငံတွင် သတ်မှတ်ထားသော မူဝါဒများ၊ ဥပဒေများနှင့် လမ်းညွှန်ချက်များကို လိုက်နာဆောင်ရွက်ရန်မှာ အရေးကြီးပါသည်။ စီမံကိန်း အကောင်အထည် ဖော်ဆောင်ရွက်သူအနေဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) နှင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တို့နှင့်အညီ လိုက်နာဆောင်ရွက်ရန်လည်း အရေးကြီးပါသည်။

ဤစီမံကိန်းနေရာသည် စက်မှုဇုန်တွင်တည်ရှိပြီး လူနေအိမ်ရာများမှ ဝေးကွာသောနေရာတွင် ရှိနေသောကြောင့် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်းအတွက် စီမံကိန်းနယ်နိမိတ်မှ ၀.၅ ကီလိုမီတာအတွင်း သဘာဝ ပတ်ဝန်းကျင် အခြေခံအချက်အလက်များ စုဆောင်းခြင်းနှင့် ပတ်ဝန်းကျင် အရည်အသွေး တိုင်းတာခြင်းများ ဆောင်ရွက်ခဲ့ပါသည်။ အခြေခံတိုင်းတာမှုများဖြစ်သည့် လေထုအရည်အသွေး၊ ဆူညံသံ၊ တုန်ခါမှုနှင့် ရေအရည်အသွေးတို့ကို ၂၀၂၄ ခုနှစ် အောက်တိုဘာလ ၅ ရက်မှ ၇ ရက် အတွင်း တည်နေရာ ၂ ခု တွင် ပြုလုပ်ခဲ့ပါသည်။ ပတ်ဝန်းကျင် လေထု အရည်အသွေးအဖြစ် ဖုန်မှုန့် ထုတ်လွှတ်မှု (PM₁₀, PM_{2.5}) နှင့် ဓာတ်ငွေ့ထုတ်လွှတ်မှု (SO₂, NO₂, O₃, CO, CO₂) တို့ကို နှစ်ဆယ့်လေးနာရီကြာ စဉ်ဆက်မပြတ် တိုင်းတာ ခဲ့ပါသည်။ တိုင်းတာမှုရလဒ်များအရ ဖုန်မှုန့်နှင့် ဓာတ်ငွေ့ထုတ်လွှတ်မှုများ၏ တန်ဖိုးများသည် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (NEQEG)၊ ကမ္ဘာ့ကျန်းမာရေးအဖွဲ့၏ လမ်းညွှန်ချက်များ (WHO)၊ American Conference of Governmental Industrial Hygienists (ACGIH) တို့မှ သတ်မှတ်ထားသော စံချိန်စံညွှန်းတန်ဖိုးများအတွင်းရှိပါသည်။ နှစ်ဆယ့်လေးနာရီကြာ တိုင်းတာခဲ့သည့် ဆူညံသံနှင့် တုန်ခါမှုအဆင့် တန်ဖိုးများသည် ခွင့်ပြုနိုင်သည့် ကန့်သတ်ချက်အတွင်း၌ ရှိပါသည်။ ကောက်ယူလာသောရေကုန်များကို သက်ဆိုင်ရာဓာတ်ခွဲခန်းများသို့ ပို့၍ ဆန်းစစ်ခဲ့ပါသည်။

မြေအောက်ရေအရည်အသွေး တိုင်းတာမှု ရလဒ်များသည် မြန်မာနိုင်ငံ အမျိုးသားသောက်သုံးရေ အရည်အသွေးစံချိန်စံညွှန်းများအတွင်း ရှိသော်လည်း manganese ပါဝင်မှုသည် လမ်းညွှန်ချက် တန်းဖိုးများထက် ကျော်လွန်နေသည်သာမက အလွန်းမြင့်မားကြောင်း တွေ့ရပါသည်။ စွန့်ထုတ်ရေဆိုး အရည်အသွေးရလဒ် များသည် ဖီနော၊ ဆီနှင့် ဆီချေး၊ အမိုးနီးယား ပါဝင်မှုတို့အတွက် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး ထုတ်လွှတ်မှု လမ်းညွှန်ချက်များ (NEQEG) ထက် ကျော်လွန်နေပါသည်။ အချုပ်အားဖြင့် အဆိုပြုစီမံကိန်း၏ ပတ်ဝန်းကျင်အခြေခံ အခြေအနေ များဖြစ်သည့် ရေအရည်အသွေးမှလွဲ၍ လေထုအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှုအဆင့် တန်ဖိုးများသည် လမ်းညွှန်ချက် တန်ဖိုးများအတွင်းရှိနေပါသည်။ ဤအစီရင်ခံစာတွင် အဆိုပြု စီမံကိန်းနေရာ၏ လူမှုစီးပွား အခြေအနေ၊ ရုပ်/ဇီဝ ပတ်ဝန်းကျင်နှင့် မိုးလေဝသအချက်အလက်များကို ကန်ကြီးထောင့်မြို့နယ်၏ ဒေသဆိုင်ရာ သတင်း အချက်အလက် (၂၀၂၃) များမှ ကောက်နုတ်ဖော်ပြ ထားပါသည်။

စီမံကိန်း အကောင်အထည်ဖော်ဆောင်ရွက်မှုများသည် သဘာဝပတ်ဝန်းကျင် အရင်းအမြစ်များ၊ ဇီဝအရင်းအမြစ်များ၊ လူသားများ၊ အမှိုက်စွန့်ပစ်မှုနှင့် လူမှုစီးပွားအခြေအနေများအပေါ် သက်ရောက်မှုရှိနိုင်ပါသည်။ ပတ်ဝန်းကျင် အပေါ် သက်ရောက်မှုတစ်ခုချင်းစီ၏ အကဲဖြတ်မှုသည် ပမာဏ၊ ကြာချိန်၊ သက်ရောက်နိုင်မှု အတိုင်းအတာနှင့် ဖြစ်နိုင်ခြေတို့ကို အခြေခံ၍ ဆုံးဖြတ်ထားပါသည်။ စီမံကိန်းသည် ပုသိမ်စက်မှုမြို့တော်မှ တည်ဆောက်ပြီး ငှားရမ်းထားသည့် စက်ရုံတွင် လည်ပတ်ဆောင်ရွက်နေသောကြောင့် ဆောက်လုပ်ရေးလုပ်ငန်းအဆင့်အတွက် ပတ်ဝန်းကျင်ထိခိုက်မှု အကဲဖြတ်ခြင်းကို လေ့လာထားခြင်းမရှိဘဲ ဆန်စက်လည်ပတ်သည့်အဆင့်နှင့် ကြိတ်ခွဲစက်များ ဖြုတ်သိမ်းသည့် အဆင့်ကိုသာလေ့လာခဲ့ပါသည်။ သက်ရောက်မှုများ၏ ခွဲခြမ်းစိတ်ဖြာ တွေ့ရှိချက်များအရ စီမံကိန်းဆောက်ရွက်မှုလုပ်ငန်းအများစုသည် သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက် မှုများ အလွန်းနည်းပါးခြင်း၊ အချို့သော သက်ရောက်မှုများမှာ အနည်းငယ်သာရှိနိုင်ခြင်းနှင့် ပတ်ဝန်းကျင် ဆိုင်ရာ အလေးပေးဆောင်ရွက်ရမည့် အလယ်အလတ် အကျိုးသက်ရောက်မှုများ တွေ့ရပါသည်။ လည်ပတ်မှု အဆင့်များအတွင်း ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများကို အကဲဖြတ်ရာတွင် ကြိတ်ခွဲခြင်းလုပ်ငန်း၊ ဂက်စီဖိုင်ယာ အသုံးပြုခြင်းနှင့် သယ်ယူပို့ဆောင်ရေးလုပ်ငန်းများကဲ့သို့သော အဓိကလုပ်ဆောင်မှုများသည် လေထုအရည်အသွေး၊ ဆူညံသံ၊ တုန်ခါမှု၊ ရေအရည်အသွေး၊ လုပ်ငန်းခွင် ကျန်းမာရေးနှင့်ဘေးအန္တရာယ် ကင်းရှင်းနှင့် မီးဘေး တို့အပေါ် အလယ်အလတ်အဆင့် သက်ရောက်မှုရှိကြောင်း ဆန်းစစ်တွေ့ရှိရပြီး သင့်လျော်သော လျော့ပါးသက်သာစေရေး အစီအမံများဆောင်ရွက်ရန်လိုအပ်ပါသည်။ ဇီဝမျိုးစုံမျိုးကွဲများနှင့် မြေဆီလွှာညစ်ညမ်းမှုအပေါ် မျှော်မှန်းထားသော သက်ရောက်မှုများမှာ အနည်းငယ်သာ သက်ရောက်ခြင်း ရှိသောကြောင့် သိသာထင်ရှားခြင်းမရှိပါ။ စီမံကိန်းဧရိယာအတွင်း ဘေးအန္တရာယ် ကင်းရှင်းရေး တစ်ကိုယ်ရေသုံး အကာအကွယ်ပစ္စည်း (PPE) များအသုံးပြုခြင်းနှင့် မီးဘေးလုံခြုံရေး ကြိုတင်ပြင်ဆင်မှုများ ဆောင်ရွက် ထားခြင်းသည် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးကင်းရေးအပေါ် သက်ရောက်မှုများ သိသိသာသာ လျော့နည်း စေခြင်းအပြင် မီးဘေးအန္တရာယ်ကိုပါ ကာကွယ်နိုင်ပါသည်။ ရေဆိုးများနှင့် စွန့်ပစ်ဖွဲ့ပြာများ များစွာ ထွက်ရှိခြင်းကြောင့် ထိရောက်သော စွန့်ပစ်အမှိုက် စီမံခန့်ခွဲမှု လုပ်ငန်းစဉ်များ မရှိမဖြစ်လိုအပ်ပါသည်။

စက်ပစ္စည်းများ ဖြုတ်သိမ်းခြင်း သို့မဟုတ် ဖျက်သိမ်းခြင်း အဆင့်တွင် အမှိုက်စွန့်ပစ်မှုလုပ်ငန်းစဉ်များကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများမှာ အလယ်အလတ်ရှိပြီး လေ၊ ရေ၊ ဆူညံသံ၊ တုန်ခါမှုနှင့် ဇီဝမျိုးစုံ မျိုးကွဲများအပေါ် သက်ရောက်မှုမှာ အလွန်နည်းပါးပါသည်။ အဆိုပါသက်ရောက်မှုများကို လျော့ချရန် သက်ရောက်မှုစကေး၊ အမျိုးအစားများအလိုက် လျော့ပါးသက်သာစေရေး အစီအမံများကိုလည်းဖော်ပြထား ပါသည်။

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာကို ပြင်ဆင်ချိန်အတွင်း စီမံကိန်းနှင့်ပတ်သက်သည့် အချက် အလက်များကို ထုတ်ဖော်ရန် အရေးကြီးပြီး စီမံကိန်းနှင့် သက်ဆိုင်သူအားလုံး၏ ထင်မြင်ယူဆချက်များကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ထည့်သွင်းစဉ်းစားရန် အရေးကြီးပါသည်။ အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်းလုပ်ငန်းကို ၂၀၂၄ ခုနှစ်၊ ဒီဇင်ဘာလ ၁၉ ရက်နေ့တွင် ဧရာဝတီတိုင်း ဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ပုသိမ်စက်မှုမြို့တော်တွင် ကျင်းပခဲ့ပြီး အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးပွဲပြုလုပ်ခဲ့သည့် အစည်းအဝေး မှတ်တမ်းဓာတ်ပုံများ၊ တက်ရောက် သူများစာရင်း၊ ဆွေးနွေး ခဲ့သောအမေးအဖြေများနှင့် အကြံပြုချက်များကို အစီရင်ခံစာတွင် အသေးစိတ် ဖော်ပြ ထားပါသည်။

ဆန်၊ ပြောင်း ၊ ပဲ အမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်းလုပ်ငန်း၏ လုပ်ငန်းလည်ပတ်ခြင်းနှင့် စီမံကိန်း ဖျက်သိမ်းခြင်း အဆင့်တို့တွင် ဖြစ်နိုင်ခြေရှိသော ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုများဖြစ်သည့် လေထု အရည်အသွေး၊ ဆူညံသံနှင့်တုန်ခါမှုအဆင့်၊ မြေအောက်ရေနှင့် စွန့်ထုတ်ရေဆိုး အရည်အသွေးရလဒ်များ၊ ကွင်းဆင်းလေ့လာခြင်းနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များကို ထည့်သွင်းစဉ်းစားကာ ပတ်ဝန်းကျင် ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်ကို ပြင်ဆင်ခဲ့ပါသည်။ ထို့အပြင် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်သည် စီမံကိန်းအား သဘာဝပတ်ဝန်းကျင်နှင့် ရေရှည်တည်တံ့ခိုင်မြဲစေရန် အကောင်အထည်ဖော်ကြောင်း သေချာစေရေး အတွက် စီမံကိန်းအလိုက် ဖွံ့ဖြိုးတိုးတက်ရေးကို စီစဉ်ပေးခြင်းဖြစ်သည်။ ထို့အပြင် ဆိုးရွားသော သဘာဝ ပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်မှုများကို လျော့ချရန် သင့်လျော်သော လျော့ပါးရေး အစီအမံများကို လုပ်ဆောင် ခြင်းဖြင့် စီမံကိန်း အကောင်အထည်ဖော်မှုကို ဆောင်ရွက်ကြောင်း သေချာစေပါသည်။ ဤစီမံကိန်း အတွက် အဆိုပြုထားသည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ၁) လည်ပတ်မှုနှင့် ဖျက်သိမ်းခြင်းအဆင့်များအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ပါးရေးအစီအစဉ် ၂) တိကျသော စံလမ်းညွှန်ချက်များ ပါဝင်သည့် ပတ်ဝန်းကျင် စောင့်ကြည့်ရေးအစီအစဉ် ၃) အရေးပေါ်ပြင်ဆင်မှုအစီအစဉ် ၄) ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် ဘတ်ဂျက်ခွဲဝေမှုအစီအစဉ် တို့ ပါဝင်ပါသည်။ သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှု လျော့ပါးစေရေး အစီအစဉ်တွင် လုပ်ငန်းလည်ပတ်ဆောင်ရွက်မှုနှင့် ဖျက်သိမ်းရေး အဆင့်တို့နှင့် ဆက်စပ်နေသော သဘာဝပတ်ဝန်းကျင် ဆိုင်ရာ ပြဿနာများအတွက် အကြံပြုထားသော လျော့ပါး သက်သာရေး အစီအမံများ ပါဝင်ပါသည်။ ထို့ကြောင့် လေ့လာမှုတွင် ဖော်ပြထားသည့် သင့်လျော်သော လျော့ပါးသက်သာရေး အစီအမံများဖြင့် ပတ်ဝန်းကျင်အပေါ် ဆိုးရွားသော ထိခိုက်မှုများကို လျော့ချနိုင်ပါသည်။ Green Shine Co., Ltd. သည် လုပ်ငန်း လည်ပတ်နေစဉ်အတွင်း ဤအစီရင်ခံစာတွင်ဖော်ပြထားသော ပတ်ဝန်းကျင်အရည်အသွေး သတ်မှတ်ချက်များကို ဆန်းစစ်၍ ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုမှု အစီရင်ခံစာကို ပုံမှန်ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။ ဆန်စက်

လည်ပတ်မှု ကုန်ကျစရိတ်နှုတ်ပြီး စီမံကိန်း၏ အသားတင် အမြတ်၏ ၂ % ကို လူမှုတာဝန်ခံမှုအစီအစဉ် အတွက် သုံးစွဲသွားမည် ဖြစ်ပါသည်။ ထို့အပြင် စီမံကိန်း လည်ပတ်နေစဉ်အတွင်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် အကောင်အထည်ဖော်မှုနှင့် လျော့ပါးရေး အစီအမံများအတွက် ဘတ်ဂျက်ခွဲဝေမှု အသုံးစရိတ် များကိုလည်း ထည့်သွင်းဖော်ပြထားပါသည်။

နိဂုံးချုပ်အနေဖြင့် Green Shine Co., Ltd. သည် ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်၏ တည်ဆဲ ပတ်ဝန်းကျင်ဆိုင်ရာမူဝါဒ၊ ဥပဒေများ၊ နည်းဥပဒေများ၊ သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုဆိုင်ရာကျင့်ထုံးများ၊ လုပ်ထုံးလုပ်နည်းများနှင့် တာဝန်များ၊ ညွှန်ကြားချက်များကို အပြည့်အဝ လိုက်နာ၍ အကောင်အထည်ဖော် ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

1 EXECUTIVE SUMMARY

This report provides the Initial Environmental Examination (IEE) study conducted for Rice, Corn and Bean Milling, Production and Exporting project proposed by Green Shine Co., Ltd. This report aims to get environmental approval and comments from the Environmental Conservation Department (ECD) of the Ministry of Natural Resources and Environmental Conservation regarding the establishment of Rice, Corn and Bean Milling, Production and Exporting project. Therefore, E Guard Environmental Services prepared the IEE report in accordance with the Environmental Conservation Law (2012) and the Environmental Impact Assessment Procedure (2015) for project proponent; Green Shien Co., Ltd. This report covers the scope of the assessment, methods, data analysis, and conclusions, and provides an overview of the findings and recommendations.

The proposed project is a joint investment, with contributions from both foreign and local stakeholders and also individual investors under Green Shine Co., Ltd as a private company with the approval of the Directorate of Investment and Company Administration on October 7, 2022. The project aims to generate foreign income for the country, to manufacture high-quality products from the factory and import and trade quality products to local and international, to promote the development of agro-industrial sector improving the socio-economic conditions of local farmers and crating employment opportunities for local residents. The factory is located at No. 53-C, Pathein Industrial City, Pathein-Ngaputaw Road, Chaung Zauk Village Tract, Kangyidaunt Township, Pathein District, Ayeyarwady Region, on a land area of 3.36 acres. The milling operation is being conducted in an already constructed, rented facility by Pathein Industrial City. Although Plot No. 28-C was initially proposed in the project proposal, the operations are currently being carried out at No. 53-C. In the project proposal, presented that 200 tons of rice and 70 tons of corn milling would be processed daily. However, at present, only rice milling operations are being operated with a total investment amount of 6,200 million MMK. The operational period of the project is 10 years, with the plans to extend it into a long-term project. If the current rental of Plot No. 53-C is not allowed for extension, the rice milling operations would be continued at another location.

The rented main building serves as the facility for office, staff housing, rice mill operation and production activities. Gasifier for energy sources, Ash filtration pond for wastewater from gasifier and reservoir tank are behind the main building as sub-components of the project. In the process of rice milling project, initially, the brown rice (primary raw material) with medium grain rice (5.5 mm to 6.5 mm) and long grain rice (6.5mm and above) are purchased daily from rice mills nearby Pathein village tracts by truck. Then milling operation begins operations up to the stage of producing white rice and do export process. It operates with 23 employees including office department and operating department at 53-C factory. Daily wage workers and skilled workers are also employed based on the cargo operation of rice bags to ensure all of the operations activities. In terms of utility consumption, a 500 KVA transformer and a gasifier are used as the main power sources, while a diesel generator is utilized as a backup power source and only groundwater is the main use for operation.

Preparation of this report was carried out by E Guard Environmental Services on behalf of Green Shine Co., Ltd. The IEE study team has solid academic backgrounds, extensive expertise

in environmental impact assessments, EMP formulations, and monitoring, along with appropriate qualifications.

In implementing the IEE, it is essential to adhere to the policies, legislations, and guidelines established in Myanmar. Among them, Environmental Impact Assessment Procedure (2015) and National Environmental Quality (Emission) Guidelines (2015), are considered to be the most important.

As the project site is situated in an industrial zone and far from residential area, an environmental baseline data collection and site assessment were carried out within a 0.5 km buffer zone surrounding the project boundary area for the purpose of this IEE study. The baseline study covered the measurement of ambient air quality, noise level, and groundwater and effluent water collection at during 5th to 7th October 2024 at two locations. For a period of twenty-four hours, the attributes of the surrounding air quality were determined continuously, that includes measurements of particulate matter emissions (PM10, PM2.5) and gas emissions (SO₂, NO₂, O₃, CO, CO₂). The results indicated that the concentrations of both dust and gas emissions are within the allowable limits set by the National Environmental Quality Emission Guidelines (NEQEG), World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH). The ambient noise and vibration level at the project site were measured for twenty-four hours and the results noise and vibration level for two measuring points are within the acceptable range. The collected water samples were sent to the respective laboratories for analysis. Although the most of the groundwater quality parameters were within the acceptable range of Myanmar National Drinking Water Quality Standards, manganese level is not only above the guide lines, but the level is also too high. The results of effluent water exceeded NEQEG guidelines for phenols, oil and grease and ammonia. In summary, most measurement indicators for environmental baseline conditions except water quality, air quality, noise and vibration level of the proposed project site are within the guideline values. This IEE report also described Kangyidaunt Township's secondary data (2023) on socio-economic, physical/biological, and climate characteristics that might relate to the proposed project site.

The project activities may have impacts on environmental resources, biological resources, human beings, waste disposal and socio-economic conditions. The assessment of each impact has been determined based on the magnitude, duration, extent, and probability of operations. As the proposed rice milling project is being conducted in an already constructed, rented facility from Pathien Industrial City, the assessment of environmental impact will not be identified for construction phase. The assessment of the operation phase and dismantling of milling machinery (decommissioning phase) of rice milling project were studied. According to the finding's analysis, most project activities occurred with very low and low significance of environmental impacts, while others have a moderate impact that requires improvement in terms of environmental performance. The evaluation of potential impacts during the operation phases indicates that major activities such as milling operation, use of gasifier and transportation activities may have a minimal impact on air, noise, vibration, water, fire hazard and occupational health and safety as moderate significant. It is required to provide appropriate mitigations measures. The anticipated impacts on biodiversity and soil contamination resulting

from operation activities are expected to be insignificant, as it may have minimal impact. Providing PPE and fire safety preparedness at the project site could have a low significant impact on occupational health and safety, as well as fire risk. Proper waste management facilities are essential for gasifier process due to the generation of heavy amount of ash waste and wastewater.

During the decommissioning phase (dismantling process), impacts on waste disposal are identified as moderate, and other impacts on air, noise, water, and flora and fauna are classified as very low. There are no significant impacts on the surrounding environment. Mitigation measures are important to minimize and reduce these potential negative impacts. They also describe the requirements of impacts mitigation tasks and technologies according to the types of impacts scales. And hence, recommended mitigation measures for decommission are also described in the study to overcome and mitigate those impacts.

Disclosing project information is crucial for the preparation of the IEE report, and it is essential to consider the opinions of all stakeholders in the finalization process. The purpose of public consultation is to disclose information about the project during the preparation of the IEE report. The public consultation meeting for the proposed project was held by government department officials and local people at Pathien Industrial City, Kangyidaunt Township, Pathein, Ayeyarwady Region. The public consultation meeting photo record, attendance lists, discussion questions, and suggestions are detailed in the report.

The Environmental Management Plan (EMP) for the Rice, Corn and Bean Milling, Production and Exporting project was prepared based on an assessment of potential environmental impacts throughout the operation, and decommissioning phases. This evaluation considered the project activities, level of impact significances on environment, baseline environmental data focusing on air quality, noise and vibration levels, groundwater and wastewater quality, as well as the surrounding area of the project site. Additionally, on-site visits were conducted as part of this process. The EMP serves as a tailored plan designed for the specific project site, ensuring the implementation of the project in an environmentally sustainable manner. To reduce negative impacts on the environment, it ensures that the project is required to apply appropriate mitigation strategies and measures. The proposed EMP for this project include: (i) an environmental impact mitigation plan for operation and decommissioning phases, (ii) an environmental monitoring plan with specific standard guidelines, (iii) an emergency preparedness plan, and (iv) a budget allocation plan for the EMP. Within the environmental impact mitigation plan, recommended measures are outlined to address environmental concerns associated with the operation and decommissioning phases. Therefore, the number of adverse impacts on surrounding environment can be reduced to some extent by related proper mitigation measure mentioned in the study. Green Shine Co., Ltd. will conduct a regular environmental monitoring report regularly by examining the environmental quality parameters mentioned in this report for operation phase of milling project. For CSR, 2% of the project's net profit after deducting operating costs will be allocated. Moreover, the expenditure for the implementation of EMP and monitoring plan of project phase for budget allocation of mitigation measure and monitoring plan throughout the project life cycle.

In Conclusion, the environmental management practices, procedures, and responsibilities are defined here for Green Shine Co., Ltd. with commitments to get full compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

2 PROJECT DESCRIPTION

2.1 Introduction

The rice milling project is being implemented on the area of 3.36 acre at Plot No.67, Chaung Zauk Village Tract, Kangyidaunt Township, Pathein District, along the Pathein-Ngaputaw Road, Pathein Industrial City No. 53-C. The project is being conducted in an already constructed, rented facility by Pathien Industrial City. Although Plot No. 28-C was initially proposed in the project proposal, the operations are currently being carried out at Plot No. 53-C. In the project proposal, presented that 200 tons of rice and 70 tons of corn milling would be processed daily. However, at present, only rice milling operations are being conducted. This report will access only for the rice milling process. Therefore, if corn and bean milling operations are to be implemented, the project owner need to follow the guidance of the relevant Government Department. The project is a joint investment, with contributions from both foreign and local stakeholders and also individual investors under Green Shine Co., Ltd., with a total investment amount of 6,200 million MMK. The operational period of the project is 10 years, with the plans to extend it into a long-term project. If the current rental of Plot No. 53-C is not allowed for extension, the rice milling operations would be continued at another location.

2.2 Project Location and Project Size

The project is situated at Latitude 16° 43' 14.0196" N and Longitude 94° 44' 53.9412" E, No. 53-C, Pathein Industrial City, Kangyidaunt Township, Pathein District, Ayeyarwady Region. The location map of the project site is shown in Figure 2-1. It is also bounded to the north and east by the bean milling factory and a vacant warehouse, while empty plots of land to the south and west. The main building occupies 1.94 acres, serving as the facility for office, staff housing, rice mill operation and production activities. Gasifier, Ash filtration pond for wastewater from gasifier and reservoir tank are behind the main building as sub-components of the project. Surrounding the building, 6-ft wide road runs along both sides, facilitating easy and transportation of rice bags. In front of the main building, a green area covering approximately 0.05 acres provides an environmentally conscious space, enhancing the overall contributing to a sustainable work environment.

- i) To generate foreign income for the country.
- ii) To manufacture high-quality products from the factory and import and trade quality products to local and international.
- iii) To Increase employment opportunities and develop livelihoods and mechanization using systematic techniques.
- iv) To ensure compliance with local and national environmental regulations and proposed strategies to promote sustainable practices, ultimately contributing to environmental protection and community welfare.



Figure 2-1 Location Map of the Project Site (53-C)



Figure 2-2 Overview Map of the Project Site (53-C)

2.3 Installation, Technology, Infrastructure, Production Processes

2.3.1 Installation Phase

This rice milling process is being conducted in an already constructed, rented facility at No. (53-C) within Pathien Industrial City. The installation process began in November 2023 and spent over 6 months involving the placement of the milling equipment, systematic setup of machinery and other associated components such as water treatment plant required for milling operation, gasifier room which is used to generate electricity, reservoir tank which provide a consistent water supply for operation, and wastewater filtration tank. The rented facility provided by Pathein Industrial City includes essential areas such as an office, staff dormitory, and restrooms, which provide employees with the facilities they need. Additionally, it also has a transformer for power supply and control room which monitors the milling operation. The operation of milling started in May 2024. The photo of the building and components are shown in the following figures.



Figure 2-3 No. 53-C Building

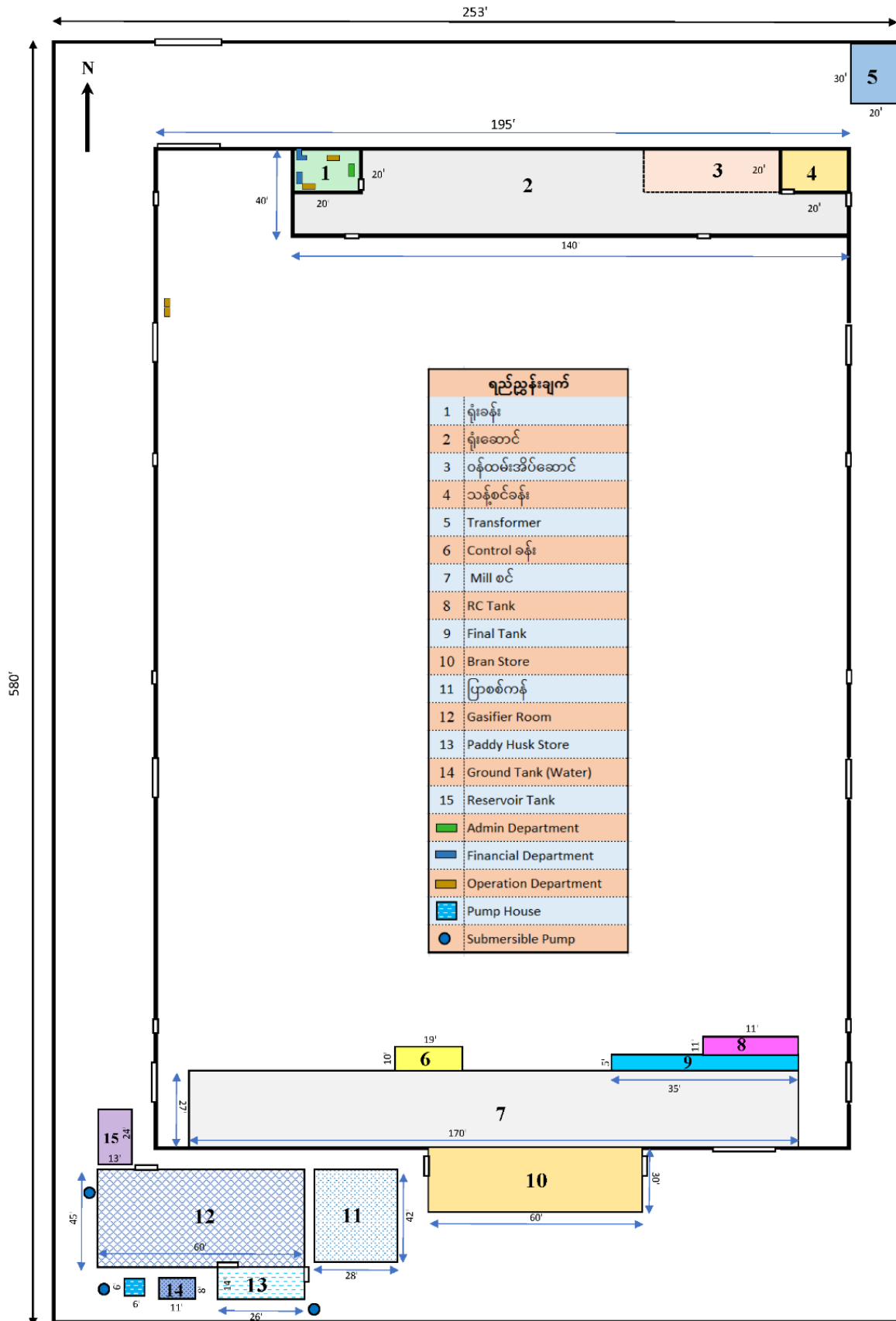



Figure 2-4 Layout of the Main Building

2.3.2 Operation phase

2.3.2.1 Working Procedure of Rice Milling Operation

In the process of rice milling project, the sequential steps involved in transforming brown rice into white rice. Initially, the brown rice (primary raw material) are purchased daily from rice mills nearby Pathein village tracts by truck. The milling process begins by pouring the brown rice into the bowl and then transferred via conveyor to the No. (1) Cleaner to remove impurities, followed by passing through a Destoner to eliminate stones. Afterward, it proceeds through the No. (2) Cleaner for additional cleaning. The process then splits into two parallel streams where rice is polished through No. (1) and No. (2) Polishers. Following this, the rice is further cleaned by the No. (3) Wet Cleaner before undergoing another round of polishing through No. (1) and No. (2) Polishers. Following this, the rice is further cleaned by the No. (3) Cleaner before undergoing another round of polishing through No. (3) and No. (4) Polishers. Finally, the polished rice is graded by size using a Size Grader and sorted by length using a Length Grader. The end result is high-quality white rice, ready for packaging or export.

		
<p>Raw Material (Brown Rice) Collection</p>	<p>Brown Rice Tank</p>	
		
<p>No (1) Cleaner</p>	<p>Destoner</p>	<p>No (2) Cleaner</p>

		
<p>No (1 & 2) Polisher</p>	<p>No (3) Cleaner</p>	<p>No (1) Color Softer</p>
		
<p>No (2) Color Softer</p>	<p>No (3 & 4) Polisher</p>	<p>Size Grader</p>
		
<p>Leagth Grader</p>	<p>White Rice Tank</p>	<p>A.12 Tank</p>



Milling Operation Area



Exporting White Rice

Figure 2-5 Processes of the White Rice Milling Operation (53-C)

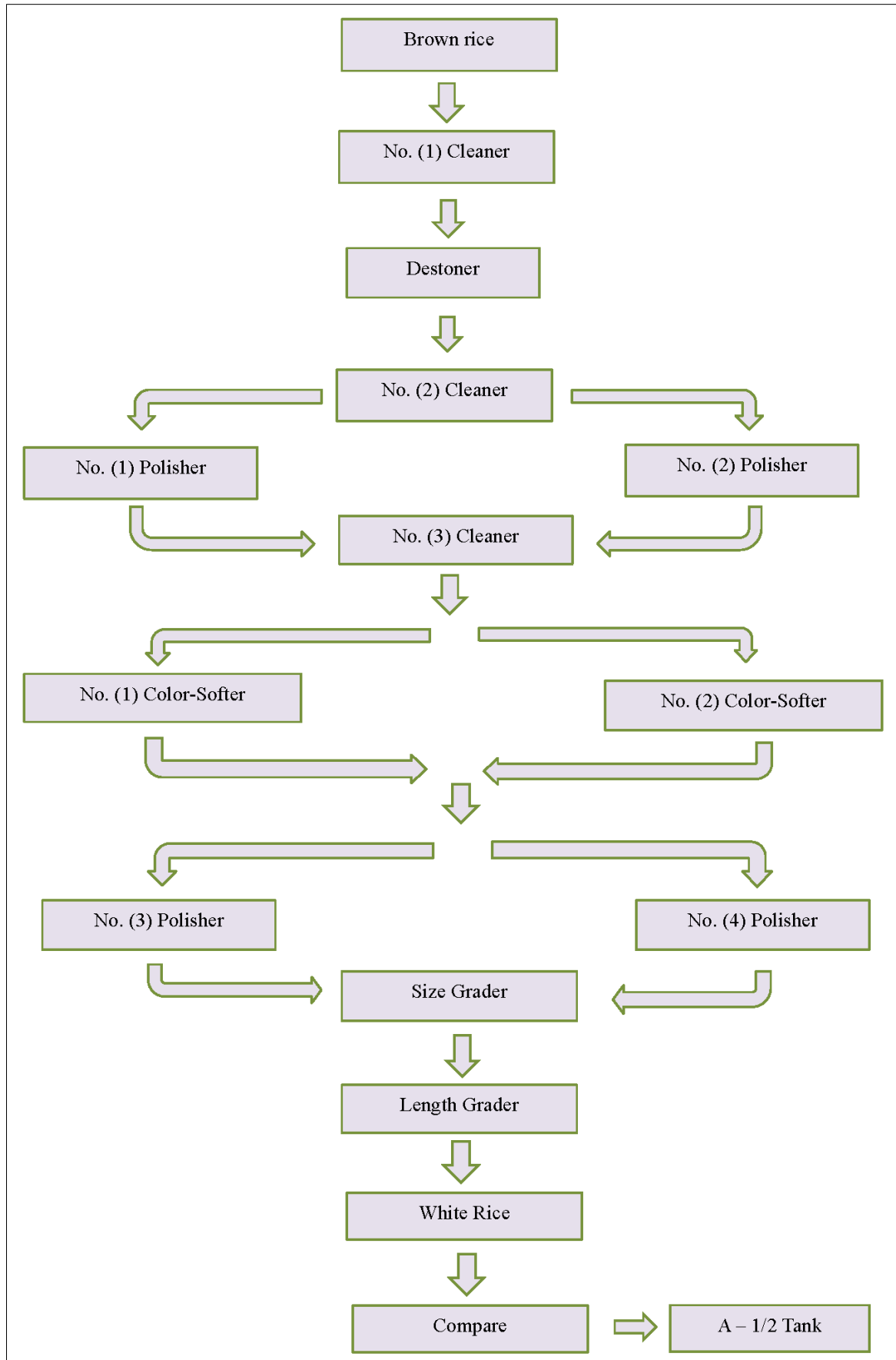


Figure 2-6 Step-by-Step Operation Procedures of Rice Milling

2.3.3 Lists of Equipment

The following Table 2-1 displays the specific machinery and equipment required for rice milling process during operation phase, along with their respective capacity and quantities.



Figure 2-7 Equipment Storage

Table 2-1 Machinery and Equipment Lists

No	Motor Name	KW	Qty	Combine KW	Remark
1	Water Pump	1.5	3	4.5	
2	Slove & Tower Water Pump	3	1	3	
3	Slove Wint Motor	0.75	3	2.25	
4	Elevator W-30	7.5	1	7.5	
5	Conveyor No-1	1.5	1	1.5	
6	Cleaner No-1, No-2	1.5	2	3	
7	Destoner	0.75	3	2.25	
8	Elevator W-15, W-10	2.2	21	46.2	
9	Blower No-1, No-2	7.5	2	15	
10	ပုံနှိပ် မော်တော်	2.2	1	2.2	
11	Air Lock	1.5	8	12	
12	Screw Conveyor	2.2	1	2.2	
13	Blower No-3	18.5	1	18.5	
14	Blower No-4	22	1	22	
15	Rice Polisher No-1	55	1	55	
16	Rice Polisher No-3	45	1	45	
17	Rotary Filter	2.2	1	2.2	
18	Length Grader	2.2	3	6.6	
19	Cleaner No-3	1.5	1	1.5	
20	Conveyor No-2, No-3	1.5	2	3	
21	Screw Air Compressor W-13	45	1	45	
22	Air Dryer	1.6	1	1.6	
23	Blower No-5, No-7	22	2	44	
24	Blower No-6	7.5	1	7.5	
25	Blower No-8	15	1	15	
26	Rice Polisher Water Pump No-1,3	0.75	2	1.5	
27	Rice Polisher No-2	55	1	55	
28	Rice Polisher No-4	45	1	45	
29	Rice Polisher Water Pump No-2,4	0.75	2	1.5	
	Total		70	471.5	

2.4 Use of Materials and Resources

2.4.1 Use of Material

The major materials required for operation stages of the rice milling project were explained in the following section.

2.4.1.1 Materials used for Rice Milling Operation

For this rice milling project, the primary raw material consists of medium grain rice (5.5 mm to 6.5 mm) and long grain rice (6.5mm and above), which is collected daily from various rice farms near village tracts. A total of 75 tons to 100 tons per day of raw rice is collected, providing sufficient stock for the white rice milling process. Energy is also a key consideration, as the project utilizes a gasifier from rice husk or biomass and diesel are also used for the dynamo to generate electricity, ensuring a reliable power supply for the rice milling process. The rice husk required for gasifier is 400 bags (3.3 tons) per day. Water is another essential input, especially for wet cleaning and additionally polishing processes. Packaging materials including polypropylene, inner liner, jute etc. are also crucial for final white rice.



Raw Material (Brown Rice) Storage



Woven Bags Storage for White Rice

Figure 2-8 Raw Material Storage

2.4.2 Human Resources

The rice milling project at Plot No. 53-C is currently operating with 23 employees including office department and operating department. Daily wage workers and skilled workers are also employed based on the cargo operation of rice bags to ensure all of the operations activities. Normal government office hours will be employed to regulate working hours (9:00 to 5:00) during the operation phase. The organization chart of required employees for operation at 53-C is shown in the following figure.

promoting environmental sustainability. Additionally, they help lower greenhouse gas emissions, contributing to efforts to combat climate change. The by-products, such as ash, can be used as natural fertilizer, enhancing soil health and supporting agricultural practices.



Raw material (Rice Husk for Gasifier)



Gasifier Room



Diesel Generator



500 KVA Transformer

Figure 2-10 Sources of Electricity

2.4.4 Water Requirement

The water supply for operation use in this rice milling project is taken from two tube wells with 4 inches diameter with a ground tank having storage capacity of 2025 gallons. A total of 15000 gallons storage capacity RC water tank was also built as a reservoir tank to sufficient for the whole operating process and domestic usage. The water purification system is installed to treat the raw water and supply for milling operation. It is operating with a Reverse Osmosis (RO) system and UV filtration with output capacity of 2.5 gallons per minute, producing purified water about 150 gallons per hour with an 8-hour daily operation. For maintenance, the main filter cartridges are cleaned monthly, and the membrane is flushed every two weeks. The membrane is replaced if the output water decreases below 1.5 gallons per minute. The required amount of treated water for the wet cleaning and polishing stages is 1200 gallons per day. Drinking water bottles are provided for staff buying 10 bottles of 20 liters per day buying from local sources. The total maximum daily water consumption for the gasifier process are 10000 gallons per day.



Groundwater Tank



Reservoir Tank



Water Purification System for Milling Operation



Drinking Water Bottles

Figure 2-11 Required Water Storage

2.4.5 Generation of Waste and Management

Solid Waste Generation and Management Facilities

In the process of producing white rice from grown rice, various types of waste can be generated. The broken rice total estimated amount of 120 bags (6 tons) and 30 bags (1.5 tons) of reject are produced from the whole operation per day. These include ash waste from gasifier used for electricity generation, discarded rice husks from the gasifier filters, dust and fine particles as well as stones and clumps of clay, rice bran, hulls and husks and broken rice from the dry cleaning, wet cleaning and polishing stages in the milling process. The ash waste from gasifier is generated 300 bags (4.5 tons) per day and rice husks from gasifier filters is disposed of every 15 days, with a disposal volume of 50 bags (0.375 ton) per cycle. The rice bran is generated with a total amount of 40 bags (1 ton) per day from milling process. The waste generated from office and staff amounts to approximately 18 kg on every three days. The amount of packing waste is also minimal since the employees bring their own lunch boxes instead of purchasing food from shops. The estimated 1500 packaging bags from raw rice are generated per day.

To manage the waste generated from the white rice production process, several sustainable methods are implemented. Ash from the gasifier is repurposed as fertilizer and disposed of in the gardens of Pathein Industrial City and near agricultural farms then, the rice husk from the gasifier filter is used for landfilling. Domestic waste from the office and staff are disposed of at NantharKone dump site. The reject rice and rice bran are repurposed as animal feed, while packaging bags from raw rice are reused for packaging reject rice, rice bran, ash and rice husk

waste. This waste management approach reduces the environmental impact by reusing or repurposing materials supporting in the production process.



Ash Waste



Ash Waste Storage before disposed off



Rice Husk Waste from Gasifier Filters



Ash Waste Disposal Site (PIP Garden)



Reuse woven bags



General office waste

Figure 2-12 Solid Waste Management Practices

Wastewater Generation and Management Facilities

In the white rice production process, which utilizes a rice husk gasifier for electricity generation, wastewater is primarily generated from the wet cleaning stages, equipment washing and gasifier cooling processes. During wet cleaning, significant water is used to remove dirt, dust, and producing wastewater that contains organic matter such as rice dust, soil and small rice husk parties. Additionally, regular washing of milling equipment generates wastewater containing residual rice particles, dust, and traces of machinery oils. The gasifier cooling process also requires water to cool and scrub the gas, resulting in approximately 3,000 gallons of wastewater per day that includes ash particles. Domestic wastewater from restrooms and staff accommodations contributes an additional 30-40 gallons per day.

To manage the wastewater, gasifier wastewater is filtered through a three-stage wastewater filter tank before disposal to the central drain of Pathein Industrial City. The filtration process includes an initial layer of broken brick, followed by charcoal, and finally pea gravel to ensure thorough filtering before the water enters the central drain. Domestic wastewater from office restrooms and staff accommodations is disposed of through drainage directly into the central drain. The wastewater from the whole project direct to flow from the central drain into the sedimentation pond of the PIP, which serves as the secondary treatment.

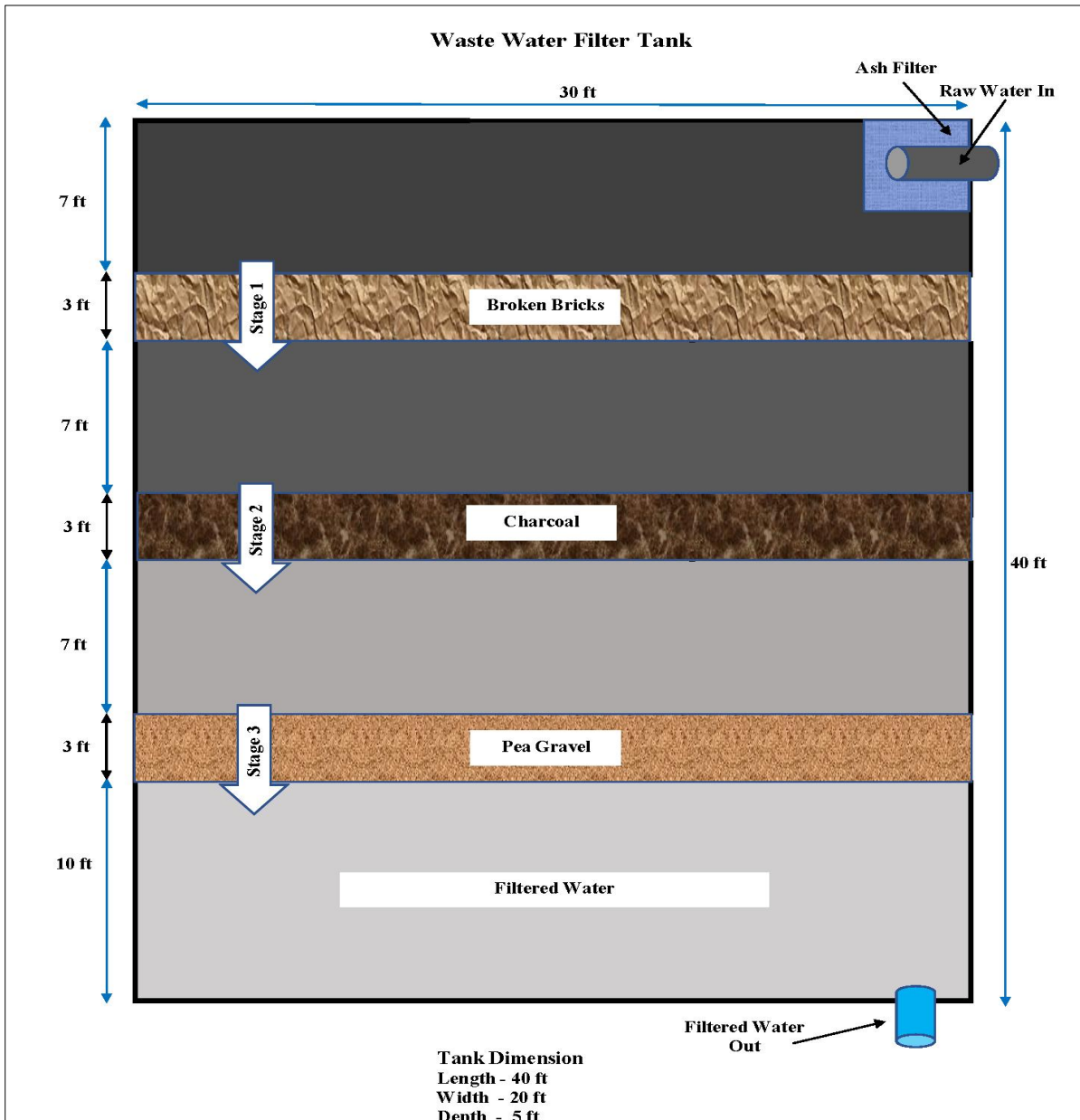


Figure 2-13 Layout of Wastewater Filtration Tank



Figure 2-14 Wastewater Filtration Tank



Green Shine Drainage System



Drainage Outlet to Central Drain



PIP Central Drainage

Figure 2-15 Drainage Systems

Air Pollution Control

In rice milling operations, dust emissions are a significant concern due to the nature of the processes involving key stages such as dry cleaning, polishing, and other milling steps generate high levels of airborne particulate matter, primarily from the handling of rice grains. Additionally, dust emissions are exacerbated during the collection and processing of by-products like rice husk and rice bran, which release fine particles into the air. These emissions pose health risks to workers and contribute to environmental pollution if not properly managed.

Implementing effective air pollution control and ventilation measures is essential for a white rice milling operation. Regular cleaning at high-dust areas is done to minimize the accumulation of particulate matter and prevent it from becoming airborne. Cyclone dust collectors and blower are installed near key emission points, such as cleaning, polishing machines and rice by-product handling areas to capture and removal of bran and fine particles. Additionally, a well-designed ventilation system and exhaust units are placed to improve overall air quality. Collected dust is compacted for safe disposal or repurposing, ensuring sustainable waste management. Regular monitoring and schedule maintenance of cyclones, fans and filter are implemented for worker safety and operational efficiency ensuring optimized air quality control in the milling process.



Figure 2-16 Air Pollution Control Measures

2.5 Fire Safety Preparedness

The rice milling project is associated with significant fire hazards due to the accumulation of rice husk, milling dust, and the use of rice husk gasifier. To mitigate these risks, fire safety preparedness measures have been implemented, including the strategic placement of 5 kg with 50 fire extinguishers particularly in high-risk areas such as the gasifier room, rice husk storage area and milling operation area. Additionally, the emergency exists, fire alarm systems and assembly points are also prepared. Furthermore, the project proponent will collaborate with PIP representatives and local fire service department to ensure support during emergencies.

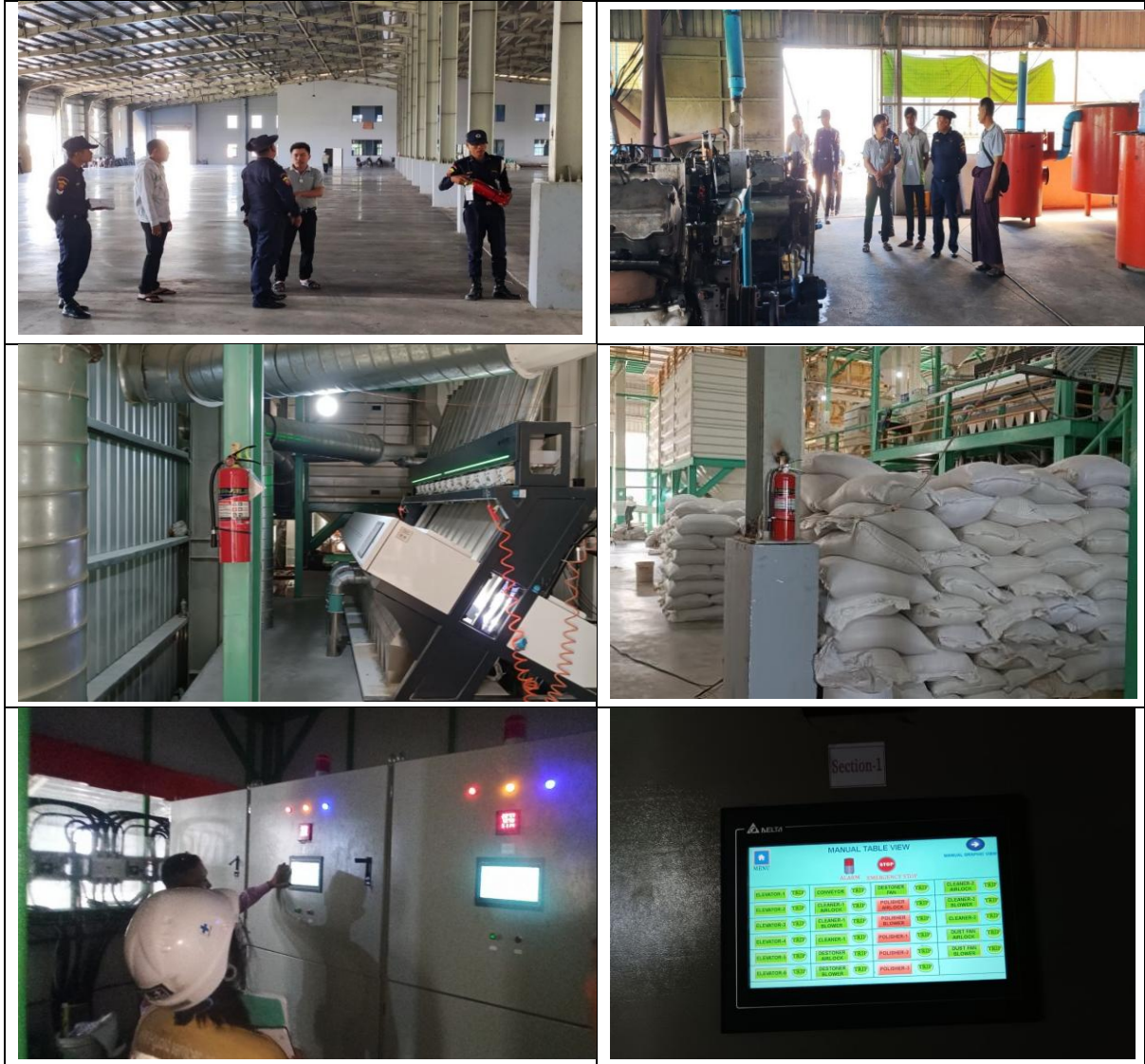


Figure 2-17 Fire Safety Preparedness

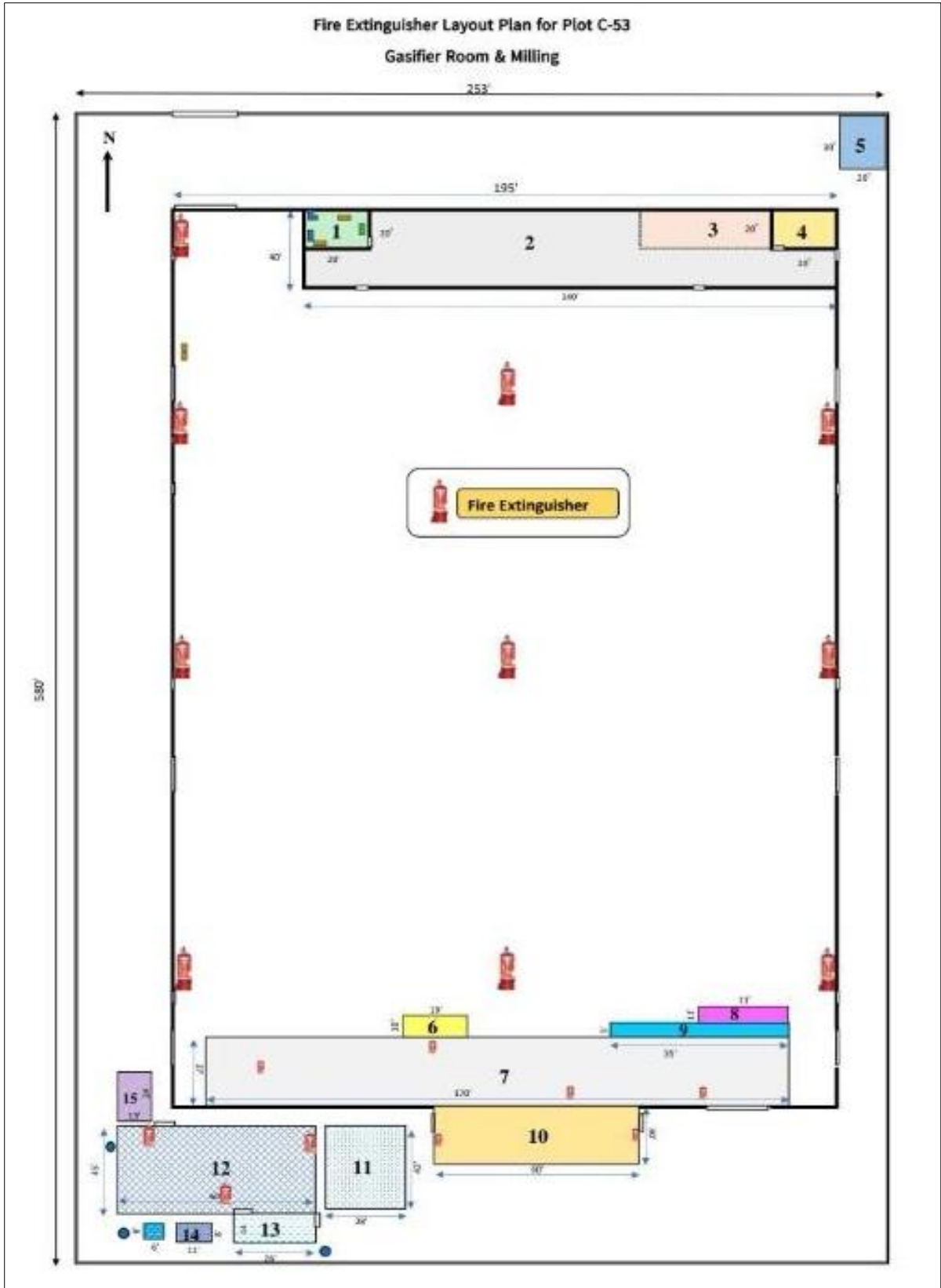


Figure 2-18 Fire Extinguisher Layout Plan for Milling Operation Area

3 IDENTIFICATION OF THE PROJECT PROPONENT

3.1 Project Proponent

The proposed project is implemented by Green Shine Co., Ltd. which is engaged in the processing, exporting, and selling of rice, corn and bean milled. The factory is located at No. 53-C in Pathein Industrial City, Chaung Zauk Village Tract, Kangyidaunt Township, Pathien District, Ayeyarwady Region. Their commitment to submission of this report to Environmental Conservation Department in collaboration with the third-party environmental consultant firm aligns with the principles of environmental stewardship. Green Shine Co., Ltd. is dedicated to collaborating with stakeholders, adhering to environmental regulations, and ensuring transparency throughout the project's lifecycle. This IEE is conducted in partnership with the Green Shine Co., Ltd. to uphold environmental standards and contribute to the overall well-being of the community. Detailed information of the project proponent and organization chart of rice milling project during operation stage can be seen in Table 3-1) and Figure 3-1).

Table 3-1 Project Proponent Information

Project Proponent	Green Shine Co., Ltd.
Address	No. (108), Corner of Kabar Aye Pagoda Road and Nat Mauk Road Bo Cho (1) Quarter, Bahan Township, Yangon Region, Myanmar
Contact Person	U Ye' Wai Phyo (U Ye' Htut), Deputy General Manager, Green Shine Co., Ltd.
Contact email address	deputy_gm@greenshinemm.com ; factory_opmanager@greenshinemm.com
Project Location	No. C-53, Pathein Industrial City, Pathein-Nga Pu Taw Road, Kangyidaunt Township, Pathein District, Ayeyarwady Region, Myanmar

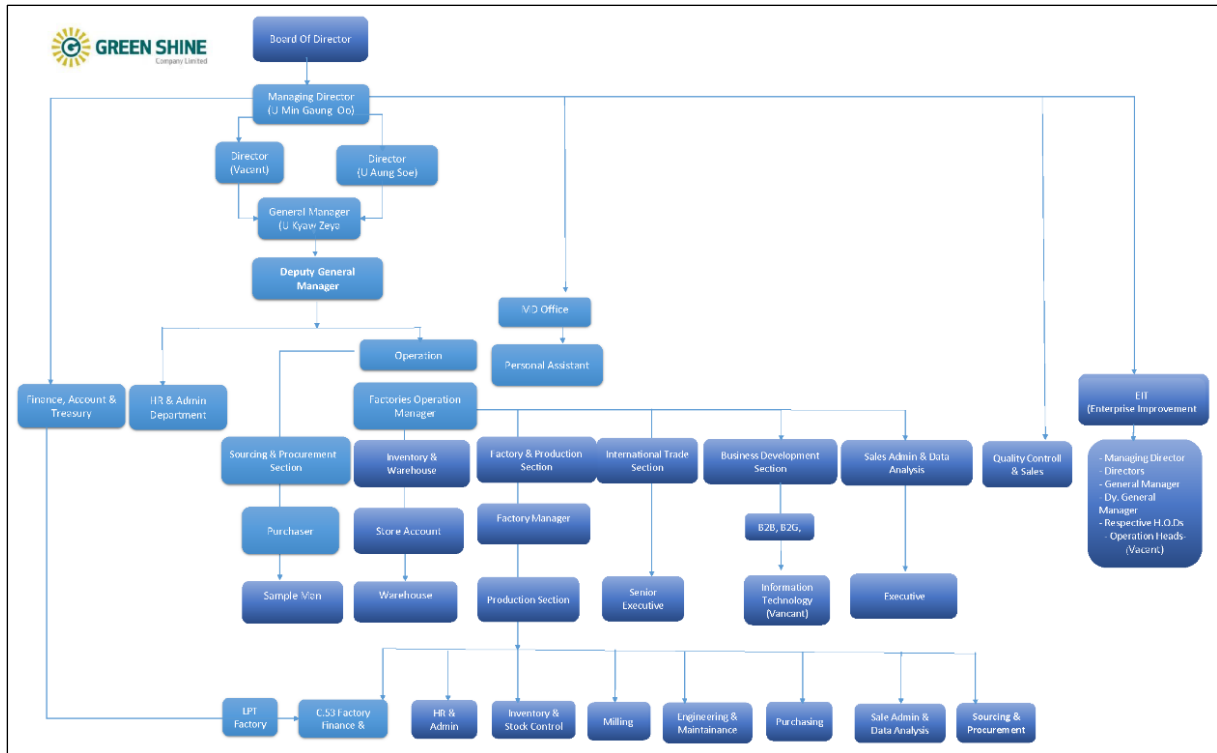


Figure 3-1 Organization Chart of Green Shine Co., Ltd.

3.2 Investment Information

The project is a joint investment, with contributions from both foreign and local stakeholders. GMEC PTE. Ltd. from Singapore holds a 35% share, while Ayeyar Hinthar Trading Co., Ltd. from Myanmar contributes 16%. Additionally, U Min Gaung Oo, an individual investor from Myanmar, holds 29.4%, and Daw Khin Moe Thuzar holds 19.6%. This diverse investment structure includes a foreign and local partnerships under Green Shine Co., Ltd., with a total investment amount of 6,200 million MMK. The investment plan for the whole process of the rice milling project is shown in the following table.

Table 3-2 Investment Plan for Green Shine Rice Milling Project

No	Investment Type	MMK (million)
1	Investment amount for shares	200
2	Investment amount for Materials and Equipment	4,000
3	Investment amount for Raw Materials	2,000
	Total Investment	6,200

4 IDENTIFICATION OF THE IEE EXPERTS

4.1 E Guard Environmental Services

Established in July 2013, "E Guard" has evolved into a prominent third-party Environmental Impact Assessment (EIA) consultancy firm, making significant strides in the field of environmental services. Registered with the Directorate of Investment and Company Administration (DICA), "E Guard" proudly stands as a recognized and reputable organization committed to fostering sustainable development through responsible environmental practices. As a licensed third-party consultancy organization accredited by the Environmental Conservation Department (ECD), "E Guard" plays a pivotal role in ensuring that projects adhere to stringent environmental standards. The firm's third-party consultant license no. EIA_CO(A)001 2023 was issued on 29 December 2023 with 155 Areas of Expertise. Thus, it is providing comprehensive EIA services positioned as a trusted advisor, offering invaluable insights into the potential environmental impacts associated with diverse projects across various sectors.

"E Guard" has earned a distinguished reputation as a well-known environmental service provider, synonymous with excellence and commitment to environmental stewardship. The firm's track record includes successfully navigating the complex landscape of environmental regulations, contributing to the mitigation of environmental risks, and facilitating environmentally responsible development.

At the heart of "E Guard" is a team of 11 licensed consultants and 14 associate consultants with supporting dedicated environmental professionals and employees. Their collective expertise spans diverse disciplines, including environmental science, engineering, ecology, and regulatory compliance. This team, driven by a shared commitment to sustainability, employs a holistic approach to environmental assessments, ensuring that each project is thoroughly analyzed, and recommendations are tailored to meet the highest environmental standards.

As "E Guard" continues to expand its footprint, the firm remains unwavering in its dedication to advancing environmentally sound practices, fostering collaborative partnerships with clients, and contributing to the broader goal of sustainable development. Figure 4-1) illustrates the organization chart of E Guard, and operation and administration are the main departments of E Guard Environmental Services Co., Ltd.

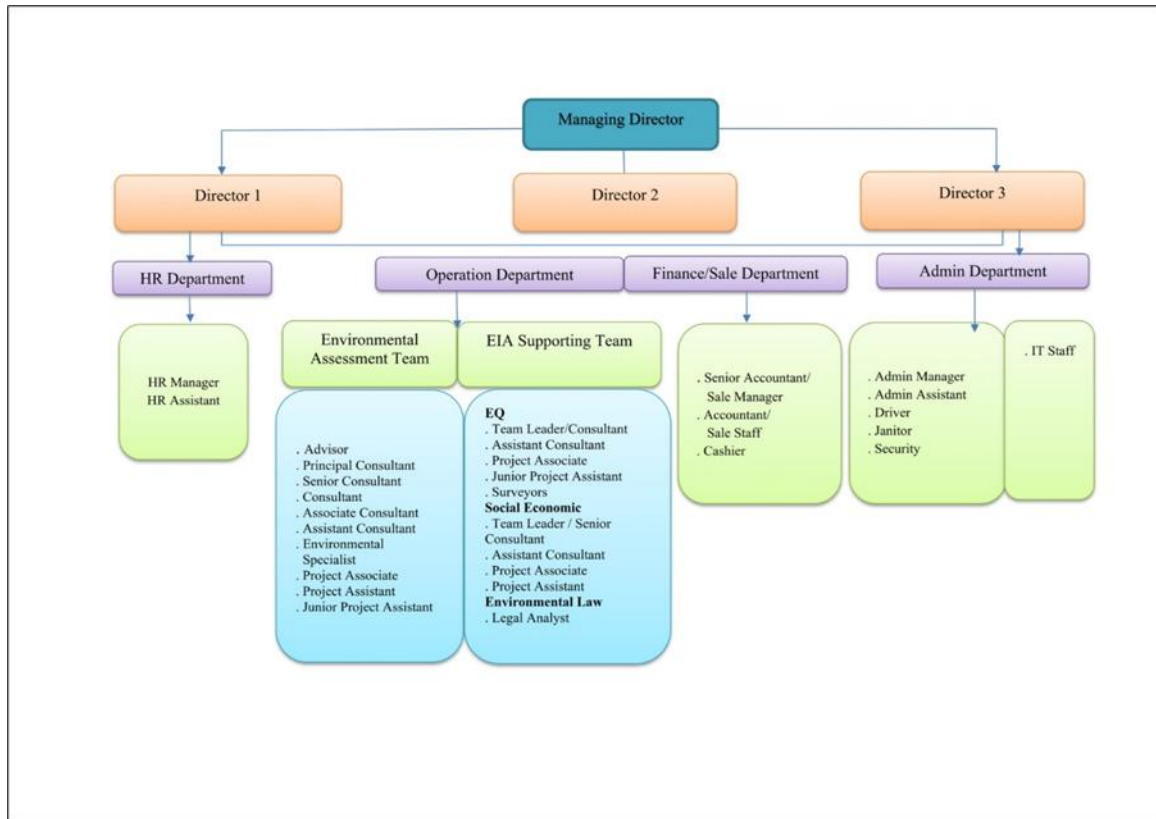


Figure 4-1 Organization Chart of E Guard Environmental Services Co., Ltd.

4.2 IEE Study Team for Environmental and Social

The following members of the study team worked with E Guard to prepare this IEE report. Listed below in Table 4-1 are the responsible IEE experts, along with a description of their roles and responsibilities.

Table 4-1 Study Team and their Responsibility

No	Name	Position	License No.	Expertise
	E Guard Environmental Services Co., Ltd.		EIA-CO (A) 001/2023	
1.	U Soe Min	Team Leader	EIA-C 031/2023	- Hydrology, Surface water and Groundwater conservation - Water Pollution Prevention, Control, and Impact Prediction - Air Pollution Prevention and Control
2.	U Si Thu Aung	Team Member	EIA-AC 094/2024	- Hydrology, Surface water and Groundwater conservation - Water Pollution Prevention, Control, and Impact Prediction
3.	Daw Shwe Ya Min Bo	Team Member	EIA-AC 009/2023	- Ecology and Biodiversity - Social Study and Analysis
4.	U Aung Moe Oo	Team Member	EIA-AC 010/2023	- Air Pollution Monitoring - Solid Waste and Hazardous Waste Management

No	Name	Position	License No.	Expertise
5.	Daw May Pwint Phoo	Team Member	EIA-AC 007/2023	- Risk Assessment and Hazard Management - General Environmental Management
6.	Daw Thein Mwe Khin	Supporting Team Member	-	- Legal Study and Analysis
7.	U Ye Chit Zaw	Supporting Team Member	-	- Noise and Vibration

U Soe Min (Principal Consultant)

U Soe Min is a director of E Guard Environmental Services Co., Ltd (well known as E Guard). He is also a principal consultant of the company responsible for successful implementation of the environmental related projects overseeing and coordinating the various aspects of the EIA process. His environmental consultant license number is EIA-C 031/2023.

He is a civil, water resources and environmental engineer. He received Bachelor of Civil Engineering Degree (B.E, Civil) from Rangoon Institute of Technology (RIT) Yangon and pursued Master of Environmental Engineering (M.E) from Asian Institute of Technology (AIT) Bangkok, Thailand. He had worked and trained for water resources engineering, irrigation and drainage engineering disciplines for a decade long period in his career development.

As a civil-water resources engineer, he was involved in water resources development projects from investigation and feasibility studies to planning, design and construction. He had experiences of local and international practices on design, construction management and contractual documentations. He had oversea working experiences in Thailand and Singapore. He had worked as a local environmental consultant for various technical assistant project of ADB and World Bank supporting capacity-building projects in strengthening environmental safeguard systems in Myanmar.

He has keen interest in environmental monitoring and establishment of environmental data acquisition system. He provides capacity building trainings and knowledge sharing on topics related to Environmental Protection and Safeguarding. Taking the role of a principal consultant at E Guard, currently he is leading the local consultant team and collaborating with international consultant firms providing environmental related services in Myanmar.

In this project he is taking the role of a team leader who leads the overall project implementation, planning, organizing and execution of the EIA process, and develops project timelines, milestones, and deliverables.

As a team leader he

- assembles and manages a multidisciplinary team of experts, including ecologists, engineers, social scientists and other specialists.
- fosters effective communication and collaboration among team members.
- oversees the quality of work produced by the EIA team.

- addresses concerns and facilitates communication between the project proponent and stakeholders.
- oversees the preparation of the EIA report, ensuring it accurately reflects the findings of the assessment.
- reviews and approves the final report.

U Si Thu Aung (Consultant)

U Si Thu Aung is a Consultant at E Guard Environmental Services Co. Ltd with the license EIA-AC 094/2024. He gained his Civil Engineering Degree from Thanlyin Technological University in 2014. He pursued his master's degree in environmental engineering at Yangon Technological University in 2018 while he started his career engagement with E-Guard. He is also a Registered Engineer (Water Supply and Sanitation) at Myanmar Engineering Council. Through his time at E-Guard, he has been involved in the preparation of ESIA related reports and in negotiation with relevant stakeholders such as Report Writing, Stakeholders Engagement, Secondary Data Collection, Site Investigation, Impact Assessment, Mitigation Measures and Environmental Management Plan, etc. He has worked in Myanmar EIA Field and in a range of different local and international projects more than five years. His quest for seeking out new sources and making friends for data collection led him to aid his primary works and provide information to the organization and colleagues. Currently he is working in the organization as a motivated and collaborative team player.

As a member of this IEE study team, he supported in the area of Water Pollution Prevention, Control, and Impact Prediction; Hydrology, Surface Water and Groundwater Conservation; General Environmental Management.

Daw Shwe Ya Min Bo (Assistant Consultant)

Daw Shwe Ya Min Bo is an Assistant Consultant, who holds Consultant License No. EIA-AC 009/2023, described expertise in Ecology and Biodiversity, and Social Study and Analysis. She received her Bachelor Degree in Forestry from the University of Forestry and Environmental Sciences in November, 2016. She also received Post Graduate Diploma in Geographic Information System and Remote Sensing and Post Graduate Diploma in Environmental Studies from University of Yangon in December, 2019. She has almost seven years-experience in preparation of Environmental Impact Assessment, Initial Environmental Examination and Environmental Management Plan Reports for various development projects as a Lead Consultant and in participation many Environmental Impact Assessment and Resettlement Action Plan projects including Japan's ODA loan projects. Moreover, she has many experiences in communication with clients, government authorities and local people, stakeholder engagements and public consultation meetings conduction, socio-economic survey and biodiversity survey. In this project, she provides on socio-economic related issues.

U Aung Moe Oo (Assistant Consultant)

Aung Moe Oo is a Project Associate, who received his bachelor's degree in chemical engineering from Technological University in 2016. He engaged E Guard as a project assistant in 2016 and was promoted to Assistant Consultant. He holds consultant registration number

EIA-AC 010/2023 with expertise in the area of Air Pollution Monitoring, Solid Waste and Hazardous Waste Management. He has been involved with Environmental Quality Assessment for air, noise and vibration, water, and soil; and Data analysis and Environmental Quality Report preparation. As an Environmental Specialist he developed and implemented monitoring programs for environmental parameters. He used to coordinate with project proponents in conducting stakeholder's engagement and public consultations (General Environmental Management) in many EMP projects. He attended and finished 'Occupational Safety and Health Supervisor Course' sponsored by WIN OSHE Co., Ltd.

In this project he was involved in air pollution monitoring related issues and mitigation in the environmental management plan. He analyzes the environmental quality data of air, noise and vibration, and water quality, prepare the environmental quality report and provide occupational health, safety and environment (OHSE).

Daw May Pwint Phoo (Associate Consultant)

Daw May Pwint Phoo is an Associate Consultant with a license EIA-AC 007/2023, who had her Engineering bachelor's degree in civil from West Yangon Technology University, Yangon, Myanmar and Master Degree in Urban Environmental Management from Asian Institute of Technology University, Bangkok, Thailand. She is currently working as an associate consultant at E Guard Environmental Services Co., Ltd. She had experience in working as lead environmental consultant in Elite petrochemical project and Myanmar Shwe Nagar Fertilizers production and distribution project, and as a team member in Anin Quarry project.

She is responsible to do overall management for the proposed project description, review impact list, impact analysis, develop mitigation measure for each respective impact and formulate the implementable EMP in coordination with team leader, team members and client. She provides her expertise in the area of Impact Analysis on Pollution Control, Waste Management, Risk Assessment and Traffic Management in this project.

Daw Thein Mwe Khin (Senior Consultant)

Daw Thein Mwe Khin is a Senior Consultant with the license EIA-C 006/2023 to conduct the environmental impact assessment in Social Study and Analysis and Ecology and Biodiversity. She received her master's degree in Regional and Rural Development Planning from Asian Institute of Technology in 2019 and bachelor's degree in forestry from the University of Forestry in 2013. She worked as a social expert in cooperation with JICA study team for the preparation of Resettlement Action Plans (RAPs) for Yangon Outer Ring Road Construction Project (YORR, Eastern Section) and New Hanthawaddy International Airport Development Project. She also cooperated with KECC for the preparation of prefeasibility study report for Wataya Bridge Construction project in 2020. She had experience in working as a social survey team leader for the preparation of EIA and Abbreviated Resettlement Action Plan (ARAP) for Yangon Circular Railways Line Updating Project (YCRLUP, Eastern Section) and Dry Zone Water Supply Project in 2014, 2015 and 2016 respectively. She had her experiences in working as a core team member of the social team for the preparation of EIA and RAP for Construction of Kyarkalay Bypass and 2 Bridges. At the same time, she worked as a social team member under the supervision of JICA Study Team in preparation of EIA and RAP for Construction of

Thaton Bypass and 2 Bridges in 2014. In addition, she has a project leader role in the revision of one EIA report for Bawdwin Project and six IEE reports for various types of projects. She also participated in the preparation of technical and financial proposals for several projects with diverse fields. She led many social surveys including the socioeconomic survey (SES), lost asset inventory and census survey, Focus Group Discussion (FGDs) and Key Informant Interview (KII) for collection of baseline surveys for preparation of EIA, IEE, EMP, RAP and ARAP reports for various types of projects over around nine years of working life in the impact assessment fields. As a social team leader, she is solely responsible for conducting social surveys in coordination with the lead environmental consultants and team leaders of the projects, and project proponents. She prepares social reports based on the data analysis of collected baseline information as a part of the main reports (i.e., EIA, IEE, EMP, EMPs, RAP and ARAP) in many of E Guard's team reports. In addition to social reports preparation based on the social surveys, she plays the role to carry out feedbacks survey aimed to collect the feedbacks and opinions of the local communities on the operation of proposed projects and used to be done during public consultations. She also studied the socioeconomic impact of rural electrification on the well-being of rural households in central dry zone Myanmar as her master thesis in 2018. She will be involved as a social expert for this project.

In this project she contributes the Policy, Legal and Institutional Framework Chapter of this IEE study.

U Ye Chit Zaw (Project Associate)

U Ye Chit Zaw is a project associate and received a degree in geology from Dagon University in 2019. He has been working in his role as a project associate at E Guard Environmental Services Co., Ltd for about 2 years. He specializes in operating environmental measurement equipment, collecting field data, analyzing and measuring environmental conditions. Additionally, he prepares reports on environmental quality measurement report and environmental monitoring report.

In this project, he analyzes the environmental quality data of air, noise and vibration, and water quality and prepare the environmental quality report.

5 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

5.1 National Laws and Regulations

Describes the National Laws and Regulations for the Environmental Protection applicable to the proposed project. Among these laws and regulations, the Constitution of the Republic of the Union of Myanmar (2008) is the main concern for the environmental conservation in Myanmar. The others are the National Environmental Policy, the National Land Use Policy, Environmental Conservation Law and Regulations on Environmental Impact Assessment and Initial Environmental Examination, Conservation of Water Resources and Rivers Law, Land Acquisition Act, The Land Nationalization Act, Building Regulations, Foreign Investment Law, Factories Act and Private Industrial Enterprise Law.

This section reviews the relevant policies, national laws, regulations, legislations and institutional framework of Myanmar, National Environmental Quality (Emission) Guidelines, International standards, guidelines, and agreements relevant in the context of environmental and socio-economic aspect of the project. The project proponent understood and should compile in accordance with the followings:

Overview of Myanmar Regulatory Framework

Key ministries, agencies, and state-owned enterprises that have jurisdiction or are typically involved in environmental and social impact assessment related to the Project include the followings:

- (1) Ministry of Natural Resources and Environmental Conservation (MONREC)
- (2) The Environmental Conservation Department (ECD)
- (3) Ministry of Labor (MOL)
- (4) Ministry of Industry
- (5) Ministry of Health (MOH)
- (6) Ministry of Investment and Foreign Economic Relations
- (7) Ministry of Electricity
- (8) Ministry of Transportation and Communications

Every citizen has the duty to assist the Union carrying out the environmental conservation under sub-section (b) of section 390 of The Constitution of the Republic of the Union of Myanmar (2008).

For this project, the following laws are related to Environment-

- National Environmental Policy of Myanmar (2019)
- National Environmental Policy of Myanmar (1994)
- The Environmental Conservation Law (2012)
- The Environmental Conservation Rules (2014)
- The Environmental Impact Assessment Procedure (2015)
- National Environmental Quality (Emission) Guidelines (2015)
- The National Strategy and Master Plan for Waste Management (2018–2030) of Myanmar
- Myanmar Climate Change Policy (2019)

For Insurance,

- The Myanmar Insurance Law (1993)
- The Myanmar Investment Law (2016)
- The Myanmar Investment Rules (2017)

For Health,

- The Public Health Law (1972)
- Prevention of Hazard from Chemical and Related Substances Law (2013)
- The Prevention and Control of Communicable Diseases Law (2011)
- The Control of Smoking and Consumption of Tobacco Product Law (2006)

Other necessary laws for this project-

- The Myanmar Agenda 21 (2007)
- The Electricity Law (2014)
- The Factories Act, (1951)
- The Private Industry Act (1990)
- The Industrial Explosive Materials Law (2018)
- The Vehicle Safety and Motor Vehicle Management Law (2020)
- The Vehicle Safety and Motor Vehicle Management Rules (2022)
- The Myanmar Engineering Council Law (2022)
- Myanmar National Land Use Policy (2016)
- Import and Export Law, 2012
- Myanmar Fire Brigade Law (2015)
- The Social Security Law (2012)
- The Consumer Protection Law (2014)
- National Food Law, 1997 (Amendment 2013)
- Natural Disaster Management Law, 2013
- Underground Water Act (1930)
- Farm Land Law (2012) (Amendment 2020)
- Commercial Tax Law (1990)
- The Standardization Law (2014)
- The Police Act, 1945

Implementation of this project, the following laws are required for labours-

- Workmen's Compensation Act (1923)
- The Leaves and Holidays Act (1951)
- The Labour Organization Law (2011)
- The Employment and Skill Development Law (2013) (Amendment 2019)
- The Minimum Wage Law (2013)
- Payment of Wages Law (2016)
- The Settlement of Labour Dispute Law (2012), (Amendment 2019)
- The Occupational Health and Safety Law (2019)

The following Laws are applicable for this project-**Biodiversity and Resource Conservation**

- The Conservation of Water Resources and Rivers Law (2006) (Amendment 2017)
- The Conservation of Water Resources and Rivers Rules (2013) (Amendment 2015) (Second Amendment 2020)
- The Law Amending Water Resources and Rivers Conservation Law (2013) (Amendment 2017)

1. The Constitution of the Republic of the Union of Myanmar (2008)

- The Union shall protect and conserve natural environment under section-45 of said law.
- Every citizen has the duty to assist the Union carrying out the environmental conservation under sub-section (b) of section 390 of said law.

2. National Environmental Policy of Myanmar (2019)

- **Mission:** To achieve a clean environment, with healthy and functioning ecosystems, that ensures inclusive development and wellbeing for all people in Myanmar.
- **Vision:** To establish national environmental policy principles for guiding environmental protection and sustainable development and for mainstreaming environmental considerations into all policies, laws, regulations, plans, strategies, programs and projects in Myanmar.
- The protection and conservation of natural resources for the benefit of present and future generations is the duty of the State and every citizen. (Policy Article 3 (b))

3. National Environmental Policy of Myanmar (1994)

- In 1994, the National Environment Policy was adopted stating the commit to sustainable development. This served as a precursor to the drafting of the Myanmar Agenda 21 in 1997.
- This Policy builds on Myanmar's 1994 National Environment Policy and reaffirms its core values:
 - (b) It is the responsibility of the State and every citizen to preserve our natural resources in the interests of present and future generations.

4. The Environmental Conservation Law (2012)

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

- The project proponent has to pay the compensation for damages if the project will cause injuries to environment under sub-section (o) of section 7 of said law.

- The project proponent has to purify, emit, dispose and keep the polluted materials in line with the stipulated standards under section 14 of said law.
- The project proponent has to install or use the apparatus which can control or help to reduce, manage, control or monitor the impacts on the environment under section 15 of said law.
- The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition included in prior permission, stipulated by the ministry, or not under section-24 of said law.
- The project proponent has to comply with the terms and conditions included in prior permission under section 25 of said law.
- The project proponent has to abide by the stipulations included in the rules, regulation, by-law, order, notification and procedure under section 29 of said law.

5. The Environmental Conservation Rules (2014)

- 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 under sub-rule (a) of rule 69 of said law.
- The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem under sub-rule (b) of rule 69 of said law.

6. The Environmental Impact Assessment Procedure (2015)

- The project proponent has to be liable for all adverse impacts caused by doing or omitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner under sub-paragraph (a) of paragraph 102 of said law.
- The project proponent has to support, after consultation 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 of said law.
- 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 of said law.
- 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 paragraph 104 of said law.
- 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 of said law.

- The project proponent has to continuously monitor all adverse impacts in the pre-construction phase, construction phase, operation phase, suspension phase, closure phase and post-closure phase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure under paragraph 106 of said law.
- 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 of said law.
- 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 of said law.
- The project proponent has to prepare the monitoring report under paragraph 109 of said law.
- 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 of said law.
- 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 of said law.
- 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 of said law.
- The project proponent has to allow inspector to inspect the contractor and sub-contractor who implement on behalf of project under paragraph 117 of said law.

7. National Environmental Quality (Emission) Guidelines (2015)

Objectives: The project proponent has to emit, discharge or dispose in line with the standards stipulated in said guideline.

8. The National Strategy and Master Plan for Waste Management (2018–2030) of Myanmar

The aim is to formulate and implement a comprehensive waste management strategy based on the principles of collaborative participation from all producers and consumers, ensuring the reuse of all waste, achieving zero environmental pollution, and establishing a circular economy where all waste is reused, in order to achieve a greener, cleaner, and more equitable environmental condition in Myanmar." (Paragraph 1.3)

9. Myanmar Climate Change Policy (2019)

The aim is to become a climate-resilient, low-carbon society that is inclusive and prosperous for present and future generations in Myanmar." (Paragraph 10)

10. The Myanmar Insurance Law (1993)

Objectives: The project can cause the damages to the environment and injuries to public so to ensure the needed insurances are insured at Myanmar Insurance.

- If the project proponent uses the owned vehicles the project owner has to ensure the insurance for injured person under section 15 of said law.
- The project proponent has to ensure the insurance to compensate for general damages because the project may cause the damages to the environment and injury to public under section 16 of said law.

The project owner has to comply with the provisions of the Myanmar Insurance Business Law regarding the insurance related to the project. (In accordance with the law)

11. The Myanmar Investment Law (2016)

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

- The project proponent has to submit a proposal to the Commission and invest after receiving the Permit under section 36 of said law.
- The project proponent has not to invest in prohibited investment under section 41 of said law.
- The project proponent has to register the land lease contract at Registration of Deeds Office in accordance with the Registration of Deeds Law under sub – section (d) of section 50 of said law.
- The project proponent has to appoint a qualified person of any citizenship in the investor's investment within the Union as senior manager, technical and operational expert, and advisor in accordance with applicable laws under sub -section (a) of section 51 of said law.
- The project proponent has to appoint the nationalities in the various levels of administrative, technical and expert work by the arrangement to develop their expertise under sub- section (b) of section 51 of said law.
- The project proponent has to appoint the nationalities only in normal work without expertise under sub – section (c) of section 51 of said law.
- The project proponent has to appoint either foreigner or nationality with the appointment agreement in accord with the law under sub – section (d) of section 51 of said law.
- The project proponent has to ensure the entitlements and rights contained in applicable labor laws and rules including minimum wages and salary, leave, holiday, overtime fee, damages, workman's compensation, social welfare and other insurance relating to workers by stipulating the rights and duties of employers and employees and other

employment terms and conditions contained in the employment contract under sub – section (e) of section 51 of said law.

- The project proponent has to settle disputes arising amongst employers, amongst workers, between employers and workers, between workers and technicians or staff in accordance with applicable laws under sub – section (f) of section 51 of said law.
- The project proponent has to respect and comply with the customs, traditions and culture of the national races in the Union under sub – section (a) of section 65 of said law.
- The project proponent has to establish and register a company or sole proprietorship or legal entities or branches under the applicable laws in order to invest under sub – section (b) of section 65 of said law.
- The project proponent has to abide by the rules and stipulations of special licenses, permits and business operation certificates issued to them including the rules, procedures, notifications, orders and directives issued under applicable laws and this law, terms and conditions of contract and tax obligations under sub – section (c) of section 65 of said law.
- The project proponent has to carry out in accordance with the stipulations of department concerned if it is required by the nature of business or other need to obtain any license or permit from the relevant Union Ministries, government bodies and organizations, or to carry out registration under sub – section (d) of section 65 of said law.
- The project proponent has to immediately inform to the Commission if natural mineral resources or antique objects and treasure trove, which are not related to the permitted business and not included in original contracts, are found above and under the land on which the investor is entitled to lease or use under sub – section (e) of section 65 of said law.
- The project proponent has not made any significant alteration of topography or elevation of the land on which he is entitled to lease or has rights to use, without the approval of the Commission under sub – section (f) of section 65 of said law.
- The project proponent has to comply with the international best practices, existing laws, rules and procedures to not damage, pollute, and injure to environment, cultural heritage and social under sub – section (g) of section 65 of said law.
- The project proponent has to prepare and keep proper records of books of account and annual financial statement, and necessary financial matters relating to the investments which are performed by permit or endorsement in accordance with internationally and locally recognized accounting standards under sub – section (h) of section 65 of said law.
- The project proponent has to close the project after paying the compensation to the employees in accord with the existing laws if violates the appointment agreement or terminate, transfer or suspend the investment or reduce the number of employees under sub – section (i) of section 65 of said law.
- The project proponent has to pay the wages or salary to the employees in accord with the laws, rules, order and procedures in the suspension period under sub – section (j) of section 65 of said law.

- The project proponent has to pay the compensation or injured fees to the respected employees or their inheritors if injury in or loss of part of body or death caused by work under sub – section (k) of section 65 of said law.
- The project proponent has to stipulate the foreign employees to respect the culture and custom and abide by the existing laws, rules, orders, and directives under sub – section (l) of section 65 of said law.
- The project proponent has to abide by labor laws under sub – section (m) of section 65 of said law.
- The project proponent has to right to sue and be sued in accordance with laws under sub – section (n) of section 65 of said law.
- The project proponent has to pay the compensation, to the injured person for damages if damage to environment or socio-economy is occurred by misuse of project under sub – section (o) of section 65 of said law.
- The project proponent has to inspect in anywhere of project if Myanmar Investment Commission inform to inspect the project under sub – section (p) of section 65 of said law.
- The project proponent has to obtain the permission of MIC before EIA process and report back this process to Myanmar Investment Commission under sub – section (q) of section 65 of said law.
- The project proponent has to ensure the prescribed insurance by rules under section 73 of said law.

12. The Myanmar Investment Rules (2017)

- The project proponent has to comply with the conditions of the permit issued by MIC and applicable laws when making the investment under section 202 of said law.
- The project proponent has to fully assist while negotiating with the Authority for settling the grievances of the local community that have been affected due to Investments under section 203 of said law.
- If the project proponent is desirous to appoint a foreigner as senior management, technician expert or consultant according to section 51(a) of the Law. The project proponent has to submit such foreigner's passport, expertise evidence or degree and profile to the Commission Office for approval under section 206 of said law.
- The project proponent has to ensure the relevant insurance out of the following types of the insurance at any insurance business entitled to carry out insurance business within the Union based on the nature of the business:
 - (a) Property and Business Interruption Insurance;
 - (b) Engineering Insurance;
 - (c) Professional Liability Insurance;
 - (d) Bodily Injury Insurance;
 - (e) Marine Insurance; or
 - (f) Workmen Compensation Insurance;
 - (g) Life Insurance;

(h) Fire Insurance. Under section 212 of said law.

13. The Public Health Law (1972)

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.

- The project proponent has to abide by any instruction or stipulation for public health under section 3 of said law.
- The project proponent has to allow any inspection, anytime, anywhere, if necessary, under section 5 of said law.
- The project Proponent has to comply with Section 3 of the Law on Public Health of the Union of Myanmar that empowers the Government of the Union of Myanmar to carry out measures relating to environmental health, such as garbage disposal, use of water for drinking and other purposes, radioactivity, protection of air from pollution, sanitation works and food and drug safety. Provisions to promote and safeguard public health including measures and prohibitions regarding environmental health. Project proponent has to comply with Section 5 of the Law on Public Health of the Union of Myanmar: The right to enter and inspect the building anytime by the person who have been assigned by these groups, or Government departments and organizations subordinate to the government assigned under this law.

14. Prevention of Hazard from Chemical and Related Substances Law (2013)

Objectives: To ensure to use the hazardous chemical and related substances safely and safety for the employees. Moreover, safety in carrying the hazardous chemical and related substances and storage place of it. If it is needed to train how to use the safety dresses which provided to the employees with free of charges. Insure to compensate for injury to person or damage to environment. The project has to be inspected for safety use of hazardous chemical and related substances before starting the project.

- The project owner has to be inspected for the safety and resistance of the machinery and equipment by the respective Supervisory Board and Board of Inspection before starting the business under sub section (a) of section 15 of said law.
- The project owner has to assign the employees, who will serve with the hazardous chemical and substances, to attend the trainings on prevention of hazardous chemical and substances in local or abroad under sub section (b) of section 15 of said law.
- The project owner has to abide by the conditions included in the license under sub section (a) of section 16 of said law.
- The project owner has to abide by and assign to the employees who serve in this work to abide by the instructions for safety in using the hazardous chemical and related substances under sub section (b) of section 16 of said law.
- The project owner has to arrange the enough safety equipment in the work-place and provide the safety dresses to the employees who serve in this work with free of charge under sub-section (c) of section 16 of said law.

- The project owner has to train, in work-place my arrangement, the know-how to use the occupational safety equipment, personal protection equipment and safety dresses systemically in the work-place under sub section (d) of section 16 of said law.
- The project owner has to allow the receptive Supervisory Board and Board of Inspection to inspect whether the hazard may be injured to health of human or animal or damaged to environment under sub section (e) of section 16 of said law.
- The project owner has to assign the healthy employees who have obtained the recommendation that is fit for this work after taken medical check- up and keep systematically the medical records of employees under sub section (f) of section 16 of said law.
- The project owner has to inform the copy of storage permission for hazardous chemical and related substances to the relevant township administrative office under sub section (g) of section 16 of said law.
- The project owner has to obtain the approval with instructions of relevant fire force before starting the work if the project will use the fire hazard substances or explosive substances sub section (h) of section 16 of said law.
- The project owner has to transport only the limited amount of the chemical and related substance in accord with the prescribed stipulations in local transportation under sub section (i) of section 16 of said law.
- The project proponent has to take the permission from the Central Supervisory Board if the chemical and related substance is altered and transferred from one place to any other place which contained in the licence under sub – section (j) section 16 of said law.
- The project proponent has to abide and perform in accordance with the related environmental laws not to impact and damage to the environment in operating the chemical and related substances business under sub-section (k) section 16 of said law.
- The project owner has to insure, in accord with the stipulations, to pay the compensation if the project cause injury to person or animals or damage to environment under section 17 of said law.
- The project owner has to abide by the conditions included in the registration certificate. Moreover, will abide by the orders and directives issued by the Central Supervisory Board from time to time under section 22 of said law.
- If there is an intention to use hazardous chemicals and related substances that are not listed in one's registered inventory, an additional application for registration must be submitted to the Central Supervisory Board. (Section 23)
- The project owner has to classify the level of hazard to protect it in advance according to the properties of chemical and related substances under sub section (a) of section 27 of said law.
- The project proponent has to express the Material Safety Data Sheet and Pictogram under sub – section (b) of section 27 of said law.
- The project owner has to provide the safety equipment, personal protection equipment to protect and reduce the accident and assign to attend the training to use the equipment systematically under sub section (c) of section 27 of said law.

- The project proponent has to perform in accordance with the stipulations in respect of transporting, possessing, storing, using, discharging the chemical and related substances under sub – section (d) of section 27 of said law.

15. The Prevention and Control of Communicable Diseases Law (1995) (Amendment 2011)

Objectives: To ensure the healthy work environment and prevention the communicable diseases by the cooperation with the relevant health department.

- The project proponent has to build the housing in line with the health standards, distribute the healthful drinking water & using water and arrange to systematically discharge the garbage & sewage under clause (9) of sub section (a) of section 3 of said law.
- The project proponent has to abide by any instruction or stipulation by Department of health and Ministry of Health under section 4 of said law.
- The project proponent has to inform promptly to the nearest health department or hospital if the following are occurred: under section 9 of said law.
 - (a) Mass death of animals included in birds or chicken;
 - (b) Mass death of mouse;
 - (c) Suspense of occurring of communicable disease or occurring of communicable disease;
 - (d) Occurring of communicable disease which must be informed.

The project proponent has to allow any inspection, anytime, anywhere if it is need to inspect by health officer under section 11 of said law.

16. The Control of Smoking and Consumption of Tobacco Product Law (2006)

Objectives: To ensure the creation of smoking area and non-smoking area in the power plant area for health and control of smoking.

- The project proponent has to keep the caption and mark referring that is non- smoking area in the project area under sub section (a) of section 9 of said law.
- The project proponent has to arrange the specific place for smoking in the project area and keep the caption and mark in accordance with the stipulations under sub section (b) of section 9 of said law.
- The project proponent has to supervise and carry out the measures so that no one shall smoke at the non-smoking area under sub section (c) of section 9 of said law.
- The project proponent has to allow the inspection of supervisory body in the power plant area sub section (d) of section 9 of said law.

17. The Myanmar Agenda 21 (2007)

- It was endorsed by the administration in 2007 and formulated in collaboration with the United Nations (UN). The Myanmar Agenda 21 included four program areas in Environmental Quality Management and Enhancement. It detailed the social, economic, institutional and infrastructural strengthening programs that will promote environmental protection in Myanmar.

18. The Electricity Law (2014)

Objectives: To ensure the compliance with the conditions of permission for productions of electricity, abiding by any stipulation, implementing with the best practices and paying compensation in line with above law. It stipulated the following obligations of the project proponent.

- The project proponent has to implement the project with the best practices to reduce the damages on the environment, health and socio-economy, also will pay compensation for the damages and will pay the fund for environmental conservation under sub section (b) of section 10 of said law.
- The project proponent has to take the certificate of electric safety, issued by the chief-inspector, before the commencement of power generation under section 18 of said law.
- The project proponent has to abide by the rules, regulations, bye-laws, notifications, orders, directives and procedures issued by the Ministry in carrying out the electrical business contained in the permit under section 20 of said law.
- The project proponent has to be liable for damages to any person or enterprise by failure to abide by the quality standards or rules, regulation, by-law, order and directive issued under said law under sub section (a) of section 21 of said law.
- The project proponent has to be liable for damages to any person or enterprise by negligence of project owner under sub section (a) of section 22 of said law.
- The project proponent has to pay if damages or losses arise to any other electric power user or any electrical business due to negligence of any electric power user, the calculated compensation in accord with the method prescribed by the Ministry for the value of damage or loss under section 24 of said law.
- The project proponent has to comply with the permission for electric searching and generation under sub section (a) and (b) of section 26 of said law.
- The project proponent has to inform promptly to chief-inspector and head officer of related office while occurring of accident in electricity generation under section 27 of said law.
- The project proponent has to comply with the standards, rules and procedure. Moreover, will allow the inspection by respected governmental department and organization if it is necessary under section 40 of said law.

The project proponent has to pay the compensation to anyone who is injured or caused to death in electric shock or fire caused by the negligence or omitting of the project owner or representative of project owner under section 68 of said law.

19. The Factories Act (1951)

The project owner shall implement and comply with the provisions of the Factory Act (1951) regarding health, safety, illumination, proper ventilation, the maintenance of safety equipment, and emergency plans in case of fire.

20. The Private Industry Act (1990)

- The project proponent has to comply with the provisions of the Private Industrial Enterprise Law by taking steps to enhance production and efficiency in various industrial and related economic activities through the acquisition of modern technologies. Efforts will be made to establish a strong presence for industrial goods not only in the domestic market but also in international markets, create more employment opportunities, avoid or minimize the use of environmentally harmful technologies, and promote energy-efficient practices.

21. The Industrial Explosive Materials Law (2018)

Objectives;

- (a) To manufacture, import, transfer, store and use industrial explosive materials systematically;
- (b) To be safe and secure at work places where dynamite and related substances are used;
- (c) To supervise manufacture and use of industrial explosive materials systematically.

On receipt of the direction from the Ministry under sub – section (b),

The project proponent has not refused inspection of the Chief Inspector or and inspector under section 8 of said law.

The project proponent, in an unlicensed magazine, has to

- Accept to store industrial explosive materials;
- Deliver to store industrial explosive materials under section 16 of said law.

The project has to-

- (a) Store industrial explosive materials only in the licensed magazine;
 - (b) Take necessary preventive measures in accord with the specifications to avoid harm in transport, manufacture, use or possession of industrial explosive materials
- The project proponent has not refused inspection of the Chief Inspector or and inspector under section 18 of said law.

The project proponent has to-

- (a) Import, transport, store, manufacture, use, possess or transfer industrial explosive materials without permission in accordance with this law;
- (b) Destroy industrial explosive materials without approval of the Executive Committee of Defense Service Council
- (c) Fail to act in accordance with the rules, regulations, by-laws, notifications, orders and directives issued under section 19 of said law.

The project proponent has not to accept to store industrial explosive materials;

- Accept to store industrial explosive materials more than the limited amount mentioned in the license issued by the Ministry;
- Fail to inform the nearest police station immediately and to report the Chief Inspector timely if anything mentioned in sub-section (c) of section 15 occurs due to industrial explosive materials;
- Continue to store industrial explosive materials without renewal after expiration of the license under section 21 of said law.

- a) Distribute any of the company's property among the members, in kind or otherwise, under sub-section (ii), sub-section (dd) of said law.
 - The constitution of a company may contain a provision relating to the capacity, rights, powers, or privileges of the company only if the capacity of the company or those rights, powers and privileges are restricted, under section-5, sub-section (b) of said law.

A company may act as a holding company of another company and incorporate and hold shares in any number of subsidiaries, under section-5, sub-section (c) of said law.

22. The Vehicle Safety and Motor Vehicle Management Law (2020)

Objectives: When the construction period and if necessary, in operation and production period for the all vehicles.

- The project proponent has to comply with the restrictions and restrictions on the use of domestic vehicles by the Ministry of Transport and Communications with the approval of the Union Government under sub section (a) of section 9 of said law.
- The project proponent has to comply with safety, environmental regulation, standards and regulations regarding the initial registration of vehicles issued by the Ministry under sub section (c) of section 12 of said law.
- The project proponent has to drive at the speed limit set by the Road Transport Directorate to ensure the safe movement of vehicles on public roads under sub section (r) of section 14 of said law.
- The project proponent has to maintain the vehicles in accordance with the standards set by the Department so that it can be driven safely under sub section (a) of section 18 of said law.
- The project proponent has not to carry or transport hazardous materials in public places in accordance with the regulations under sub section (g) of section 81 of said law.

23. The Vehicle Safety and Motor Vehicle Management Rules (2022)

- The project proponent has to comply with the Commercial Vehicle Regulations in Chapter (9) and the Motor Vehicle Traffic Regulations in Chapter (10).

24. The Myanmar Engineering Council Law (2022)

Objectives; To ensure the safety in technical and engineering work in the project. This law focuses the following;

- The project proponent has to ensure the employees who are engineers abide to the provisions of Myanmar Engineering Council law, prohibitions included in the rules, order and directive issued under said law, conditions included in the registration certificate issued by the Myanmar engineering council, under section 34 of said law.
- The project proponent has to appoint the employees, who obtained the registration certificate issued by the Myanmar Engineering Council, in the technical and engineering work, under section 37 of said law.

25. The Export and Import Law (2012)

- In accordance with Section 6 of the law, the project proponent has not to import or export goods that require permits without obtaining the necessary approvals.

In accordance with Section 7 of the law, if a permit is obtained, the project proponent has not to violate the conditions and regulations specified in that permit.

26. The Myanmar Fire Brigade Law (2015)

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

- The project proponent has to institute the specific fire services under sub section (a) of section 25 of said law.

The project owner has to provide materials and apparatuses for fire precaution and prevention under sub section (b) of section 25 of said law.

27. The Social Security Law (2012)

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

- The project proponent has to register to the respected social security office under sub section (a) of section 11 of said law.
- The project proponent has to pay the social security fund for at least four types of social security included in sub-section (a) of section 15 under section 15 of said law.
- The project proponent has to pay the fund which has to be paid myself and together with the fund which has to be paid from their salary by the employees. Moreover, the project owner will pay the cost for paying the above-mentioned fund only myself under sub section (b) of section 18 of said law.
- The project proponent has to pay the fund for accident sub section (b) of section 48 of said law.

The project proponent has to make correctly and submit the list and record provided in section 75 to respected social security office under section 75 of said law.

28. The Consumer Protection Law (2014)

- The consumer protection law has been prepared and established as follows and the project proponent will commit to adhere with the followings-
- Section 6(a, b), Rights and Duties of the Consumer
- Section 7(a, b), Rights and Duties of the Entrepreneurs
- Section 16 and 17(a,b,c,d) Formation of the Consumer Dispute Settlement Body and Functions and Duties thereof
- Section 18(a,b,c,d,e,f), Settlement of Consumer Dispute

- Section 19,20,21 and 22, Right To Take Action of The Consumer Dispute Settlement Body

29. National Food Law, 1997 (Amendment 2013)

- The project proponent has to comply with this related law as the following section 18, 22, 25
- The project proponent has not to produce, import, export, store, distribute or sell food strictly abide by the order, directive and conditions issued by the relevant Government department or organization or Board of Authority in respect of quality assurance of food, labelling and advertisement.
- The project proponent has not to produce import, export, and store, distribute or sell food which are under the types of food mentioned in this law, section 22.
- The project proponent has not to produce, import, export, store, distribute or sell food abide by the order, directive and conditions issued by the relevant Government department or organization or the Board of Authority in respect of the following:
 - (a) quality assurance;
 - (b) labelling;

30. Natural Disaster Management Law (2013)

Objectives: To implement natural disaster management programs and to coordinate with national and international organizations in carrying out natural disaster management activities; to conserve and restore the environment affected by natural disaster and to provide health, education, social and livelihood programs in order to bring about better living conditions for victims;

- The project proponent has to perform preparatory and preventive measures for natural disaster risks reduction before the natural disaster strikes under sub section (a)(i) of section 13 of said law.
- The project proponent has to undertake rehabilitation and reconstruction activities for improving better living standard after the natural disaster strikes and conservation of the environment that has been affected by natural disaster under sub section (a)(iii) of section 13 of said law.
- The project proponent has to carry out better improvement on early warning system of natural disaster under sub section (b) of section 14 of said law.
- The project proponent has to carry out together with the measures of natural disaster risk reduction in development plans of the State under sub section (d) of section 14 of said law.
- Whoever if the natural disaster causes or is likely to be caused by any negligent act without examination or by willful action which is known that a disaster is likely to strike, shall be punished with imprisonment for a term not exceeding three years and may also be liable to fine under section 25 of said law.
- Whoever interferes, prevents, prohibits, assaults or coerces the department, organization or person assigned by this law to perform any natural disaster management

shall, on conviction, be punished with imprisonment for a term not exceeding two years or with fine or with both under section 26 of said law.

- Whoever violates any prohibition contained in rules, notifications and orders issued under this law shall, on conviction, be punished with imprisonment for a term not exceeding one year or with fine or with both under section 29 of said law.
- Whoever willful failure to comply with any of the directives of the department, organization or person assigned by this law to perform any natural disaster management shall, on conviction, be punished with imprisonment for a term not exceeding one year or with fine or with both under sub section (a) of section 30 of said law.
- Anyone who interferes with, obstructs, hinders, assaults, or exercises unjust authority over any department, organization, or individual assigned responsibility under this law for carrying out any disaster management activity, and is convicted of such an offense, shall be subject to a sentence of imprisonment for not more than two years, a fine, or both under section 6 of said law.

31. Underground Water Act (1930)

- The project proponent has to obtain the necessary permits and comply with the specified regulations in accordance with Section 3 and 6 of the Underground Water Act.
- No person shall sink 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.
- Every person owning a tube which was in existence before the extension of this Act to the local area concerned shall apply to the water officer for a license for the said tube, and such license shall be granted free of charge. (Section 3)
- The Governor may make rules-
- (a) prescribing the conditions subject to which licenses may be granted by the water officer under section 3;
- (b) prescribing the form of and the procedure for granting such licenses and the fees payable for the issue thereof;
- (c) prescribing the information to be supplied to the water officer under section 5.

32. Farm Land Law (2012) (Amendment 2020)

Objectives: To ensure the right to use the farm land and sufficient compensation for acquisition of the farm land. This law focuses the following matters;

- The project proponent has to apply for using farmland for other purposes in the public interest, the relevant Region or State Government shall proceed by obtaining the verification and approval from the Region or State Farmland Management Committee for the conversion of farmland for other uses, under sub-section (b) of section 30.

33. Commercial Tax Law (1990)

- The project proponent has to comply, in accordance with Section 12(a), pay the applicable taxes within ten days after the end of each month if there are taxable sales or

service revenues within a fiscal year. Additionally, a declaration must be submitted to the relevant district tax office within one month following the end of each three-month period

34. The Standardization Law (2014)

The project implementer, along with the quality certifier, their representatives, and contractors, shall strictly adhere to the standards and guidelines that must be followed in accordance with Section 9 of the law.

35. The Police Act (1945)

- The Project Proponent has to adhere with the following section;
- The Police Act also has similar provisions in its section 18. It provides that the duty of every police officer shall be promptly to obey and execute all orders and warrants lawfully issued to him by any competent authority, and to, take lawful measures to assist in the protection of life and property at fires. Though those provisions of the Yangon Police Act and the Police Act originally intended for public order, they also effect for prevention of air pollution.

36. Workmen's Compensation Act (1923)

Objectives: To ensure the compensations to injured employee while implementing in line with the above law and to pay the prescribed compensations in various kinds of injury.

- The project proponent has to pay the compensation in line with the provisions of said law base on kind of injury and case by case under section 13 of said law.

37. The Leaves and Holiday Act (1951)

Objectives: The employees can take the leaves and get the holidays legally and to ensure the right to get the holidays and leaves.

The project proponent has to allow the leaves and holidays in line with the law.

38. The Labor Organization Law (2011) (Amendment 2012)

Objectives: To ensure protection the rights of the employees, having the good relationships between the employees and employer and enabling to form and carry out the labor organizations systematically and independently.

- The project owner has to allow the labor organization to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labor laws and to submit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached under section 17 of said law.
- The project proponent has to allow the demand for the re-appointment of worker who is dismissed by the employer without the conformity with the labor laws under section 18 of said law.

- The project proponent has to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker under section 19 of said law.
- The project proponent has to allow the labor organization to participate and discuss in discussing with the government, the employer and the complaining employees in respect of employee's rights or interest contained in the labor laws under section 20 of said law.
- The project proponent has to allow the labor organization to participate in solving the collective bargains of the employees in accord with the labor laws under section 21 of said law.
- The project proponent has to allow the labor organization to carry out the holding the meetings, going on strike and other collective activities in line with the procedure, regulation, by-law and directive of relevant Chief Labor Organization under section 22 of said law.

The labour organizations shall assist in making agreements relating to management of works, individual employment agreements, bonds and other individual agreements between the employer and the workers. (Section 23)

39. The Employment and Skill Development Law (2013)

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

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

The project proponent has to promise not to deduct from the payment of employees for above mentioned fund under sub section (b) of section 30 of said law.

40. The Minimum Wage Law (2013)

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

- The project proponent hasn't to pay wage to the worker less than the minimum wage stipulated under this Law.
- The project proponent has to pay more than the minimum wage stipulated under this Law.

- The project proponent hasn't not had the right to deduct any other wage except the wage for which it has the right to deduct as stipulated in the notification issued under this Law.
- The project proponent has to pay the minimum wage to the workers working in the commerce, production business and service in cash. Moreover, if the specific benefits, interests or opportunities are to be paid, it may be paid in cash in accord with the stipulations or jointly in some cash and in some produce prescribed in local price according to the desire of the worker.
- The project proponent has to pay jointly in some cash and some produce prescribed in local price according to the local custom or desire of the majority of workers or collective agreement in paying the minimum wage to the workers and working in the agriculture and livestock breeding business. Such payment shall be for any personal use and benefit of the worker and his family and the value shall also be considerable and fair under section 12 of said law.
- The project proponent has to notify the prescribed wages obviously in work place under sub section (a) of section 13 of said law.
- The project proponent has to correctly record the lists, schedules, documents and wages and report these to the relevant department and give if these are asked while inspecting, in accord with the stipulations under sub section (b)(c)(d) of section 13 of said law.
- The project proponent has to allow to be inspected by the inspector under sub section (d) and (e) of section 13 and section 18 of said law.
- The project proponent has to allow holiday for medical treatment if the employee's health is not fit to work under sub section (f) of section 13 of said law.
- The project proponent has to allow holidays without deducting from the wages if one of parents or one of family dies under sub section (g) of section 13 of said law.

41. The Payment of Wages Law (2016)

Objectives: To ensure the way of payment and avoiding delay payment to the employees.

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

The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours under section 14 of said law.

42. The Settlement of Labor Dispute Law (2012) (Amendment 2019)

Objectives: To ensure negotiation and discussion between employees and project proponent, abiding the decision of Tribunal.

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

43. The Occupational Health and Safety Law (2019)

Objectives: To effectively implement measures related to safety and health in every industry and to set occupational safety and health standards.

- The project proponent has to-
 - a) Appoint a person in-charge for occupational safety and health according to the type of industries to closely supervise the safety and health of the workers in accordance with the specifications of the Ministry.
 - b) Establish each occupational Safety and Health Committee comprising equal number of employers and workers' representatives according to the types of industry without lessening the number of workers prescribed by the Ministry to be safe and healthy workplace, in accordance with the specifications of the Ministry. In establishing the Committee, occupational safety and health matters for female workers shall be considered according to the nature of work under sub – section (a) and (b) of section 12 of said law.
- The project proponent has to comply with this Law and rules, orders, directives and procedures issued under this Law to be safe and healthy workplace under section 14 of said law.
- The inspectors shall inspect the workplace under this Law for occupational safety and health, instruct the respective employer on the facts to be observed, and report to the chief inspector under section 16 of said law.
- For the purposes of occupational safety and health in line with the code of conduct, inspectors are entitled to;
 - a) Enter, inspect and examine any workplace applicable to this Law without a warrant by showing their identity cards at any time;
 - b) Inspect and copy all records, books and documents relating to the workplace and process, and seize any of them as exhibits, if necessary;
 - c) Take photographs and video records of the workplace situations and processes which may be harmful to the occupational safety and health;
 - d) Assess and record the amount of impact and time on the workplace environment, due to noise, illumination, temperature, dust, fume and hazardous materials, with the assistance of an expert on the respective subjects, if necessary;

- e) Inquire any person working at the workplace during working hours about contracting occupational diseases or potential situations with the assistance of a certified doctor;
- f) Ask the responsible person from hospitals and medical clinics to confidentially send the medical report of a worker who is receiving medical treatment for injuring in a workplace accident or suffering from an occupational disease or information about death or the autopsy report requested with the form prescribed by the Department under section 17 of said law.
- The inspectors shall issue a temporary order to the employer for work stoppage partially or wholly with the approval of the chief inspector and inform the relevant departments, if necessary, if any occupational accident, disease, dangerous occurrence or major accident happens or is likely to happen due to any of the following facts;
 - a) Impropriety to work continuously due to the unsafe workplace conditions, unsafe acts of workers, the existence of hazardous material and machinery at the workplace, or parts of machinery or laying out of machinery at the workplace and working practices;
 - b) Impropriety to work continuously due to violation of or failure to comply with any provision of this Law;
 - c) Assumption to be harmful to workers at the workplace due to any act of negligence and carelessness or omission by any person;
 - d) Necessity to evacuate workers for safety due to the imminent danger situation of the occupational injury under section 18 of said law.
- 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 under sub section (e) of section 26 of said law.
- The project proponent has to arrange and display occupational safety and health instructions, warning signs, notices, posters, and signboards under sub section (l) of section 26 of said law.
- 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 under sub section (a) of section 30 of said law.
- 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 under sub section (d) of section 30 of said law.
- 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 under sub section (e) of section 30 of said law.

44. The Conservation of Water Resources and Rivers Law (2006) (Amendment 2017)

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

- The project proponent has to avoid any act to damage to the river, any creek and water resource under sub section (a) of section 8 of said law.
- The project proponent has to avoid disposing the fuel, chemicals, toxic substances, other substances and explosive substances from the bank to the river under sub section (a) of section 11 of said law.
- The project proponent has to avoid disposing any material, which may damage or change the water way, from the bank to the river under section 19 of said law.
- The project proponent has to avoid constructing the toilets, which are not suitable, at the bank under sub section (a) of section 21 of said law.
- The project proponent has to avoid digging the well or lake and digging the soil without permission of the Directorate under sub section (b) of section 21 of said law.
- The project proponent has to avoid putting the heavy materials in the bank without permission of the Directorate under section 22 of said law.
- Actions will be carried out in compliance with the authority of the relevant department (as per Article 6 of the law).
- Additionally, measures will be taken to ensure that there is no environmental damage within and near rivers and streams (as per Section 5 of the law).
- The project proponent has to avoid the violation of conditions stipulated by the Directorate for prevention of water pollution under sub section (b) of section 24 of said law.
- According to the business requirements, any activities such as excavation of drainage channels within rivers and streams, utilization of river water, construction of large river crossings (bridges), installation of underground pipelines, installation of underground electrical power lines, and installation of underground telecommunications lines must only be carried out after obtaining the consent of the relevant ministry (as per Section 30 of the law).
- If an individual attempts to commit any offense under this law, participates in planning or conspiring to commit such an offense, or provides assistance or encouragement to commit an offense, they will be subject to penalties as prescribed for that offense in this law (as per Section 29).

45. The Conservation of Water Resources and Rivers Rules (2013) (Amendment 2015) (Second Amendment 2020)

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

- The project proponent has to obtain the permission for pumping water from river issued by the Ministry of Communication and Transport before pumping water from river and abide by the conditions in permit. (rule 48)

46. The Law Amending Water Resources and Rivers Conservation Law (2013) (Amendment 2017)

- The project proponent has to comply with the provisions of the substitute law, specifically Section (6) and its subsections.

5.2 International Guidelines

The Initial Environmental Examination for this project shall be conducted following not only the Myanmar Environmental Impact Assessment Procedure (2015) but also International Guidelines and Practices such as WHO standards, and IFC performance indicators. The international guidelines are as follows:

- a) IFC General Environmental, Health and Safety Guidelines, 2007
- b) IFC Guidelines on Occupational, Health and Safety, 2007

In addition, IFC performance standard (PS) represent the policy and performance-based framework and requirements for the ESIA and sustainable social and environmental management for the project. Whereas the World Bank Group’s EHS Guidelines provide guidance on general and industry best practice as well as recommended numerical limits for air emissions to the atmosphere, noise, liquid and solid wastes, hazardous waste, occupational health and safety, and other aspects of industrial facilities and other types of development project. The IFC performance standard (PS) includes;

- PS 1 Assessment and Management of Environmental and Social Risks and Impacts
- PS 2 Labor and Working Conditions
- PS 3 Resource Efficiency and Pollution Prevention
- PS 4 Community Health, Safety and Security

5.3 National Environmental Quality (Emissions) Guideline for Rice Milling Project

In order to ensure that the white rice milling project meets all of the applicable national environmental quality standards, it must adhere to the National Environmental Quality (Emissions) Guideline, 2015, World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH) which set targets for air quality, noise level, and effluent wastewater. Detailed explanations of all applicable environmental regulations and guidelines for this project’s implementation are provided in the following section.

1. Ambient Air Quality Guidelines

Table 5-1 Ambient Air Quality

Parameters	Guidelines Value	Unit	Organization	Organization	Averaging Period
PM ₁₀	50	µg/m ³	NEQEG	-	24hrs
PM _{2.5}	25	µg/m ³	NEQEG	-	24hrs
NO ₂	200	µg/m ³	NEQEG	-	1hrs
SO ₂	20	µg/m ³	NEQEG	-	24hrs
CO	4	mg/m ³	-	WHO	24hrs
CO ₂	5000	ppm		ACGIH	8hrs
O ₃	200	µg/m ³	NEQEG	-	8hrs

^a Particulate matter 10 micrometers or less in diameter

^b Particulate matter 2.5 micrometers or less in diameter

2. Noise Levels

Table 5-2 Applicable Noise Level 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, educational	55	45
Industrial, commercial	70	70

^a Equivalent continuous sound level in decibels

3. Vibration Levels

Vibration levels will be compared with the vibration standards for Japan developed by the Ministry of the Environment, as the National Environmental Quality (Emission) Guidelines do not include such standards.

Table 5-3 Regulatory Standards for Vibration from Ministry of the Environmental Government of Japan

Time Area	Day Time	Night Time	Applicable Areas
I	60 – 65 dB	55 – 60 dB	Areas where maintenance of quiet is particularly needed to preserve a good living environment and where quiet is needed for as they are used for residential purposes.
II	65 – 70 dB	60 -65 dB	Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating.

4. National Drinking Water Quality Standards Myanmar

Table 5-4 National Drinking Water Quality Standards Myanmar

Item	Unit	National Drinking Water Quality Standards Myanmar
Iron	mg/l	1
Manganese	mg/l	0.4
Oil and Grease	mg/l	-
Total Coliform	mg/l	-
Color	TCU	15
Chloride	mg/l	250
Arsenic	mg/l	0.05
Cadmium	mg/l	0.003
Chromium	mg/l	0.05
Zinc	mg/l	3
Total Phosphorus	mg/l	-
Total Nitrogen	mg/l	-
BOD	mg/l	-
COD	mg/l	-

5. Wastewater Effluents Guideline

According to the NEQEG (National Environmental Quality Guidelines, 2015), Table 5-5 provides guidelines that must be followed during the operation phases of project. This project will follow the NEQEG (2015) general guideline for wastewater, storm water runoff, effluent, and sanitary discharges (general applicability).

Table 5-5 Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges (general application)

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

5.4 List of Commitments

A consolidated list of environmental and social impacts and mitigation measures to be committed by Green Shine Co., Ltd. are provided in Table 5-6. The company will adopt these commitments in order to manage and mitigate potential impacts associated with the project development.

Table 5-6 List of Commitments

Particular	Item	Commitment Description	Reference Chapter
Project Description	2	Green Shine Co., Ltd. strongly commits that the information and data about the project and the operation process were accurate and correct.	2
Identification of the Project Proponent	3	Green Shine Co., Ltd. strongly commits that the information about the proponent was correctly described.	3
Identification of the IEE Experts	4	Green Shine Co., Ltd. strongly commits that the information about the environmental and social study team for the IEE report preparation was correctly described.	4
Policy, Legal and Institutional Framework	5	Green Shine Co., Ltd. strongly commits to follow the related laws, rules, regulations, standards, and guideline which was described in the IEE report.	5
Description of the Surrounding Environment and Social Conditions	6.2	Green Shine Co., Ltd. strongly commits not to disturb the Existing Environment Conditions expressed in Chapter 6.	6
	6.2.5 (6.2.5.1 to 6.2.5.6)	Green Shine Co., Ltd. strongly commits that Air Quality, Water Quality, Noise and Vibration were measured with the proper devices and compared the results with the National Environmental (Emission) Guideline.	6
Description of proposed Mitigation Measures	9.2 9.3	Green Shine Co., Ltd. specifically commits to follow the mitigation measures during the operation stage and decommissioning stage.	8
Environmental Management Plan and the personnel, organization and budgets required for the implementation of the EMP	10.2.1	Green Shine Co., Ltd. commits to certainly follow the Environmental Management Plan.	10
	10.2.2	The compliance monitoring report will be reported annually along with the environmental monitoring plan for operation and decommissioning phases.	10
	10.3	Green Shine Co., Ltd. commits to certainly follow the Gasifier Management Plan.	10
	10.4	Green Shine Co., Ltd. commits to certainly follow the Waste Management Plan.	
	10.5	Green Shine Co., Ltd. commits to certainly follow the Occupational Health and Safety Plan.	10
	10.6	Green Shine Co., Ltd. commits to certainly follow the Emergency Preparedness.	10
Monitoring Report	-	Green Shine Co., Ltd. commits to submit Monitoring Report to the Ministry of Natural Resources and Environmental Conservation every 6 month.	-

6 DESCRIPTION OF THE SURROUNDING ENVIRONMENTAL AND SOCIAL CONDITIONS

6.1 Setting of the Study Area Limits

The project is located in Pathein Industrial City, Chaung Zauk Village Tract, Kangyidaunt Township, Pathien District, Ayeyarwady Region. It is four miles far from Pathein City to the south. Figure 6-1 shows an overview of project site location. The study area for this project is roughly estimated by expert's judgment. The project site is situated in an industrial zone and far from residential area. For this reason, an environmental baseline data collection and site assessment were carried out within a 0.5 km buffer zone surrounding the project boundary area for the purpose of this IEE study. The main considerations for areas of interest for this IEE study include project characteristics related to size, capacity for working activities, mitigation measures and facilities provided, preparedness of project proponent, site conditions, having an adequate buffer zone and being located in a very unpopulated area, and professional judgment of team agreements. The investigated environmental quality parameters involved air quality, noise and vibration level measured at factory site and water quality sampling for groundwater, wastewater from gasifier and effluent water. The following section presents the baseline information regarding the environmental conditions of the project site associated with the township's information. Basically, this study addressed several aspects, including physical, environmental, biological, and social components of surrounded environment of project location. This work was done by desktop research, on-site measurements, interviews with project proponents, and analysis of secondary data.

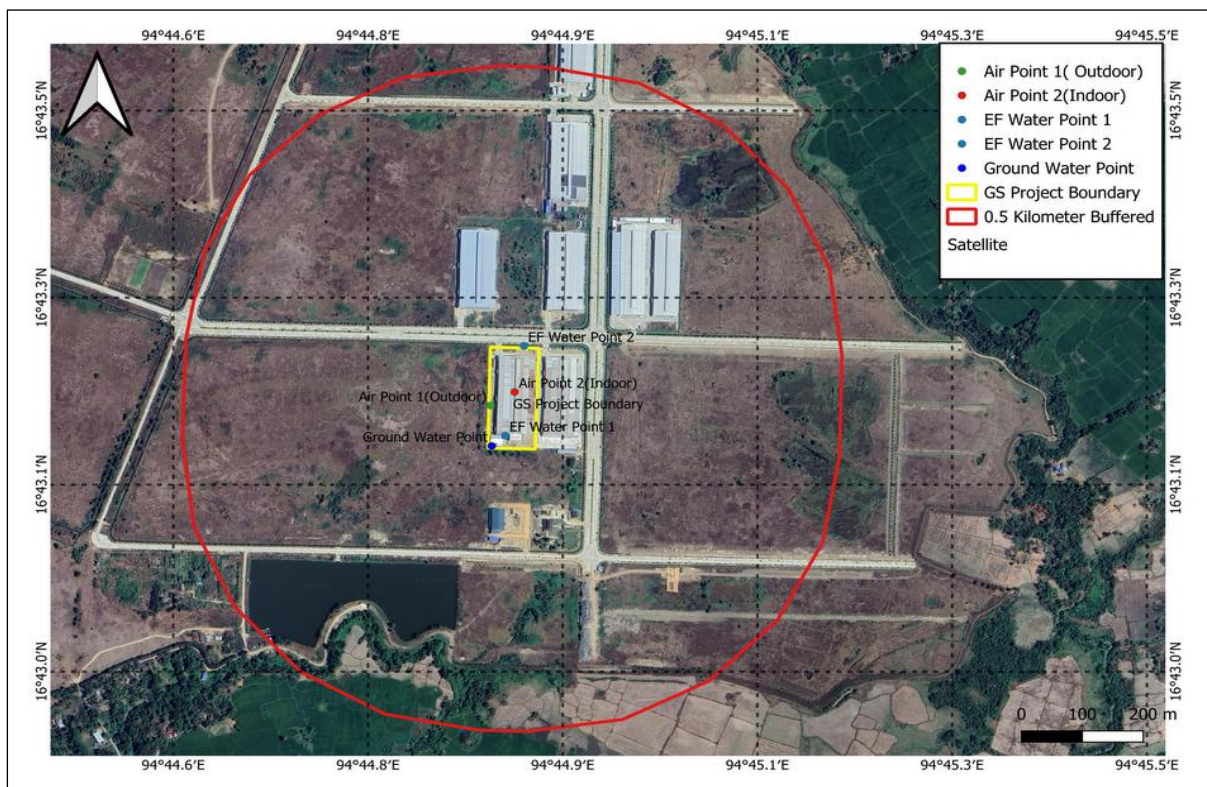


Figure 6-1 Surrounding environment of project site within 0.5 km

6.2 Physical Components

6.2.1 Topography and Soil

Kangyidaunt Township, located in Pathein District, Ayeyarwady Region, lies between North Latitude 16° 34' 58" N and 16° 50' 38" N, and East Longitude 94° 3' 55" E and 94° 3' 35" E. It is located 19 miles from east to west and 28 miles from south to north, with a total area of 16.52 square kilometers (6.38 square miles). It is bordered by Kyaung Kone Township, Einme Township, and Myaungmya Township to the east, Pathein Township to the west, Ngapudaw Township to the south, and Thabaung Township to the north. The terrain of Kangyidaunt is mostly flat, with a few areas slightly elevated due to the rivers course through the township, and its average elevation is 27 feet above sea level. The North side of the township is bounded by the Daka River and the south is bounded by the Panmawaddy and Ngawan Rivers.

The soils in Kangyidaunt are part of the larger alluvial plains of the Ayeyarwady Delta, characterized by fertile soils replenished by seasonal flooding. These soils support extensive agricultural activities, particularly rice farming, which is the main crop, with beans and rubber cultivated on a smaller scale. While the soils are generally fertile, salinity intrusion can be an issue, especially in areas closer to the coast, as saltwater enters agricultural lands during the dry season. Soil types vary across the delta, with some areas affected by salinity due to proximity to tidal estuaries.

6.2.2 Hydrology and Surface Water

Kangyidaunt Township in Pathein District, Ayeyarwady Region, is situated within the Ayeyarwady Delta, characterized by its rich hydrology and abundant surface water. The township is bordered by the Daka River to the north and the Panmawaddy and Ngawan Rivers to the south, which play a crucial role in agriculture, transportation, and daily water use.

6.2.3 Climate

The weather condition of Kangyidaunt Township is hot and humid. The highest temperature is 39°C and the lowest temperature is 14°C. The annual rainfall and temperature of Kangyidaunt Township is described in the following table based on data from Township Data of General Administration Department (2023).

Table 6-1 Rainfall and temperature of Kangyidaunt Township

Year	Rainfall		Temperature	
	Rainy Days	Total Rainfall (inches)	Summer (°C)	Winter (°C)
			Highest	Lowest
2011	126	88.28	32°C	13°C
2012	108	109.98	32°C	13°C
2013	124	85.75	32°C	13°C
2014	115	99.20	32°C	13°C
2015	116	92.27	34°C	13°C
2016	123	108.90	39°C	15°C
2017	120	95.56	39°C	15°C
2018	103	103.81	39°C	15°C
2019	103	103.81	39°C	15°C

Year	Rainfall		Temperature	
	Rainy Days	Total Rainfall (inches)	Summer (°C)	Winter (°C)
			Highest	Lowest
2020	92	74.80	39°C	14°C
2021	83	87.85	37°C	17°C
2022	40	37.18	35°C	17°C
2023	2	1.3	23°C	31°C

Source: Kangyidaunt Township Information (GAD, 2023)

6.2.4 Natural Disaster Occurrence

In order to protect the township from the danger of storms and Dhaka River flood, there are 11.57 miles of Dhaka-Yway Kone embankment and 1 mile of Daraka-Mandalay embankment. The critical water point of Dhaka River is (820 cm) in Kangyidaunt Township in 2018. The status of natural disasters from April 2022 until August 2023 is shown in the following table.

Table 6-2 Natural disaster occurred in Kangyidaunt Township

No.	Type of natural disaster	Frequency of occurrence	Number of deaths	Damage of building	Loss of value (million/Kyat)
1.	Storm	-	-	-	-
2.	Tsunami	-	-	-	-
3.	Earthquake	-	-	-	-
4.	Flood	-	-	-	-
5.	Fire Hazard	2	-	5	1.143000
Total		2	-	5	1.143000


Source: Kangyidaunt Township Information (GAD, 2023)






6.2.5 Environmental Quality Measurement

The objective of baseline data collection is to establish the meaningful and relevant information of the environmental as primary data collection. The methodology had been designed to know the nature and degree of pollution from various sources in the environment. Baseline environmental parameters were defined according to the guideline which applies to projects. All necessary criteria such as site selections for sampling and analysis of ambient air quality, water quality and noise level of the project site were identified by environmental specialists of E Guard.

The equipment used to measure ambient air, weather, noise and vibration measurements are shown in below.

Table 6-3 Equipment used to measure Ambient Air, Noise and Vibration, Weather and Water Quality Sampling

<p>Davis Vantage Pro2 Wireless Weather Station Provides detailed current weather conditions and expanded forecasts - all at a glance! The Vantage Pro2 uses a frequency-hopping spread spectrum radio from 902 MHz to 928 MHz to transmit and receive data up to 1,000' (300m) line of sight. In addition, the weather station features a bubble level, improved anemometer base, redesigned wind cups, and factory-calibrated wind direction. The integrated sensor suite combines temperature and humidity sensors, rain collector</p>	
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<p>with an aluminum-plated tipping bucket, and anemometer into one package for easy setup. Measure inside and outside temperature and humidity, heat index, barometric pressure, dew point, rainfall, wind direction and speed, and wind chill.</p>	
<p>Haz-Scanner EPAS PM₁₀, PM_{2.5}, NO₂, SO₂, CO, CO₂, Temperature, and Relative Humidity</p>	
<p>Digital Sound Level Meter Noise</p>	
<p>Vibration Level Meter Vibration</p>	
<p>Water Sampling Bottle</p>	
<p>Horiba U-50</p>	

6.2.5.1 Environmental Quality Sampling Locations

Sampling locations were confirmed by environmental specialist on site before doing the sampling. Water quality sampling (3) locations consist of **Ground water** (GWQ: Inside the Project Site) and two **Effluent Water** (EWQ: Inside the Project Site). Air quality was monitored at the 2 locations (AQ: Inside the Project Site that can get results of the existing ambient air quality. Noise Level was monitored at the 2 locations.

Table 6-4 Locations of Environmental Quality sampling points

No.	Points	Coordinate	Locations
Ambient Air Quality, Noise, Vibration Monitoring Locations			
1.	Air Quality (Outdoor)	Lat- 16°43'13.37"N Long- 94°44'52.54"E	In the Project Site

No.	Points	Coordinate	Locations
2.	Air Quality (Indoor)	Lat- 16°43'14.00"N Long- 94°44'54.00"E	In the Project Site
3.	Noise and Vibration (Outdoor)	Lat- 16°43'13.37"N Long- 94°44'52.54"E	In the Project Site
4.	Noise and Vibration (Indoor)	Lat- 16°43'14.00"N Long- 94°44'54.00"E	In the Project Site
Water Quality Measuring and Sampling Locations			
1.	Effluent Water-1	Lat- 16°43'11.00"N Long- 94°44'53.00"E	In the Project Site
2.	Effluent Water-2	Lat- 16°43'16.00"N Long- 94°44'54.00"E	In the Project Site
3.	Ground Water	Lat- 16°43'10.00"N Long- 94°44'52.00"E	In the Project Site

6.2.5.2 Ambient Air Quality

Using the Environmental Perimeter Air Station (EPAS), the emissions of dust particles and gases were measured for 24hrs continuously at the project sites. It was done at selected locations (outdoor and indoor) as presented in Figure 6-2 and Table 6-4 during 5th to 7th October 2024. Air quality is composed of dust and gas emissions of the ambient air. The investigated ambient air quality parameters included dust concentrations particularly know as particular matter (PM_{2.5} and PM₁₀) and gases concentrations including Sulfur Dioxide (SO₂), Nitrogen Oxides (NO₂), Carbon Monoxide (CO), Carbon Dioxide (CO₂) and Ozone (O₃) respectively. EPAS provides direct readings in real time with data-logging capabilities. The results were compared with National Environmental Quality Guidelines (NEQG), World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH).



Figure 6-2 Location of Air Quality Sampling Point (Indoor& Outdoor)



Point 1 (Outdoor)



Point 2 (Indoor)

Figure 6-3 Air Quality Measuring

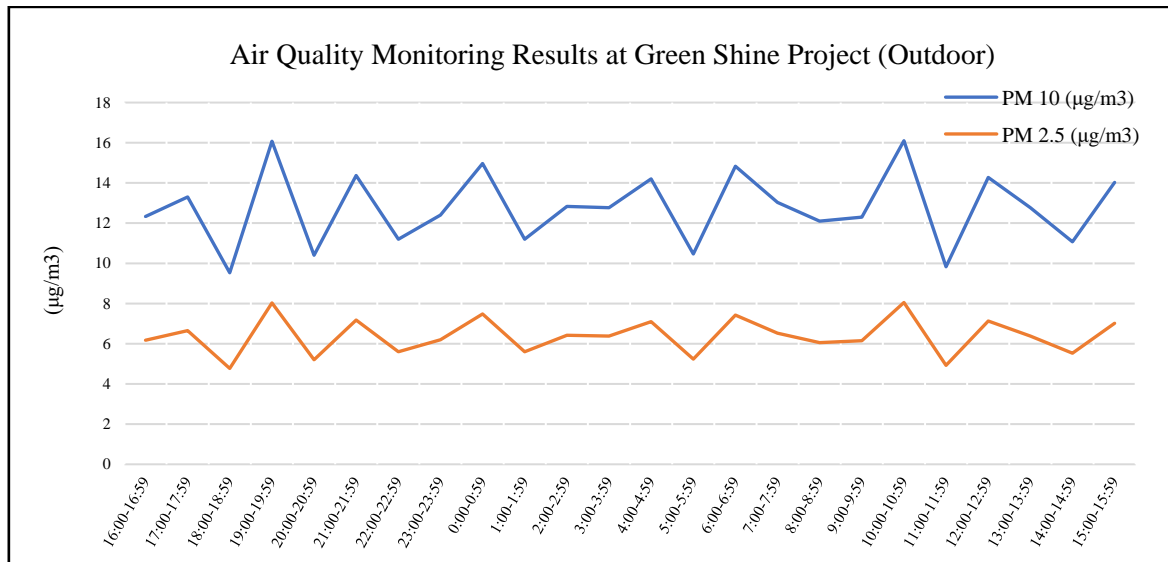


Figure 6-4 Particulate Matter (PM₁₀, PM_{2.5}) Monitoring Results at Project Site (Outdoor)

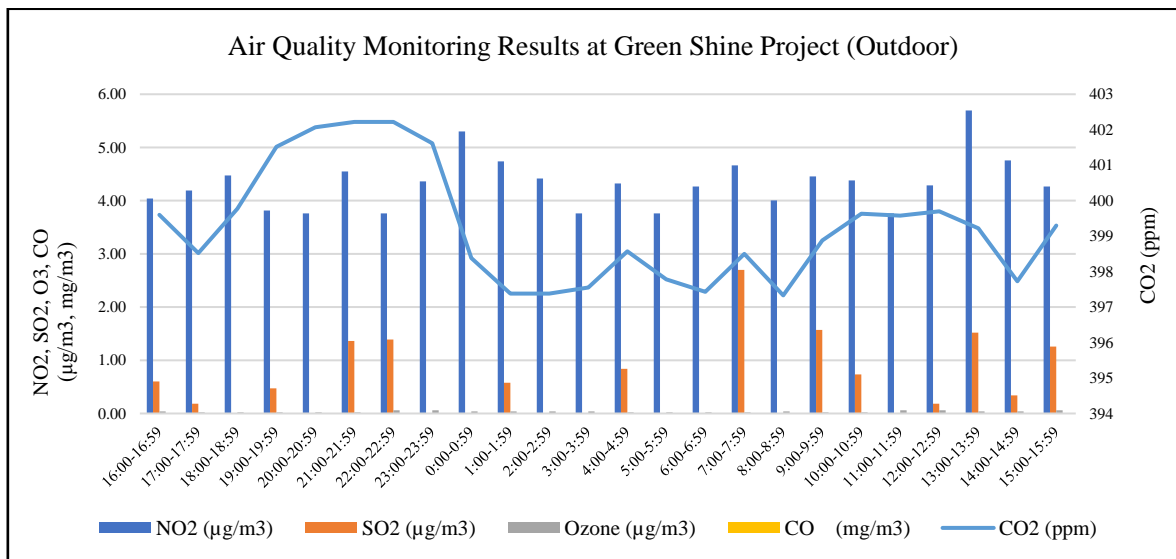


Figure 6-5 Air Quality Monitoring Results at Project Site (Outdoor)

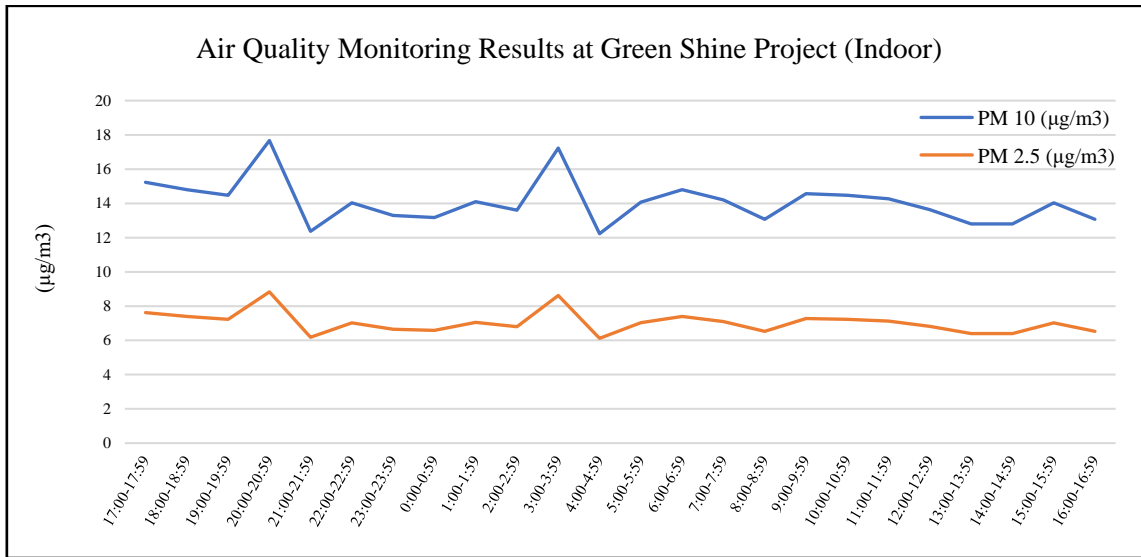


Figure 6-6 Particulate Matter (PM₁₀, PM_{2.5}) Monitoring Results at Project Site (Indoor)

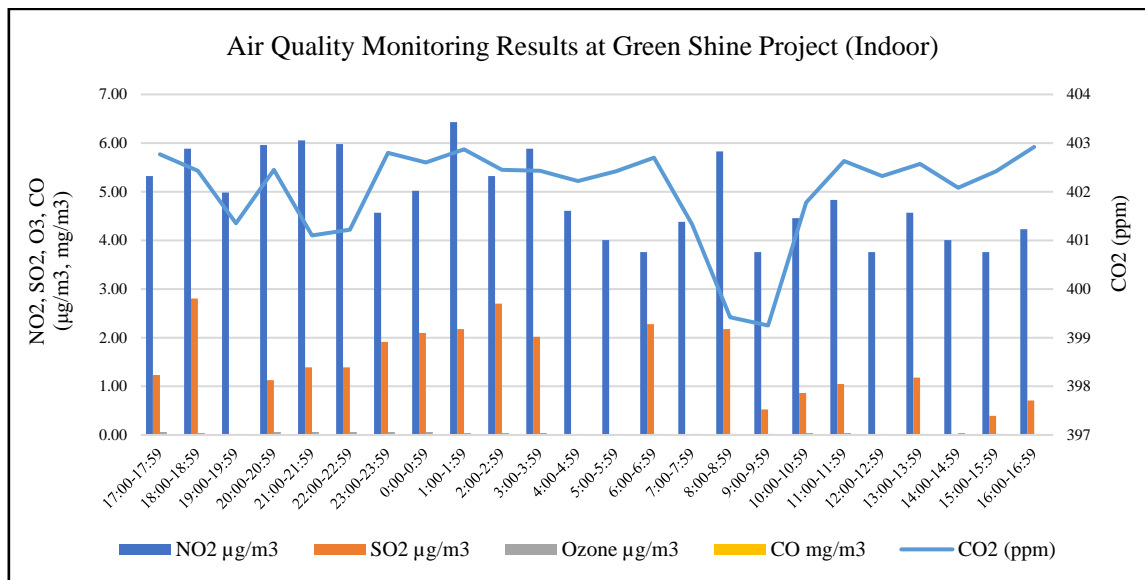


Figure 6-7 Air Quality Monitoring Results at Project Site (Indoor)

Dust Concentration

Dust samples or particulate matter (PM) can be specifically referred to as PM₁₀ and PM_{2.5}. PM₁₀ refers to particles that have a diameter of 10 micrometers or smaller, while PM_{2.5} refers to particles that have a diameter of 2.5 micrometers or smaller. According to the observed results, the average concentrations of PM₁₀ were 12.33 µg/m³ for outdoor air quality and 14.08 µg/m³ for indoor air quality and it was found that it is within the guideline value (50 µg/m³) for 24 hours continuously. Similarly, the results of PM_{2.5} were 6.38 µg/m³ for outdoor air quality and 7.04 µg/m³ for indoor air quality and it is also within the guideline value (25 µg/m³) for 24 hours continuously. Therefore, ambient dust level of the project is quite good and the proponent should maintain this good air quality throughout the project lifespan.

Gases Concentration

The representative baseline gases concentrations specifically SO₂, NO₂, CO, CO₂ and O₃, were measured at the project site. SO₂ is generated from combustion of fuels such as oil and coal, and as by-product from some chemical production or wastewater treatment processes. On-road and off-road vehicles are also emission source of SO₂ and NO₂. The poisonous gases CO and CO₂ have the same emission sources like SO₂ and NO₂ and that can cause damage to respiratory organ. All gases pollutants are continuously monitored for 24-hours, and the results are detailed in Table 6-5 and Table 6-6. All concentrations of gas pollutants for both indoor and outdoor air quality are within the acceptable range in comparison to the general ambient air quality guidelines by NEQEG, WHO and ACGIH as shown in Table 6-8. All gases pollutants monitored at the project site was acceptable range compared to NEQEG guideline. Accordingly, it can be concluded that the surrounding ambient air quality at the proposed site was favorable.

Table 6-5 Air pollutants emission results at Project Site (Outdoor)

Date	Time	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	Ozone (µg/m ³)	CO (mg/m ³)	CO ₂ (ppm)
5.10.2024	16:00-16:59	12.33	6.17	4.04	0.60	0.04	0	399.6
5.10.2024	17:00-17:59	13.3	6.65	4.19	0.18	0.02	0.00003	398.52
5.10.2024	18:00-18:59	9.53	4.77	4.47	0.00	0.02	0	399.77
5.10.2024	19:00-19:59	16.07	8.03	3.82	0.47	0.02	0	401.52
5.10.2024	20:00-20:59	10.4	5.2	3.76	0.00	0.02	0	402.07
5.10.2024	21:00-21:59	14.37	7.18	4.55	1.36	0.02	0.00004	402.22
5.10.2024	22:00-22:59	11.2	5.6	3.76	1.39	0.06	0	402.22
5.10.2024	23:00-23:59	12.4	6.2	4.36	0.00	0.06	0	401.62
6.10.2024	0:00-0:59	14.97	7.48	5.30	0.00	0.04	0	398.38
6.10.2024	1:00-1:59	11.2	5.6	4.74	0.58	0.04	0	397.38
6.10.2024	2:00-2:59	12.83	6.42	4.42	0.00	0.04	0	397.38
6.10.2024	3:00-3:59	12.77	6.38	3.76	0.00	0.04	0	397.55
6.10.2024	4:00-4:59	14.2	7.1	4.32	0.84	0.02	0	398.57
6.10.2024	5:00-5:59	10.47	5.23	3.76	0.00	0.02	0	397.78
6.10.2024	6:00-6:59	14.83	7.42	4.27	0.00	0.02	0	397.43
6.10.2024	7:00-7:59	13.03	6.52	4.66	2.70	0.02	0	398.5
6.10.2024	8:00-8:59	12.1	6.05	4.00	0.00	0.04	0	397.33
6.10.2024	9:00-9:59	12.3	6.15	4.46	1.57	0.02	0.00019	398.88
6.10.2024	10:00-10:59	16.1	8.05	4.38	0.73	0.02	0	399.63
6.10.2024	11:00-11:59	9.83	4.92	3.76	0.00	0.06	0	399.58
6.10.2024	12:00-12:59	14.27	7.13	4.29	0.18	0.06	0	399.7
6.10.2024	13:00-13:59	12.77	6.38	5.70	1.52	0.04	0	399.22

Date	Time	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	Ozone (µg/m ³)	CO (mg/m ³)	CO ₂ (ppm)
6.10.2024	14:00-14:59	11.07	5.53	4.76	0.34	0.04	0	397.73
6.10.2024	15:00-15:59	14.03	7.02	4.27	1.26	0.06	0	399.3
Average		12.77	6.38	4.32	0.57	0.04	0.00001	399.25
1 hour Minimum		9.53	4.77	3.76	0.00	0.02	0.00000	397.33
1 hour Maximum		16.1	8.05	5.70	2.70	0.06	0.00019	402.22

Table 6-6 Air pollutants emission results at Project Site (Indoor)

Date	Time	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	NO ₂ µg/m ³	SO ₂ µg/m ³	Ozone µg/m ³	CO mg/m ³	CO ₂ (ppm)
6.10.2024	17:00-17:59	15.23	7.62	5.32	1.23	0.06	0	402.77
6.10.2024	18:00-18:59	14.8	7.4	5.88	2.80	0.04	0.00026	402.43
6.10.2024	19:00-19:59	14.47	7.23	4.98	0.00	0.02	0	401.35
6.10.2024	20:00-20:59	17.67	8.83	5.96	1.13	0.06	0	402.45
6.10.2024	21:00-21:59	12.37	6.18	6.05	1.39	0.06	0	401.1
6.10.2024	22:00-22:59	14.03	7.02	5.98	1.39	0.06	0.00003	401.22
6.10.2024	23:00-23:59	13.3	6.65	4.57	1.91	0.06	0	402.8
7.10.2024	0:00-0:59	13.17	6.58	5.02	2.10	0.06	0	402.6
7.10.2024	1:00-1:59	14.1	7.05	6.43	2.17	0.04	0	402.87
7.10.2024	2:00-2:59	13.6	6.8	5.32	2.70	0.04	0	402.45
7.10.2024	3:00-3:59	17.23	8.62	5.88	2.02	0.04	0	402.43
7.10.2024	4:00-4:59	12.23	6.12	4.61	0.00	0.02	0	402.22
7.10.2024	5:00-5:59	14.07	7.03	4.00	0.00	0.02	0	402.42
7.10.2024	6:00-6:59	14.8	7.4	3.76	2.28	0.02	0.00011	402.7
7.10.2024	7:00-7:59	14.2	7.1	4.38	0.00	0.02	0	401.33
7.10.2024	8:00-8:59	13.07	6.53	5.83	2.17	0.02	0	399.42
7.10.2024	9:00-9:59	14.57	7.28	3.76	0.52	0.02	0	399.25
7.10.2024	10:00-10:59	14.47	7.23	4.46	0.86	0.04	0	401.78
7.10.2024	11:00-11:59	14.27	7.13	4.83	1.05	0.04	0.00008	402.63
7.10.2024	12:00-12:59	13.63	6.82	3.76	0.00	0.02	0	402.32
7.10.2024	13:00-13:59	12.8	6.4	4.57	1.18	0.02	0	402.57
7.10.2024	14:00-14:59	12.8	6.4	4.00	0.00	0.04	0	402.08
7.10.2024	15:00-15:59	14.03	7.02	3.76	0.39	0.02	0.00008	402.42
7.10.2024	16:00-16:59	13.07	6.53	4.23	0.71	0.02	0	402.92
Average		14.0825	7.04	4.89	4.89	0.04	0.00002	402.02
1 hour Minimum		12.23	6.12	3.76	3.76	0.02	0	399.25

1 hour Maximum	17.67	8.83	6.4296	6.43	0.06	0.00026	402.92
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Table 6-7 Air Emission Levels (Standard)

No.	Parameter	Unit	Guideline	Guideline Value	Average Period
1.	Sulfur dioxide	µg/m ³	NEQEG	20 500	24-hour 10-minute
2.	Nitrogen dioxide	µg/m ³	NEQEG	40 200	1 year 1 hour
3.	Particulate matter PM ₁₀	µg/m ³	NEQEG	20 50	1-year 24-hour
4.	Particulate matter PM _{2.5}	µg/m ³	NEQEG	10 25	1-year 24-hour
5.	Ozone	µg/m ³	NEQEG	100	8-hour daily maximum
6.	Carbon Monoxide	mg/m ³	WHO	4	24hrs
7.	Carbon Dioxide	ppm	ACGIH	5000	8hrs

Source: Myanmar National Environmental Quality (Emission) Guidelines, National Ambient Air Quality Standards (NAAQS) and American Conference of Governmental Industrial Hygienists (ACGIH).

Table 6-8 Observed Ambient Air Quality Results from Selected Points

Parameters	Point-1 Outdoor Result	Point-2 Indoor Result	Guidelines Value	Unit	Averaging Period
PM ₁₀	12.33	14.08	50	µg/m ³	24hrs
PM _{2.5}	6.38	7.04	25	µg/m ³	24hrs
NO ₂	5.69	6.42	200	µg/m ³	1hr
SO ₂	0.41	0.84	20	µg/m ³	24hrs
O ₃	0.056	0.057	100	µg/m ³	8hrs daily maximum
CO	0.00002	0.00002	4	mg/m ³	24hrs
CO ₂	402.22	402.92	5000	ppm	8hrs

As per above tables, it can be seen that all parameters measured are within the National Environmental Quality (Emission) Guideline (NEQG), World Health Organization (WHO) and American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.

6.2.5.3 Wind Speed and Wind Direction

The following Figure 6-8 to Figure 6-11 illustrate the wind speed and wind directions of the proposed rice milling project site at indoor and outdoor spaces occurred on 5rd to 7th September 2024.



Figure 6-8 Wind Speed and Wind Direction (Blowing From) at Project Site (Indoor)

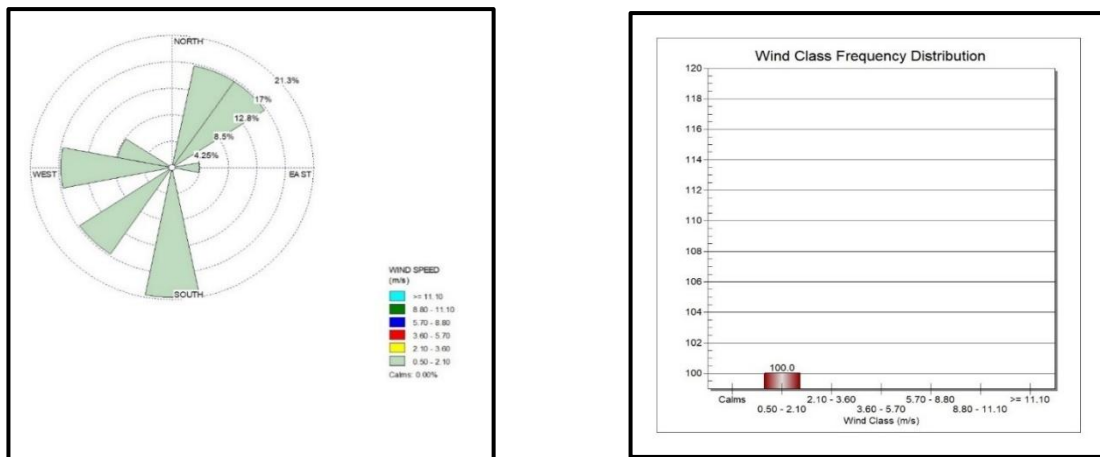


Figure 6-9 Wind Class Frequency Distribution (Blowing From) at Project Site (Indoor)

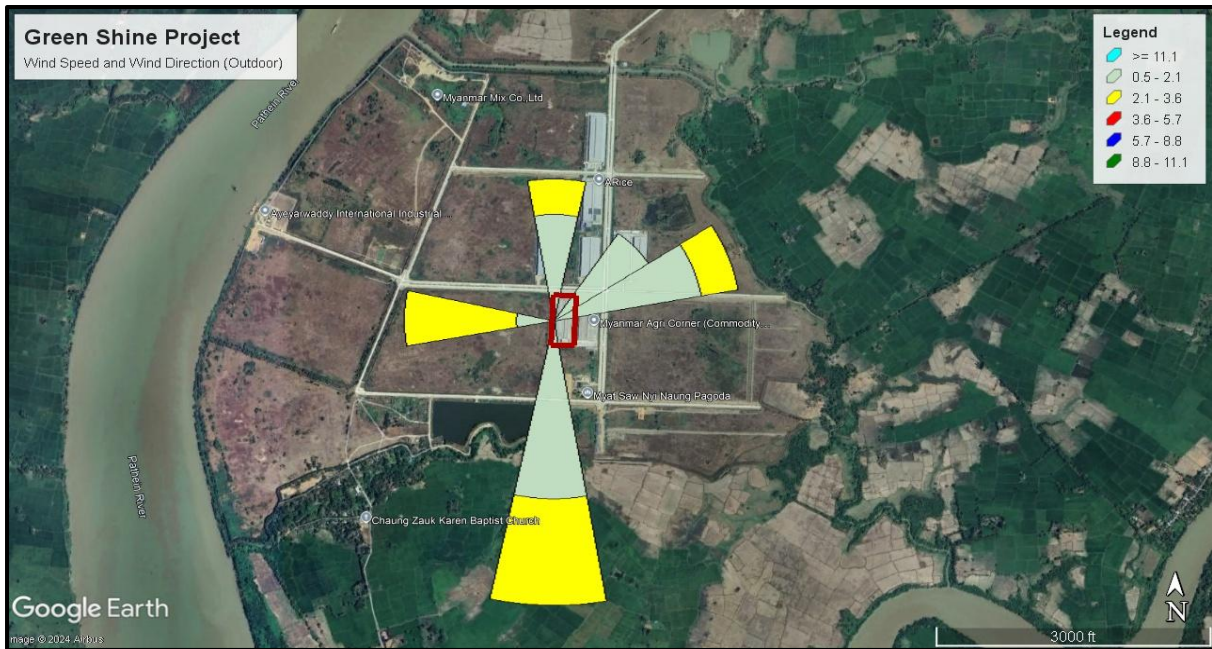


Figure 6-10 Wind Speed and Wind Direction (Blowing From) at Project Site (Outdoor)

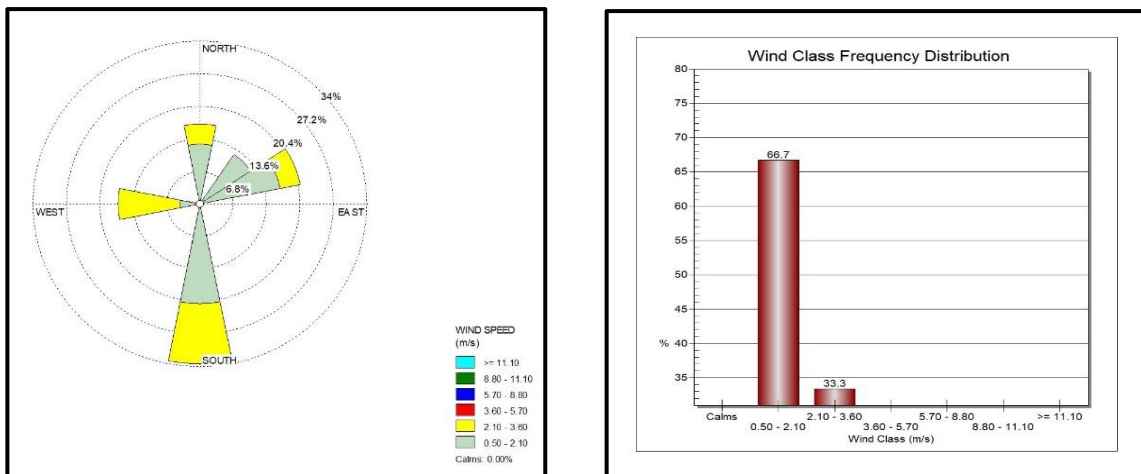


Figure 6-11 Wind Class Frequency Distribution (Blowing From) at Project Site (Outdoor)

6.2.5.4 Ambient Noise Level

The noise level for the proposed rice milling project was assessed with Digital Sound Level Meter at the project site next to the air quality station, as described above. It might be a good indicator of the level of noise in the neighborhood and sensitive areas. A digital sound level meter was used to measure the noise level for 24 hours continuously from 5rd to 7th October 2024. The noise level and survey photographs covering 24-hours are displayed in Figure 6-12 and Figure 6-13 and results are displayed in Table 6-9 and Table 6-10. The average noise level of daytime measurement for outdoor and indoor points were 58.76 dB, 59.75 dB and 55.00 dB, 57.63 dB during nighttime.



Figure 6-12 Noise & Vibration Level Measuring Location of Green Shine Project (Indoor& Outdoor)



Point 1 (Outdoor)



Point 2 (Indoor)

Figure 6-13 Noise Level Measurement

Table 6-9 Table Observed Values of Noise Level Measurement at Project Site (Outdoor)

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	6.10.2024	7:00 -7:59	61.32	A	Day	58.76
2	6.10.2024	8:00-8:59	57.89	A	Day	
3	6.10.2024	9:00-9:59	67.44	A	Day	
4	6.10.2024	10:00-10:59	67.75	A	Day	
5	6.10.2024	11:00-11:59	62.16	A	Day	
6	6.10.2024	12:00-12:59	66.54	A	Day	
7	6.10.2024	13:00-13:59	65.83	A	Day	
8	6.10.2024	14:00-14:59:	50.40	A	Day	
9	6.10.2024	15:00-15:59	52.07	A	Day	
10	5.10.2024	16:00-16:59	56.63	A	Day	

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
11	5.10.2024	17:00-17:59	58.22	A	Day	
12	5.10.2024	18:00-18:59	51.75	A	Day	
13	5.10.2024	19:00-19:59	53.87	A	Day	
14	5.10.2024	20:00-20:59	54.16	A	Day	
15	5.10.2024	21:00-21:59	55.31	A	Day	
16	5.10.2024	22:00-22:59	55.55	A	Night	55.00
17	5.10.2024	23:00-23:59	55.88	A	Night	
18	6.10.2024	0:00-0:59	56.02	A	Night	
19	6.10.2024	1:00-1:59	55.64	A	Night	
20	6.10.2024	2:00-2:59	55.25	A	Night	
21	6.10.2024	3:00-3:59	55.42	A	Night	
22	6.10.2024	4:00-4:59	54.89	A	Night	
23	6.10.2024	5:00-5:59	51.80	A	Night	
24	6.10.2024	6:00-6:59	54.60	A	Night	
Average			57.35			

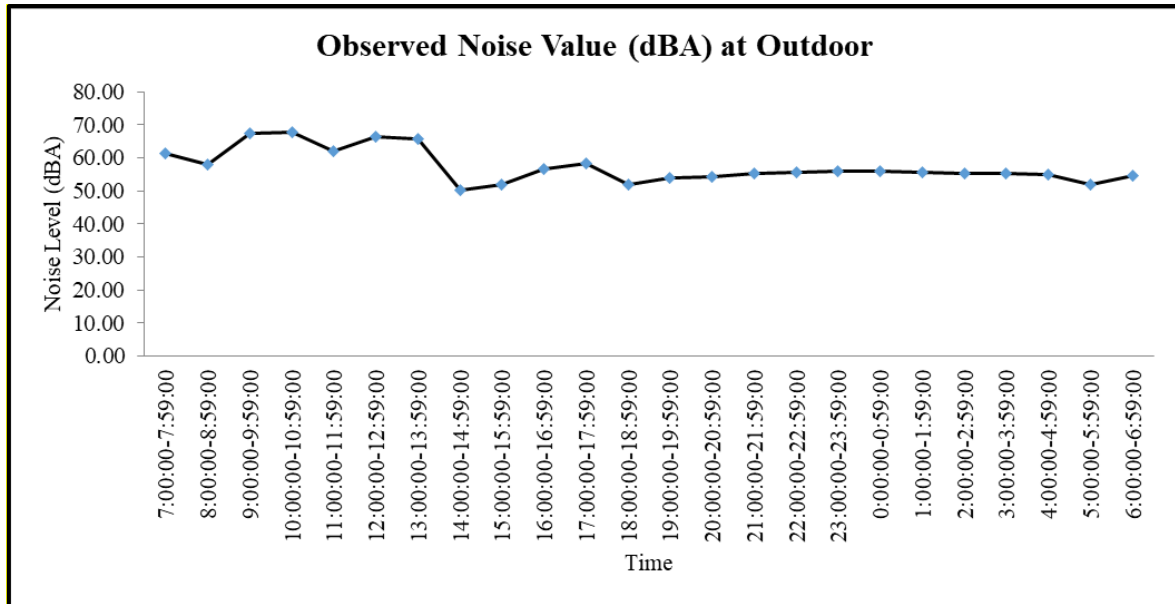


Figure 6-14 Noise Level at Project Site at Outdoor

Table 6-10 Table Observed Values of Noise Level Measurement at Project Site (Outdoor)

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
1	7.10.2024	7:00-7:59	61.33	A	Day	59.75
2	7.10.2024	8:00-8:59	54.70	A	Day	
3	7.10.2024	9:00-9:59	65.60	A	Day	
4	7.10.2024	10:00-10:59	65.27	A	Day	
5	7.10.2024	11:00-11:59	63.46	A	Day	
6	7.10.2024	12:00-12:59	57.09	A	Day	
7	7.10.2024	13:00-13:59	58.32	A	Day	
8	7.10.2024	14:00-14:59:	53.06	A	Day	
9	7.10.2024	15:00-15:59	52.78	A	Day	

No.	Date	Time	Observed Mean Value (Source)	Weight	Day/Night	Average
10	7.10.2024	16:00-16:59	54.23	A	Day	57.63
11	6.10.2024	17:00-17:59	61.33	A	Day	
12	6.10.2024	18:00-18:59	54.70	A	Day	
13	6.10.2024	19:00-19:59	65.60	A	Day	
14	6.10.2024	20:00-20:59	65.27	A	Day	
15	6.10.2024	21:00-21:59	63.46	A	Day	
16	6.10.2024	22:00-22:59	57.09	A	Night	
17	6.10.2024	23:00-23:59	58.32	A	Night	
18	7.10.2024	0:00-0:59	53.06	A	Night	
19	7.10.2024	1:00-1:59	52.78	A	Night	
20	7.10.2024	2:00-2:59	54.23	A	Night	
21	7.10.2024	3:00-3:59	55.41	A	Night	
22	7.10.2024	4:00-4:59	63.38	A	Night	
23	7.10.2024	5:00-5:59	61.24	A	Night	
24	7.10.2024	6:00-6:59	63.12	A	Night	
Average			58.95			

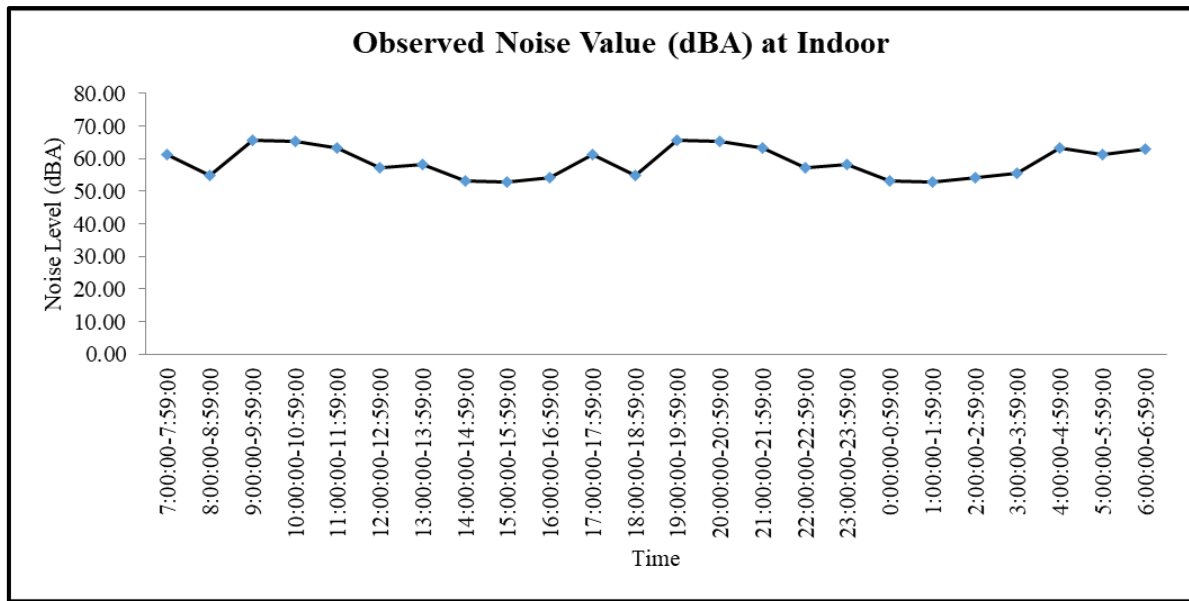


Figure 6-15 Noise Level at Project Site at Indoor

Table 6-11 Observed Ambient Noise Level Results from Selected Point

Point	Green Shine Project	
	Day Time	Night Time
Project Site (Outdoor)	58.76	55
Project Site (Indoor)	59.75	57.63
Guideline Values for Residential	55	45
Guideline Values for Industrial, Commercial	70	70

The observed values are compared with the National Environmental Quality (Emission) Guidelines as shown in Table 6-11 except receptor point, which indicates the separate level for residential and industrial points. As per above tables, it can be seen that noise level measured are within the National Environmental Quality (Emission) Guideline (NEQG) values for Industrial, Commercial.

6.2.5.5 Vibration Level

Vibration level for the project was measured with VM-55 Vibration Meter at the project site. The vibration level measurements were conducted at the points next to the air and noise stations of Green Shine Project, from the 5th to 7th October 2024. Measuring period is 24 hours continuously. The observed values are described in the following Table 6-12.



Figure 6-16 Vibration Level Measurements

Table 6-12 Vibration Monitoring Results

Location	X-Lveq		Y-Lveq		Z-Lveq	
	Daytime (7:00-22:00)	Night Time (22:00-7:00)	Daytime (7:00-22:00)	Night Time (22:00-7:00)	Daytime (7:00-22:00)	Night Time (22:00-7:00)
Point (outdoor)	46.79	40.44	32.41	32.46	41.15	37.37
Point (outdoor)	43.64	38.67	34.08	32.39	42.69	35.23

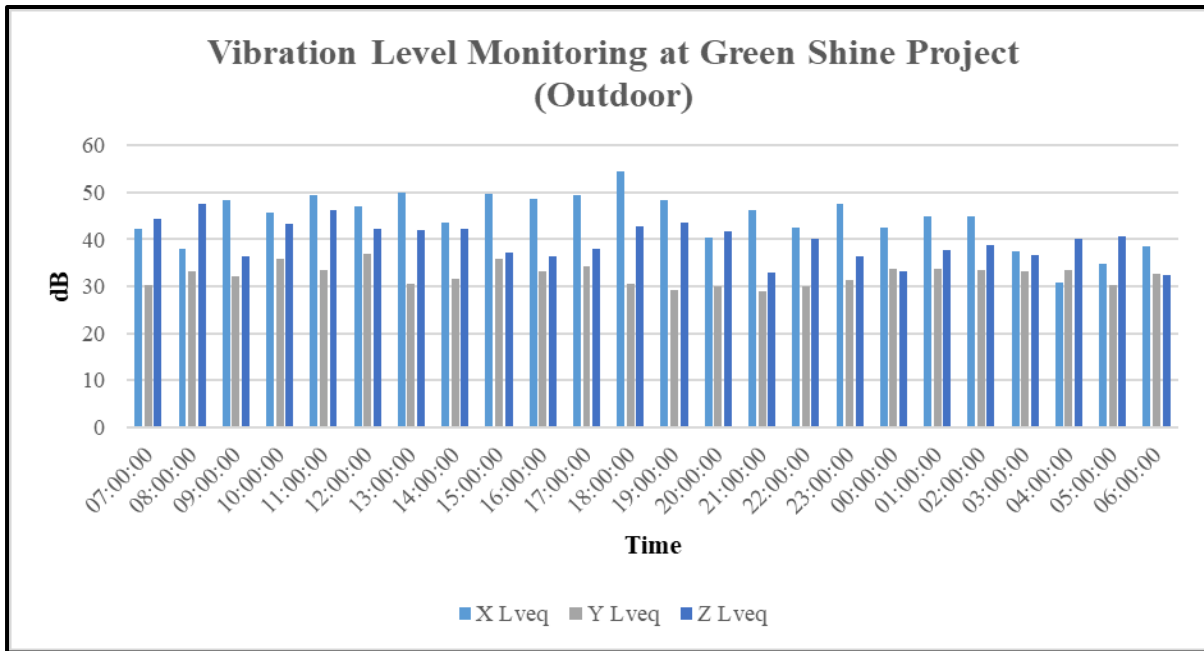


Figure 6-17 Vibration Level Monitoring at Green Shine Project (Outdoor)

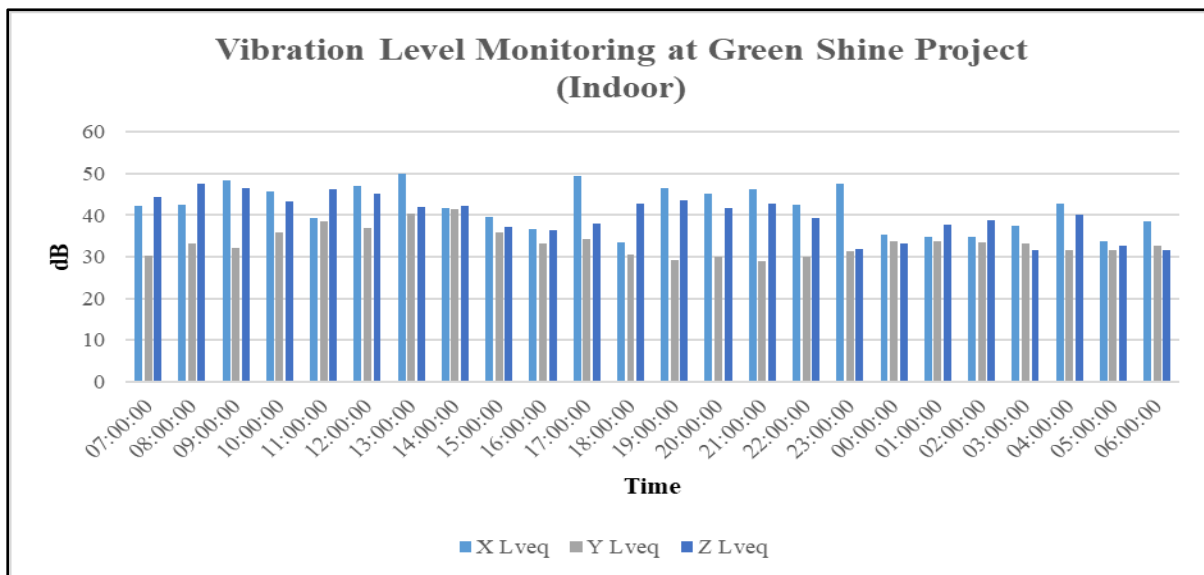


Figure 6-18 Vibration Level Monitoring at Green Shine Project (Indoor)

Table 6-13 Regulatory Standards for Vibration Emitted from Specified Factories (Summary)

Time Area	Day Time	Night Time	Applicable Areas
I	60-65 dB	55-60 dB	Areas where maintenance of quiet is particularly needed to preserve a good living environment and where quiet is needed for as they are used for residential purposes.
II	65-70 dB	60-65 dB	Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating.

6.2.5.6 Water Quality

Objectives of the sampling and analysis of ground water quality is to understand the existing water quality at the selected locations and to monitor the impacts during operation period. To analysis the baseline water quality, groundwater sample from tube well and effluent water samples from water outlet of water filtration tank and final outlet of the project site were collected on 5th October 2024. The sampling point for groundwater was located between 16°43'10.00"N and 94°44'52.00"E, at tube well. The two effluent water sampling points were located between 6°43'11.00"N and 94°44'53.00"E, and 16°43'16.00"N and 94°44'54.00"E.



Figure 6-19 Water Quality Measuring Locations of Green Shine Project



Groundwater Quality Sampling



Groundwater Quality Onsite Measurement



Effluent Water Quality Sampling (Point-1)



Effluent Water Quality Sampling (Point-2)

Figure 6-20 Water Quality Measurement

Then, the collected water sample was analyzed at the water quality laboratories namely as Forest Research Institute (FRI) and Pro Lab. Tests results provided from respective laboratory attached in Appendix. All the water quality parameter results are described in the following tables.

Table 6-14 Results of On-Site Ground Water Quality Measurement

Location	pH	Electrical Conductivity			DO (mg/l)	Turbidity (NTU)	Oxidation Reduction Potential (ORP)	Depth (ft)
		EC (ms/cm)	TDS (g/l)	Salinity (ppt)				
Ground Water	7.08	2.26	1.45	1.2	11.21	0	298	-

Table 6-15 Table Groundwater Quality of Green Shine Project

Item	Unit	Groundwater Results	National Drinking Water Quality Standards Myanmar
Iron	mg/l	0.10	1
Manganese	mg/l	5.1	0.4
Oil and Grease	mg/l	10	-
Total Coliform	mg/l	<0.3	-
Color	TCU	ND	15
Chloride	mg/l	159.87	250
Arsenic	mg/l	0.00105	0.05
Cadmium	mg/l	0.000453	0.003
Chromium	mg/l	0.00324	0.05
Zinc	mg/l	0.00102	3
Total Phosphorus	mg/l	0.00456	-
Total Nitrogen	mg/l	2.15	-
BOD	mg/l	0.80	-
COD	mg/l	5.4	-

According to the laboratory results of groundwater quality, manganese level is not only above the guide lines, but the level is also too high. Agricultural runoff, particularly from the use of

manganese-containing fertilizers or pesticides, can further elevate manganese levels in nearby water sources. Naturally, manganese is a mineral found in aquifers, and local geological conditions may contribute to higher concentrations. Furthermore, inadequate infrastructure for waste management and treatment in industrial areas can exacerbate these contamination issues. Other factors are industrial activities, such as those in rice mills, may involve machinery and equipment that contain manganese or produce manganese-containing waste, leading to contamination. Milling processes can disturb soil, causing manganese to leach into groundwater. Additionally, poor water management practices, including improper disposal of wastewater, can allow contaminants like manganese to infiltrate into groundwater systems.

Table 6-16 Effluent Water Quality (Point-1) at Filtration Tank

Item	Unit	Effluent Water	National Environmental Quality (Emission) Guideline
Chromium (Total)	mg/l	<0.005	0.5
Cyanide	mg/l	0.239	1
Iron	mg/l	0.95	3.5
Oil and Grease	mg/l	19	10
Phenols	mg/l	33.35	0.5
Silver	mg/l	0.042	0.5
Sulfide	mg/l	0.209	-
Selenium	mg/l	0.14	0.1
Total Chlorine	mg/l	Nil	-
Total Coliform	MPN/100ml	24	400
pH	mg/l	6.54	6-9
Temperature	mg/l	26.96	<3 ^b
Fluoride	mg/l	1.05	20
Ammonia	mg/l	16.85	10
Nickel	mg/l	0.00252	0.5
Arsenic	mg/l	0.101	0.1
Cadmium	mg/l	0.000731	0.1
Lead	mg/l	0.00764	0.1
Zinc	mg/l	0.00144	2
Copper	mg/l	0.00420	0.5
Mercury	mg/l	0.00307	0.01
Total Suspended Solids	mg/l	27	50
Total Phosphorus	mg/l	0.05025	2
BOD	mg/l	4.02	50
COD	mg/l	31	250

Table 6-17 Effluent Water Quality (Point -2) at Central Drain Infront of the Project

Item	Unit	Effluent Water	National Environmental Quality (Emission) Guideline
Chromium (Total)	mg/l	<0.005	0.5
Cyanide	mg/l	0.012	1

Item	Unit	Effluent Water	National Environmental Quality (Emission) Guideline
Iron	mg/l	1.96	3.5
Oil and Grease	mg/l	17	10
Phenols	mg/l	0.36	0.5
Silver	mg/l	0.043	0.5
Sulfide	mg/l	0.057	-
Selenium	mg/l	0.11	0.1
Total Chlorine	mg/l	Nil	-
Total Coliform	MPN/100ml	290	400
pH	mg/l	6.90	6-9
Temperature	mg/l	27	<3 ^b
Fluoride	mg/l	0.067	20
Ammonia	mg/l	11.53	10
Nickel	mg/l	0.0039	0.5
Arsenic	mg/l	0.00130	0.1
Cadmium	mg/l	0.000561	0.1
Lead	mg/l	0.00328	0.1
Zinc	mg/l	0.000582	2
Copper	mg/l	ND	0.5
Mercury	mg/l	0.000679	0.01
Total Suspended Solids	mg/l	98	50
Total Phosphorus	mg/l	0.69097	2
BOD	mg/l	5.19	50
COD	mg/l	36	250

According to the laboratory results of effluent water quality, phenols and oil and grease and ammonia concentration is not only above the guide lines, but the level is also too high. An ash filtration tank can result from various operational and material-related factors. Phenolic compounds may originate from incomplete combustion of organic materials like rice husk, or from phenol-containing chemicals used for maintenance. Oil and grease contamination typically arise from equipment leaks, improper handling of lubricants, or unburned fuel residues. Ammonia contamination may be due to the nitrogen content of fuels, which can release ammonia during combustion or through the hydrolysis of nitrogenous compounds in ash or flue gas residues. Additional contributing factors include improper system design, inefficient ash handling or storage practices leading to leaching, and inadequate maintenance or monitoring of the filtration system, all of which can elevate contaminant levels in the effluent.

6.3 Biological Components

The proposed project site is not located in or near a sensitive ecosystem as the proposed project area is situated in Pathein Industrial Zone. The description of biodiversity condition around the project area presented in Figure 6-21. Moreover, desktop reviews and site visits confirmed the absence of unique or ecologically significant flora and fauna and it is not covered within any

of these categories: nature reserve, protected area, nature conservation area, geophysical nature conservation area, marine farm, mangrove, and wetland area. As the project site is situated an industrial zone, and surrounded by paddy fields; there are no wild trees. The reserve forests are a bit far away from the project site. The nearest reserve forest is Kyaykkon Reserve Forest, located approximately 22.11 km southeast of the project site. Mezali Reserve Forest is located 22.43 km to the west and Talakwe Reserve Forest is 24.1 km to the northwest of the project site. According to GAD Township Profile (2023), *Alibizia lebbeck* (Kokeko), *Cocos mucifera* (Coconut), *Areca catechu* (Betle Nut), *Mangifera indica* (Mango), *Borassus floabellifer* (Htan), *Nypa fruticans* (Nipa Palm) are founded in Kangyidaunt Township.

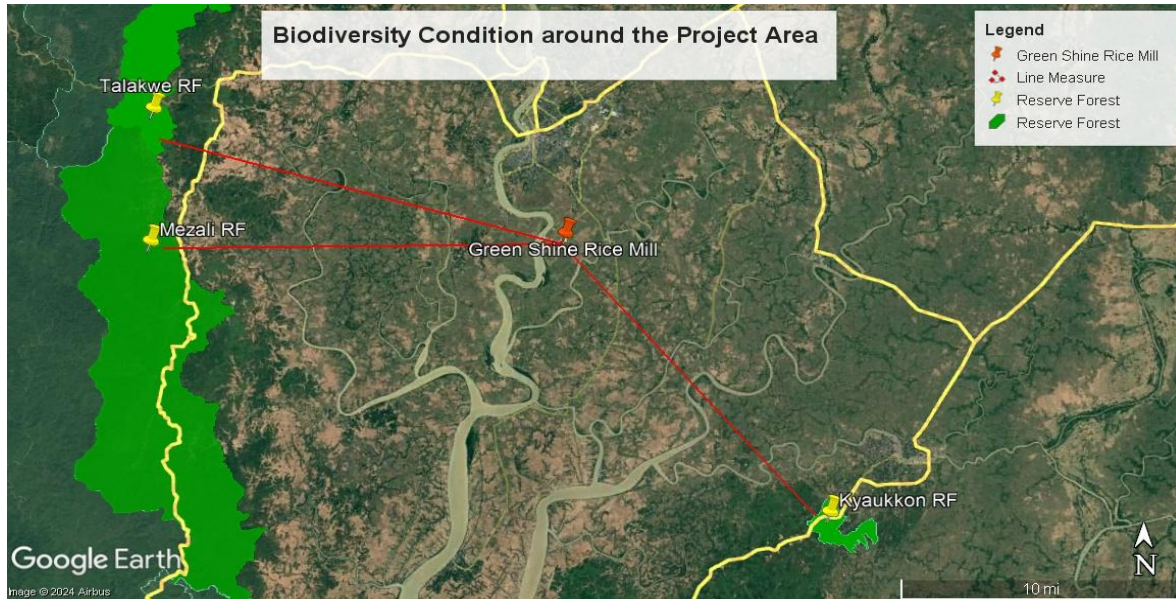


Figure 6-21 Biodiversity Condition around the Project Area

Based on the Kangyidaunt Township profile, there are no wildlife animals. As the project area is in Patiehin Industrial city, and closely to Pathien City, no terrestrial wildlife can be found. The possible fauna species commonly found in the area include snakes, birds, and various species, and no endangered species can be found due to the habitat conditions within the buffer zone specified for the project site.

6.4 Social Components

6.4.1 Population

Kangyidaunt Township has a population of 186,993 people. The following table shows the population in both rural and urban areas.

Table 6-18 Population

No.	Content	Over (18) years			Under (18) years			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1.	Urban	4,130	4,628	8,758	1,453	1,448	2,901	5,583	6,076	11,659
2.	Rural	61,842	66,609	128,451	22,622	23,497	46,119	84,494	90,106	174,570
Total		65,972	71,237	137,209	24,075	24,945	49,020	90,047	96,182	186,229

Source: Kangyidaunt Township Information (GAD, 2023)

6.4.2 Household and Housing Status

The data of households and housing in Kangyidaunt Township as of March 2024 is stated in the following table.

Table 6-19 The household/ housing data of Kangyidaunt Township

No.	Place	Housing	Household	Ward	Village Tract	Village
1.	Urban	2,814	2,901	7	-	-
2.	Rural	43,185	43,203	-	73	386
Total		45,999	46,104	7	73	386

Source: Kangyidaunt Township Information (GAD, 2023)

6.4.3 Religion and Ethnicity

Religion: The population by religion is described in the following table and most have belief in Buddhism.

Ethnicity: There are three groups of ethnic people in Kangyidaunt Township and most are Burmese people (53.84%) followed by Kayin (44.82%) and Rakhine people (0.009%).

Table 6-20 Population by Religion

Township	Buddhism	Christian	Hinduism	Islam	Other Religion	Total
Kangyidaunt	168,603	15,498	22	2,106	-	186,229

Source: Kangyidaunt Township Information (GAD, 2023)

6.4.4 Economy and Employment Status

Kangyidaunt Township is located in Ayeyarwady Region, and it is a good region for economy with reasonable economic development. People from Kangyidaunt Township depend on agriculture as their main business. Kangyidaunt Township is located at the junction of land routes and riverine routes and has good transportation. The major product of the town is rice, and it is sold to the nearby towns including Myaungmya, Patheingyi and Yangon Region.

Table 6-21 Employment status of Kangyidaunt Township

Township	Number of Workable people	Number of employees in workplace	Number of unemployed people	Percentage of People with no employment
Kangyidaunt	119,122	93,917	23,140	19.42%

Source: Kangyidaunt Township Information (GAD, 2023)

6.4.5 Community Health Care

In Kangyidaunt Township, the most common diseases are malaria, diarrhea, tuberculosis, dysentery, and hepatitis. According to the data, diarrhea is the most occurring disease with a record of 412 cases. The second occurring disease is dysentery with a record of 125 cases. Moreover, malaria occurred 7 cases, no hepatitis occurred and tuberculosis (TB) occurred 262 cases with 13 dead cases occurred. There are 15 cases of HIV/AIDS between 2022 and 2024 and there is only one dead case. The following table shows the details of occurred diseases. The following tables also include data for the quantity of hospitals, clinics, and rural health care centers located in Kangyidaunt Township.

Table 6-22 Number of hospitals, clinics, and rural health care centers

No.	Content	Number	Government	Private
1.	Hospital	4	4	-
2.	Clinic	5	2	3
3.	Rural health care center	7	7	-
4.	Sub rural health care center	37	37	-
Total		53	50	3

Source: Kangyidaunt Township Information (GAD, 2023)

6.4.6 Transportation

The condition of transportation in Kangyidaunt Township is good. There are three types of transportation in Kangyidaunt Township: railway, waterway and roadway. According to *Kangyidaunt Township Information (GAD, 2023)* data, there are 5 bus gates for transportation and 24 vehicles are used to transport local people from one place to another. In addition, there are 3 bridges with lengths over 180 feet and 6 bridges with lengths below 180 feet. There are 4 roads that are used in township and 4 roads that are connected to surrounding townships. The details of transportation are shown in the following tables.

Table 6-23 Railway and railway stations

No.	Name of Railway	Within the township		Distance (Mile/Furlong)	Number of stations	
		From	To		Big	Small
1.	Pathein-Hinthada-Kyan Khin	Ta Kone Gyi	Dhaka	14/7	2	1
2.	Pathein- Begayet-Einme	Begayet	Nyaung Kone	7	1	-
Total		-	-	21/7	3	1

Source: Kangyidaunt Township Information (GAD, 2023)

Table 6-24 Roads

No.	Name of roads	Within the township		Distance (Mile/Furlong)
		From	To	
1.	Kangyidaunt-Pathein	Kangyidaunt	Pathein	17/0
2.	Kangyidaunt- Einme	Kangyidaunt	Einme	22/0
3.	Kan Kone- Myinka Seik	Kan Kone	Myinka Seik	12/5
4.	Shan Ywar- Ngapudaw	Shan Ywar	Ngapudaw	8/3

Source: Kangyidaunt Township Information (GAD, 2023)

Table 6-25 Roads to surrounding townships

No.	Name of Road	Distance (Mile-Furlong)
1.	Kan Kone- Myinka Seik- Myaungmya Road	12/5
2.	Pathein- Ngapudaw Road	8/3
3.	Einme- Dhaka Road	15/0
4.	Pathein-Yangon Road	15/0
Total		51/0

Source: Kangyidaunt Township Information (GAD, 2023)

Table 6-26 Waterways

No.	Name of waterways	Within the township		Distance (Mile/Furlong)
		From	To	
1.	Shan Ngu - Pathein	Shan Ngu	Pathein	37/0
2.	Thayatkwin - Pathein	Thayatkwin	Pathein	80/2
3.	Kan Ywa - Pathein	Kan Ywa	Pathein	60/5
4.	Mi Chaung Tike - Pathein	Mi Chaung Tike	Pathein	73/7
5.	Ahlel Kyun - Dhaka	Ahlel Kyun	Dhaka	60/6
6.	Tha Pyay Kyun - Kangyidaunt	Tha Pyay Kyun	Kangyidaunt	47/0
7.	Ahlel Kyun - Kangyidaunt	Ahlel Kyun	Kangyidaunt	51/0
8.	Sat Thwar - Kangyidaunt	Sat Thwar	Kangyidaunt	51/0
9.	Lin Tar Kya - Kangyidaunt	Lin Tar Kya	Kangyidaunt	67/6
10.	Oke Shit - Kangyidaunt	Oke Shit	Kangyidaunt	68/0
11.	Kyar Ye - Kangyidaunt	Kyar Ye	Kangyidaunt	47/5
12.	Meetway Tike - Pathein	Meetway Tike	Pathein	51/0
13.	Kangyidaunt - Thabaung	Kangyidaunt	Thabaung	45/6
14.	Chaung Sauk - Pathein	Chaung Sauk	Pathein	31/2
15.	Kyar Ye - Dhaka	Kyar Ye	Dhaka	38/4

Source: Kangyidaunt Township Information (GAD, 2023)

6.5 Cultural Features

According to the data from GAD (2024), there are 64 famous pagodas and 245 famous monasteries. The following table shows the number of religious buildings in Kangyidaunt Township.

Table 6-27 Monastic Facilities in Kangyidaunt Township

Township	Pagodas	Shrines	Stupa	Monasteries	Nunnery	Community hall
Kangyidaunt	64	142	-	245	2	16

Source: Kangyidaunt Township Information (GAD, 2023)

7 IDENTIFICATION AND ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

7.1 Methodology for the Impact Assessments

The objective of the study is to identify the potential impacts due to the project activities during construction, operation and decommissioning phases. This proposed rice milling project is being conducted in an already constructed, rented facility at No. 53-C from Pathein Industrial City. Therefore, the assessment of environmental impact will not be identified for construction phase. This section provides for potential environmental impacts and mitigation measures to minimize negative impacts and enhance positive environmental impacts from the operation phase and dismantling of milling machinery (decommissioning phase) of rice milling project. An environmental impact is defined as any change to an existing condition of the environment. Impact analysis involved determination of **magnitude, extent, duration, and probability and significance of potential impacts**. The detailed assessment of impacts is presented in Table 7-1. Then, the significant Point (SP) is calculated by the following formula.

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

Table 7-1 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

Impact Significance: Based on calculated significant point, impact significance can be categorized into five overall classifications in the qualitative assessment as shown in Table 7-2.

Table 7-2 Significance of Impact

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

7.2 Identification of the Potential Impacts on Environmental Components

In this IEE study, the potential environmental impacts brought by operations and decommissioning phases of the proposed rice milling project were identified and judged by site survey, interview with the client teams from Green Shine No. 53-C, environmental baseline collection using primary and secondary data sources and literature review etc. The operation activities of the proposed project are likely to cause changes in the local environment in terms of physical, biological, and socio-economic aspects along with the perspective on both positive and negative impacts. Additionally, waste disposal from the project includes solid, liquid and hazardous wastes are also explained in the following sections. The identified potential environmental impacts will be caused by the project throughout the operation activities as presented in Figure 7-1.

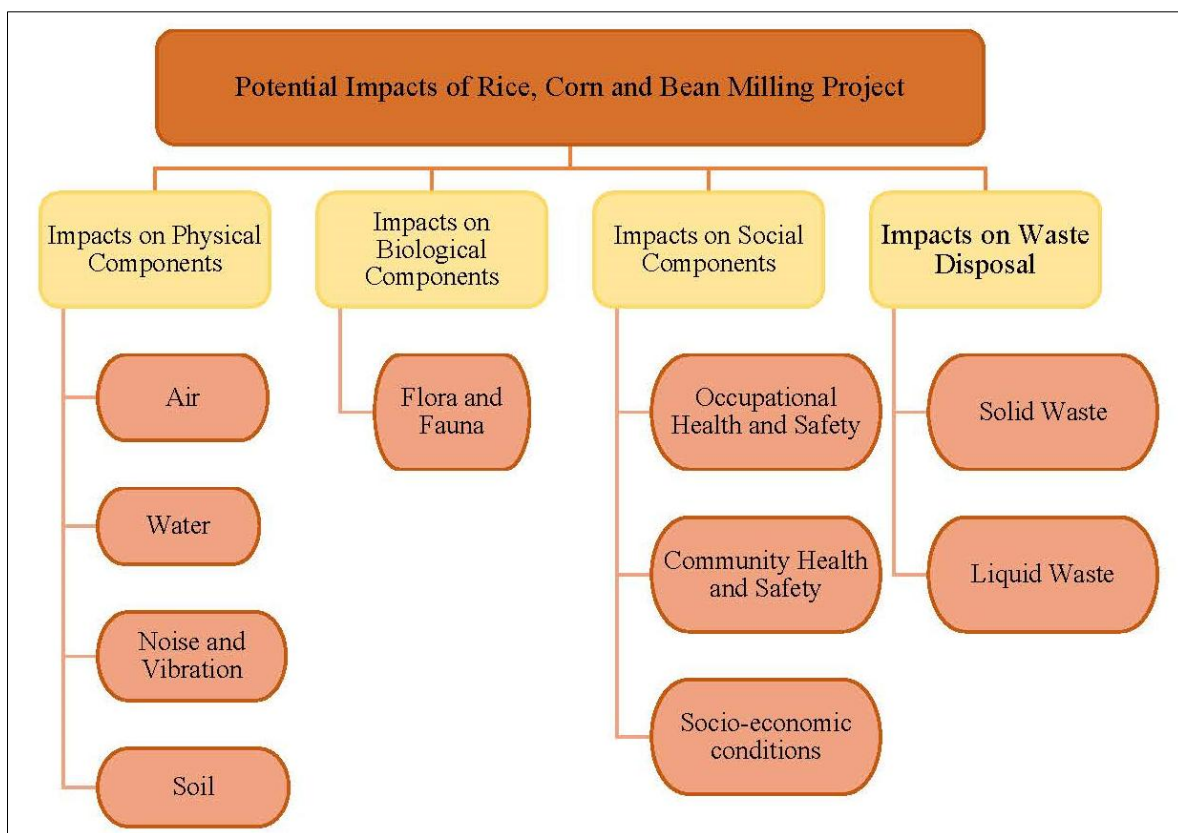


Figure 7-1 Identification of potential impacts by Rice Milling project

7.2.1 Impact on Air Quality

Operation Phase

During the operation stage of the rice milling project, air quality can be impacted within the facility and in surrounding areas primarily through the release of dust and particulate matter (PM) from the process such as dry cleaning, polishing and packaging and machinery maintenance may emit volatile organic compounds (VOCs), impacting indoor air quality. To further support power needs, this project relies on a biomass gasifier and diesel generators, which release exhaust gases including carbon monoxide (CO), nitrogen oxides (NO_x), and sulfur dioxide (SO₂) etc. The gasifier also produces rice husk ash as by-product, may pose

respiratory risk. Then, transportation vehicles used for raw rice, white rice export and rice husk delivery add to air pollution through exhaust emissions. Moreover, the concentrations of pollutants exhibit significant variations based on geographical location and temporal fluctuations, which are influenced by meteorological conditions like wind speed and wind direction.

Decommissioning Phase

The dismantling of machinery in a rice milling project can affect air quality through the release of dust, particulate matter, and emissions from residual materials. Dust from disassembled equipment, storage areas, and structural components may become airborne, contributing to localized pollution. If machinery contains lubricants, fuels, or other residues, dismantling may release volatile organic compounds (VOCs) into the air.

The rice husk gasifier dismantling can significantly impact air quality due to the release of dust, ash, and potentially harmful emissions due to residual ash and charred materials inside the gasifier increasing particulate matter in the air. Additionally, traces of tar or other byproducts may emit volatile organic compounds (VOCs) if not properly contained. Dismantling activities involving cutting or grinding metal components can further generate fine metal particles.

7.2.2 Impact on Noise and Vibration

Operation Phase

Noise and vibration impacts during operation stage are significant due to the use of heavy machinery. The gasifier and diesel generators also create noise and vibrations which can be disruptive within the facility and may extend to the surrounding areas. Vibration from these machines also affect building structures and discomfort for workers. Additionally, transportation activities of vehicles impact on noise pollution.

Decommissioning Phase

The dismantling of machinery, including the rice husk gasifier, in a rice milling project can cause significant noise and vibration. Processes such as cutting, grinding, hammering, and the use of heavy equipment generate high noise levels that may exceed permissible limits, impacting workers and nearby communities. The dismantling of the gasifier may involve additional noise from removing and handling large components, such as metal parts and residual materials. Vibration caused by heavy machinery can affect the structural stability of nearby buildings and pose risks to sensitive equipment in the vicinity.

7.2.3 Impact on Water Consumption and Quality

Operation Phase

Water consumption during the operation stage is significant due to its essential role in wet cleaning and polishing process of rice grains. The cleaning and polishing process requires substantial water to remove impurities and ensure white rice quality. The gasifier process needs a large volume of water for cooling ash which generates heat and also require a consistent water flow to maintain safe operating temperatures and overheating.

In terms of water quality, wastewater generated from cooling ash from gasifier, equipment cleaning, machinery maintenance and cooling may contain organic matter, sediments and residues which contaminate local water body, affecting aquatic life and water quality for downstream users.

Decommissioning Phase

Water consumption during the dismantling phase is significant due to its essential role in cleaning and suppressing dust during the removal of machinery and equipment. The dismantling of components like the gasifier requires water for cleaning residual ash, tar, and other contaminants to ensure safe handling and disposal. Additionally, water is used for cooling metal surfaces during cutting or grinding operations to prevent overheating and equipment damage.

In terms of water quality, wastewater generated during the dismantling process may contain sediments, oils, grease, and residual byproducts such as ash and tar from the gasifier. If not managed properly, this contaminated water can pollute local water bodies, harming aquatic ecosystems and degrading water quality for downstream users.

7.2.4 Impact on Soil Quality

Operation Phase

During the operational stage of the white rice milling project, the disposal of by-products, waste management of rice husk from gasifier filter, ash and, accidental spills of oil and fuel may pose a risk to soil quality if not stored or disposed of properly. Ash particles can affect soil fertility and surrounding vegetation. According to the laboratory results of effluent water quality, phenols and oil and grease concentration is not only above the guide lines, but the level is also too high. If high phenol concentrations are discharged into the soil, it can seep into the ground, contaminating soil and groundwater.

Decommissioning Phase

Improper handling and disposal of by-products, such as residual ash, charred materials from the gasifier, and waste oils or lubricants from machinery, can pose significant risks to soil quality. Accidental spills of fuel, oils, or cleaning agents used during dismantling can contaminate the soil, reducing its fertility and potentially harming surrounding vegetation. Additionally, dispersed ash and fine particles from dismantled components may settle on the ground degrading the soil quality.

7.2.5 Impact on Biological Components

Operation Phase

Biological components such as local flora, fauna, and ecosystems may experience several impacts by dust generation from milling and polishing processes during the operation stage. Noise from machinery and vibrations may disturb local species sensitive to sound causing disruptions in their natural behaviors. Furthermore, emissions from the gasifier and diesel generators could alter air quality, impacting nearby plant life. Wastewater and solid waste including rice husk ash may contaminate local soil and water sources affecting soil organisms.

Decommissioning Phase

Dust generation from dismantling activities, such as cutting and grinding machinery, can settle on vegetation, and damaging plant health. Noise and vibrations from heavy machinery may disturb particularly species sensitive to sound, potentially causing disruptions to their natural behaviors or forcing them to relocate. Additionally, emissions from dismantling equipment, including exhaust fumes from diesel-powered machinery, may degrade air quality, impacting nearby plant life. Improper handling or disposal of hazardous materials, such as residual ash, tar, and oils, can contaminate local soil and water sources, affecting soil organisms and aquatic ecosystems.

7.3 Impact on Human

7.3.1 Occupational Health and Safety

Operation Phase

Occupational health and safety measures are essential for employees from various hazards associated with the operation of milling processes. Health impacts include dust generation from milling that can pose respiratory risks, skin, or eyes and, high noise levels from machinery can also result in hearing loss over time its employees due to lack of adequate protection.

On the safety side, machinery hazards are also significant, as equipment like conveyors, and operating machines pose risks of cuts or crush injuries, slips, trips and falls as milling areas may have loose grain, or water on the floor, necessitating proper safeguards and regular maintenance.

Decommissioning Phase

Health risks for workers include exposure to dust and particulate matter generated during cutting, grinding, or handling of machinery, which can cause respiratory issues, skin irritation, or eye injuries if proper protective equipment is not used during the dismantling process. Noise levels from heavy machinery and power tools may also lead to hearing loss over time without adequate hearing protection. On the safety side, dismantling activities pose significant risks, such as cuts, crush injuries, or falls due to the use of sharp tools and heavy components. Slips and trips may occur from spilled oils, residual water, or loose debris on the floor.

7.3.2 Community Health and Safety

Operation Phase

The impact on community health and safety during the operation stage is not significant because it operates in Pathien Industrial Zone. It is far from residential areas. However, there may be minor residual impacts on air quality as the milling process generates dust and particulate matter, which may spread and affect workers and visitors. Noise pollution also less of a concern for distant residential areas could disrupt adjacent businesses and nearby water bodies, local water sources and groundwater quality due to wastewater discharge. When humans consume contaminated seafood, they may inadvertently ingest harmful chemicals,

leading to long-term health risks, including potential toxicity, liver damage, and carcinogenic effects.

Decommissioning Phase

The impact on community health and safety during the dismantling phase is minimal as the project is located in the Pathein Industrial Zone, far from residential areas. Noise pollution from heavy machinery and tools, while not a concern for distant residential areas, might disrupt adjacent businesses. Additionally, improper handling of waste materials, such as oils, ash, and tar residues, could lead to localized soil and water contamination. This may indirectly impact nearby water bodies, groundwater quality, and ecosystems.

7.3.3 Socio-economic

Operation Phase

The white rice milling operation provides socio-economic benefits, positively impacting the local community by creating temporary job opportunities and offering local workers income. The operation period initially sets at 10 years with plans for long-term continuation. It demands for daily labor providing flexible income opportunities for locals. The project improves community skill levels in rice processing and machinery operation by offering training and employment, particularly to recent graduates and local youth. The project also aids local farmers by creating a reliable market for their product stabilizing their livelihoods and elevating local living standards, promoting long-term socio-economic growth.

Decommissioning Phase

The dismantling process may provide temporary employment opportunities, also may have negative socio-economic impacts on the local community. It can lead to a loss of long-term, stable jobs for local workers. This process could also affect the local economy if businesses that depend on the rice milling operation.

7.4 Impact on Waste Disposal

Operation Phase

Solid Waste: The rice milling operation generates general solid waste from routine operations includes packaging materials, such as plastic bags and woven bags, generated from rice supply deliveries and equipment and office waste. The significant solid wastes are primarily rice husk, bran, and broken rice from milling operation. Rice husk, being a major byproduct, poses disposal challenges if not handled properly. Improper handling of milling waste can lead to environmental pollution including air quality degradation from particulate matter and risks of fire hazards because it is flammable.

Liquid Waste: Liquid waste includes wash water from facilities and general domestic wastewater from toilet, sink and showers of staff housing. The use of a rice husk gasifier in the rice milling operation also generates significant liquid waste primarily from processes such as ash water filtration and cooling system discharge that contain dissolved solids, ash particles or

other contaminants. It can pollute nearby groundwater quality, local water bodies affecting aquatic life and downstream water quality.

Hazardous Waste: The use of a rice husk gasifier in the rice milling operation generates hazardous waste, such as tar, ash, and charred residues, along with waste materials from machinery maintenance, including lubricants, filters, and cleaning agents. These byproducts contain potentially toxic substances that can contaminate soil and water if not disposed of properly. Maintenance activities, such as engine oil changes or replacing worn-out parts, can also produce hazardous waste that requires careful handling and disposal. Proper maintenance of the gasifier machinery and its components can also help reduce the generation of hazardous waste.

Decommissioning Phase

Solid Waste: The dismantling process generates various types of solid waste, including metal scrap, machinery parts, packaging materials, and waste from dismantled equipment. The dismantling of the rice husk gasifier may produce significant amounts of ash, charred residues, and other byproducts that require careful handling. Improper disposal of these materials can lead to environmental pollution, including contamination of soil and air quality degradation due to the release of particulate matter. Additionally, the accumulation of combustible materials poses a fire hazard, especially if not stored and disposed of properly.

Liquid Waste: The dismantling process can also generate liquid waste, including cleaning fluids, residual oils, and wastewater from decommissioning equipment and machinery. These liquids may contain contaminants such as oils, solvents, and heavy metals, which can pose risks to soil and water quality if disposed of improperly. During the dismantling of the gasifier, any remaining ash water or cooling system discharge may contain dissolved solids and other contaminants. These could pollute nearby groundwater and local water bodies, affecting aquatic life and the quality of water for downstream users.

Hazardous Waste: The dismantling phase also generates hazardous waste, including waste oils, lubricants, filters, and cleaning agents used in the maintenance and decommissioning of machinery. The removal of tar and ash from the gasifier, as well as other toxic residues, requires careful handling to prevent contamination of the surrounding environment. Hazardous waste generated during the dismantling activities, such as old parts or chemicals, must be properly stored and disposed of according to regulatory requirements to prevent soil, water, and air pollution.

7.5 Fire Hazard Impact

Operation Phase

Fire hazards is a significant safety concern during the operation stage of this project due to the generation of large amount of fine dust, rice husk, other biomass materials and packaging materials which is highly combustible. Additionally, equipment malfunctions such as overheating of motors or electrical faults can become ignition sources and improper handling of flammable materials and fuel storage can further heighten fire risks. Fire not only disrupts milling operations and damages equipment but also impact air quality in surrounding areas, potentially affecting neighboring businesses in Pathein Industrial City.

Decommissioning Phase

Fire hazards remain a significant safety concern during the dismantling phase of the project due to the presence of residual flammable materials such as rice husk, biomass, oils, and other combustible substances left in machinery or equipment. The process of dismantling equipment, particularly the gasifier and machinery, involves cutting, grinding, or using tools that can generate sparks or heat, which can serve as ignition sources. Improper handling and storage of flammable materials, including residual fuel, oils, or cleaning solvents, further increase the risk of fire. Fire hazards during dismantling not only threaten worker safety but can also damage dismantled equipment and disrupt the dismantling process. Moreover, a fire could degrade air quality, releasing harmful fumes and particulate matter that may affect the surrounding area, including nearby businesses and the Patheon Industrial City.

7.6 Project activities and its Significant Impacts

The assessment of each impact has been determined based on the magnitude, duration, extent, and probability of operations that will take place during the operation phase of rice milling project. According to the findings of the analysis, most project activities have low environmental impacts, while others have a moderate impact that requires improvement in terms of environmental performance. Table 7-3 and Table 7-4 describe the project activities, potential impact sources, and the significance of each impact during operation and decommissioning phases. All anticipated environmental impacts can be mitigated by applying mitigation measures and the Environmental Management Plan presented in the next chapters.

Table 7-3 Evaluation and Perdition of Significant Impacts for Operation Phase

Potential Impact	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
Air pollution	Improper storage and handling of rice husk, and process of rice milling including cleaning and polishing stages	3	4	1	4	32	Moderate
	Usage of biomass gasifier for power generation	3	4	1	4	32	Moderate
	Usage of diesel generator for backup power	2	4	1	3	21	Low
	Transportation activities of rice husk, raw rice and white rice	1	4	2	3	21	Low
Noise pollution	Milling operation such as blowers and dust extraction systems and milling process	4	4	1	4	36	Moderate
	Power supply as gasifier, dynamos and diesel generator	4	4	1	4	36	Moderate
	The movement of truck and heavy vehicles used to transport raw rice, rice husk, and white rice from and to the factory	2	4	2	3	24	Low
Vibration	Power supply as gasifier, dynamos and diesel generator	4	4	1	4	36	Moderate
	The movement of truck and heavy vehicles used to transport raw rice, rice husk, and white rice from and to the factory	2	4	2	3	24	Low
Impacts of water consumption	The milling process including cleaning and polishing stages	2	4	2	3	24	Low
	Usage of water for cooling machinery and equipment	4	4	2	4	40	Moderate
	Gasifier's cooling, scrubbing, and ash disposal processes	4	4	2	4	40	Moderate
Water Quality	Ash wastewater filtration and disposal from rice husk combustion from gasifier, wastewater from milling and cooling process	4	4	3	4	44	Moderate
	Cleaning and maintenance activities of machines and equipment, and improper disposal from water treatment system	4	4	3	4	44	Moderate

Potential Impact	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
	Runoff from rice husk storage due to rain, domestic wastewater and accidental oil spill	4	4	3	4	44	Moderate
Soil pollution	Improper storage, handling and disposing or rice husk ash	3	4	2	3	27	Low
	Accidental spill or leaks from machinery including oils, grease, lubricant and cleaning and maintenance activities of machines and equipment	3	4	2	3	27	Low
	Improper disposal from water treatment system	2	4	2	3	24	Low
Flora and Fauna	Improper ash management or rainfall runoff,	2	4	2	3	24	Low
	Wastewater from milling and cooling systems and improper disposal from water treatment system	2	4	2	3	24	Low
	Excessive noise from milling operation and gasifier operation	2	4	1	3	21	Low
	Improper solid waste management	2	4	2	3	24	Low
Solid waste	Rice husk ash from gasifier, waste from milling process including dust, rice bran and reject rice	4	4	2	4	40	Moderate
	Rice husk waste from gasifier filter	4	4	2	4	40	Moderate
	Packaging waste and domestic waste from office and staffs	2	4	2	2	16	Low
Liquid Waste	Ash wastewater filtration and disposal from rice husk combustion from gasifier, wastewater from milling and cooling process	4	4	3	4	44	Moderate
	Cleaning and maintenance activities of machines and equipment, and improper disposal from water treatment system	3	4	2	4	36	Moderate
	Runoff from rice husk storage due to rain, domestic wastewater and accidental oil spill	3	4	2	4	36	Moderate
Occupational health and safety	Dust generated from rice husk handling, milling and the gasification process	4	4	1	4	36	Moderate
	Heat stress due to gasifier and machinery process	4	4	1	4	36	Moderate

Potential Impact	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
	Noise from milling machinery, gasifiers and other equipment	4	4	1	4	36	Moderate
	Risk of injury from entanglement, crushing or cuts due to milling equipment, conveyors and gasifier machinery	4	4	1	3	27	Low
	Musculoskeletal strain due to tasks like lifting heavy bags of rice, manual sorting or prolonged standing	4	4	1	3	27	Low
	Slips, trips and falls due to spills from water systems, oil leaks from machinery and rice husk debris	4	4	1	3	27	Low
Community health and safety	Fine rice husk dust, rice bran generated from rice milling process	2	4	2	2	16	Low
	Wastewater from milling process and gasifier	3	4	2	3	27	Low
	Noise level from milling machinery and the gasifier system	2	4	2	2	16	Low
	Improper storage of rice husks or other byproducts which can lead to fire	3	4	2	3	27	Low
Fire Hazard impact	Fine rice husk dust, rice bran generated from rice milling process	4	4	2	4	40	Moderate
	Combustible materials from rice husk gasifier	4	4	2	4	40	Moderate
	Improper storage of flammable materials such as rice husks and other dry materials	4	4	2	4	40	Moderate
	Faulty or overloaded electricity systems and improper management of fuel	4	4	2	4	40	Moderate
	Insufficient or inadequate fire suppression systems	4	4	2	4	40	Moderate

Table 7-4 Evaluation and Perdition of Significant Impacts for Decommissioning Phase

Potential Impacts	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
Air pollution	Handling and removal of dusty components from milling machinery and gasifier (rice husk dust, milling dust, residual ash deposits, etc.)	4	1	1	4	24	Low
	Cutting, grinding and welding operations of milling machinery and usage of diesel or gas-powered equipment such as cranes, forklifts, cutters, etc.)	3	1	1	3	15	Low
	Transportation and storage of dismantled components	2	1	2	3	15	Low
Noise pollution	Use of cutting and welding tools, cranes, forklifts and hydraulic equipment for dismantling and moving heavy machinery parts Hammering, drilling and loosening of bolts and fittings	4	1	1	4	24	Low
	Transportation of dismantled parts including loading, unloading and movement of machinery components	2	1	2	3	15	Low
Impacts of water consumption	Cooling of equipment and machinery particularly components of the gasifier	3	1	2	3	18	Low
	Cleaning and washing oil, grease or other residues from dismantled parts and residual ash from gasifier	4	1	2	3	21	Low
	Regular water spraying or wetting down of the dismantling site to control dust emissions	4	1	2	3	21	Low
	Domestic water usage for office, workers	2	1	2	3	15	Low
Water Quality	Runoff from cleaning activities of machinery parts containing residues, oils, lubricants, and other cleaning agents.	4	1	2	4	28	Low
	Dust suppression especially when spraying water to control airborne particulate matter	3	1	2	4	24	Low
	Accidental spills or leaks of fuel, oil or lubricants from the dismantling of gasifiers and machinery	3	1	2	4	24	Low
	Improper disposal of wastewater from gasifier dismantling	4	1	2	4	28	Low

Potential Impacts	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
Soil pollution	Accidental spills of oils, fuel and lubricants from dismantled machinery or gasifier	2	1	1	3	12	Very Low
	Cleaning of dust from milling operation and residual ash from gasifier	2	1	1	3	12	Very Low
	Improper storage or disposal of dismantling waste materials such as scrap metal, debris or contaminated equipment parts.	2	1	1	3	12	Very Low
Flora and Fauna	Dust and particulate matter generation from dismantling process	2	1	1	3	12	Very Low
	Accidental spills of oils, fuels and lubricants or cleaning machinery	2	1	1	3	12	Very Low
	Excessive noise and vibration from machinery, tools and heavy equipment during the dismantling process	2	1	1	3	12	Very Low
Solid waste	Improper disposal of packaging materials, residual ash from gasifier	4	1	2	4	28	Low
	Scrap metal or steel waste from dismantling of machinery	4	1	2	4	28	Low
	Removal of electronic waste such as sensors, circuit boards and electrical wiring	3	1	2	3	18	Low
Liquid Waste	Improper disposal or wastewater from cleaning to remove oils, lubricants used during operation	4	1	3	4	32	Moderate
	Wastewater from flushing or cleaning of pipes, filtration tanks and cooling systems	4	1	3	3	24	Low
	Accidental spills or leaks of oils, lubricant during dismantling process	4	1	3	3	24	Low
	Wastewater from the dismantling activities including gasifier	4	1	3	4	32	Moderate
Occupational health and safety	Skin irritation or respiratory problems by handling, cleaning and dismantling of machinery	4	1	1	4	24	Low
	Risk of serious injuries, slips, trips and falls by dismantling process of heavy machinery including gasifier	4	1	1	4	24	Low
	High levels of noise by the use of heavy machinery, cutting tools, etc.	4	1	1	4	24	Low

Potential Impacts	Activity and Impact Sources	Magnitude	Duration	Extent	Probability	Significant point	Significance
	Fire and electrical hazard due to the handling of flammable materials like oils, fuel and electrical components.	4	1	1	4	24	Low
Community health and safety	Dust, flume and particulate matter released from dismantling of milling machinery and the gasifier	3	1	2	3	18	Low
	High levels of noise by the use of heavy machinery, cutting tools, welding equipment etc.	3	1	2	3	18	Low
Fire Hazard impact	Removal of components such as oils, other flammable substances used in milling machinery and the gasifier	4	1	2	4	28	Low
	Improper disposal of flammable dust such as rice husk dust, milling dust or ash	4	1	2	4	28	Low
	Damaged wires or improperly disposed of electrical materials and improper handling of flammable gases by dismantling process of the gasifier	4	1	2	4	28	Low

8 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

8.1 Introduction

It is important to disclose the information about the project during the preparation of IEE report and the opinions of all stakeholders should be considered in implementation of the project. Environmental Impact Assessment Procedure (2015) points out that the project proponent shall provide an opportunity for consultants, relevant authorities, project developers, and interested and affected parties to express their views and concerns regarding the proposal before an EIA proceeds and identify potentially affected communities and other stakeholders with an interest in the Project.

As a part of the EIA investigations, the Project Proponent shall undertake the following consultation process: a) timely disclosure of all relevant information about the proposed Project and its likely Adverse Impacts to the public and civil society through local and national media, the website(s) of the Project or Project Proponent, at public places such as libraries and community halls, and on sign boards at the Project site visible to the public, and provide appropriate and timely explanations in press conferences and media interviews; b) arrange consultation meetings as advised by the Ministry, with local communities, potential PAPs, local authorities, community based organizations and civil society; c) consultations with concerned government organizations including the Ministry, the concerned sector ministry, regional government authorities and others; and d) field visits for the Ministry and concerned government organizations.

8.2 Stakeholder Identification/Analysis

Stakeholder Analysis is an important technique for stakeholder identification and analyzing their needs. It is used to identify all key (primary and secondary) stakeholders who have a vested interest in the issues concerned with the project.

The aim of the stakeholder analysis process is to develop a strategic view of the human and institutional landscape, and the relationships between the different stakeholders and the issues they care about the most. The following table shows the identified stakeholders and their description for each stakeholder group.

Table 8-1 Stakeholders Identification and Description

Sr.	Name of Stakeholders	Description
1.	Project Proponent	The project proponent is the key player of the project because they have to take full responsibility for overall project activities.
2.	Government Department	The government is a major stakeholder since it plays the decision-making authority, determining whether the project should be implemented or approved by evaluating the facts and figures submitted by the project proponent. The relevant government departments for the proposed projects include: <ol style="list-style-type: none"> 1. Union Government Office (UGO), Ministry of Union Government Office, 2. General Administrative Department (GAD), Ministry of Home Affairs (MOHA), 3. Environmental Conservation Department (ECD), Ministry of Natural Resources and Environmental Conservation (MONREC),

Sr.	Name of Stakeholders	Description
		<ol style="list-style-type: none"> 4. Ayeyarwady Region Investment Commission (ARIC), Ministry of Commerce, 5. Department of Agriculture (DOA), Ministry of Agriculture, Livestock and Irrigation (MOALI), 6. Department of Irrigation and Water Utilization Management (IWUMD), Ministry of Agriculture, Livestock and Irrigation (MOALI), 7. Agricultural Mechanization Department (AMD), Ministry of Agriculture, Livestock and Irrigation (MOALI), 8. Food and Drug Administration, Myanmar (FDA), Ministry of Health, 9. Directorate of Water Resources and Improvement of River Systems (DWIR), Ministry of Transport and Communications (MOTC), 10. Directorate of Investment and Company Administration (DICA), Ministry of Investment and Foreign Economic Relations (MIFER), 11. Directorate of Industrial Supervision and Inspection (DISI), Ministry of Industry 12. Factories and General Labour Laws Inspection Department (FGLLID), Ministry of Labour (MOL), 13. Department of Labour (DOL), Ministry of Labour (MOL), 14. Myanmar Investment and Commercial Bank (MICB), Ministry of Planning and Finance (MOPF), 15. Department of Trade (DOT), Ministry of Commerce, 16. Myanmar Fire Services Department (MFSD), Ministry of Home Affairs 17. Department of Consumer Affairs (DCA), Ministry of Commerce 18. Department of Electricity Supply Enterprise (ESE), Ministry of Electric Power (MOEP), 19. Department of Meteorology and Hydrology (DMH), Ministry of Transport and Communications (MOTC), 20. Department of Social Welfare (DSW), Ministry of Social Welfare, Relief and Resettlement, 21. Department of Disaster Management (DDM), Ministry of Social Welfare, Relief and Resettlement, 22. Department of Protecting Ethnic Rights (DPER), Ministry of Ethnic Affairs, 23. Department of Rural Development, (DRD), Ministry of Cooperatives and Rural Development, 24. Information and Public Relations Department (IPRD), Ministry of Information
3.	Environmental Consultant Organization (Third Party)	The third-party environmental consultant organization's contributions ensure through assessments of environmental and social impacts of the project, facilitating consulting processes and prepare detailed assessment report.
4.	Project Staffs	The involvement and commitment of employees are important for successful project implementation and long-term development. Project developer should engage as an important stakeholder and value feedback and suggestions for continuous improvements and achieving project goals.
5.	Local Community	The involvement of the local residents and indigenous groups in a rice mill project is critical due to their stakeholder role. The participation and approval of local communities including (Local farmers and rice mill owners, Township development committees or local leaders) are essential for aligning the project with the needs and expectations of the residents, thereby promoting community acceptance and ensuring long-term sustainability.
6.	Potential Project Impact Affected Person (either positive or negative)	The Potential Project Impact Affected Person (PAP) is a crucial stakeholder for Rice mill project. The project developer emphasizes fairness and social responsibility within the project's framework by addressing the needs and minimizes adverse impacts.

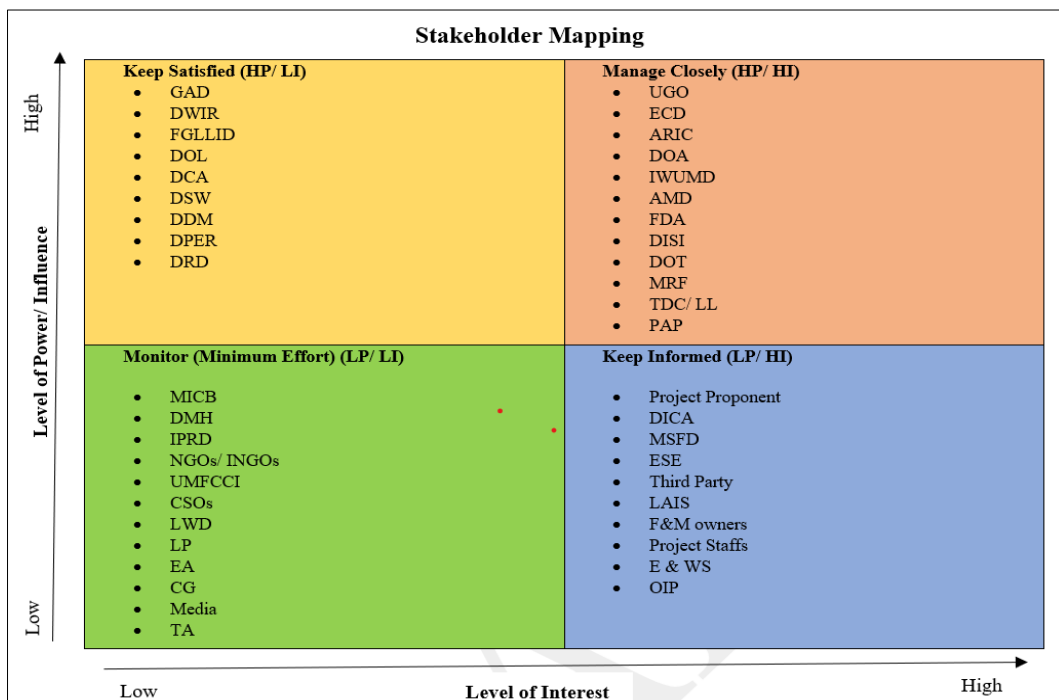
Sr.	Name of Stakeholders	Description
7.	NGOs and development partners	Other organizations including Myanmar Rice Federation (MRF), non-governmental organizations (NGOs), international non-governmental organizations (INGOs), civil society organizations (CSOs), and Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI), may have certain intervention and significant interest in the project implementation.
8.	Another Interested Person	There may have individuals or group including project exporters, suppliers and local water distributor who have interest in project for their benefits or resources sharing. The level of influence on the project may depend.
9.	Environmental Activists	Environmental activists are stakeholders in project implementation because they have interest in questions of ethics, responsibility, and sustainability with the sustainable view. The stakeholder has certain influence on the organization to minimize its ecological footprint.
10.	Conservation Groups	Conservation organizations are also stakeholders for rice mill projects, as they are responsible for ensuring that the project is designed and implemented in a manner that safeguards the natural environment and promotes biodiversity conservation.
11.	Transportation Authorities	Transportation authorities are important stakeholders in a rice mill project because they ensure the development is well-integrated with existing transportation infrastructure and meets mobility and access needs.
12.	Media	The media is important for a rice mill project as a stakeholder because they help raise public awareness and support by highlighting the project's benefits and progress. Additionally, they can hold developers and authorities accountable, ensuring transparency and addressing community concerns.

Table 8-2 Stakeholder Analysis

Sr. No.	Stakeholder Group	Status
I	Proponent	
1.	Project Proponent (Green Shine Company Limited)	Low Power /High Interest
II	Governments	
2.	Union Government Office (UGO), Ministry of Union Government Office,	High Power /High Interest
3.	General Administrative Department (GAD), Ministry of Home Affairs (MOHA),	High Power / Low Interest
4.	Environmental Conservation Department (ECD), Ministry of Natural Resources and Environmental Conservation (MONREC),	High Power /High Interest
5.	Ayeyarwady Region Investment Commission (ARIC), Ministry of Commerce,	High Power /High Interest
6.	Department of Agriculture (DOA), Ministry of Agriculture, Livestock and Irrigation (MOALI),	High Power /High Interest
7.	Department of Irrigation and Water Utilization Management (IWUMD), Ministry of Agriculture, Livestock and Irrigation (MOALI),	High Power /High Interest
8.	Agricultural Mechanization Department (AMD), Ministry of Agriculture, Livestock and Irrigation (MOALI),	High Power /High Interest
9.	Food and Drug Administration, Myanmar (FDA), Ministry of Health,	High Power /High Interest
10.	Directorate of Water Resources and Improvement of River Systems (DWIR), Ministry of Transport and Communications (MOTC),	High Power/ Low Interest
11.	Directorate of Investment and Company Administration (DICA), Ministry of Investment and Foreign Economic Relations (MIFER),	Low Power / High Interest

Sr. No.	Stakeholder Group	Status
12.	Directorate of Industrial Supervision and Inspection (DISI), Ministry of Industry	High Power /High Interest
13.	Factories and General Labour Laws Inspection Department (FGLLID), Ministry of Labour (MOL),	High Power / Low Interest
14.	Department of Labour (DOL), Ministry of Labour (MOL),	High Power / Low Interest
15.	Myanmar Investment and Commercial Bank (MICB), Ministry of Planning and Finance (MOPF),	Low Power/ Low Interest
16.	Department of Trade (DOT), Ministry of Commerce,	High Power/ High Interest
17.	Myanmar Fire Services Department (MFSD), Ministry of Home Affairs	Low Power / High Interest
18.	Department of Consumer Affairs (DCA), Ministry of Commerce	High Power / Low Interest
19.	Department of Electricity Supply Enterprise (ESE), Ministry of Electric Power (MOEP),	Low Power / High Interest
20.	Department of Meteorology and Hydrology (DMH), Ministry of Transport and Communications (MOTC),	Low Power / Low Interest
21.	Department of Social Welfare (DSW), Ministry of Social Welfare, Relief and Resettlement,	High Power / Low Interest
22.	Department of Disaster Management (DDM), Ministry of Social Welfare, Relief and Resettlement,	High Power / Low Interest
23.	Department of Protecting Ethnic Rights (DPER), Ministry of Ethnic Affairs,	High Power / Low Interest
24.	Department of Rural Development, (DRD), Ministry of Cooperatives and Rural Development,	High Power / Low Interest
25.	Information and Public Relations Department (IPRD), Ministry of Information	Low Power / Low Interest
III	Other Organizations	
26.	Environmental Consultant Organization (Third Party)	Low Power / High Interest
27.	Myanmar Rice Federation (MRF)	High Power/ High Interest
28.	NGOs/ INGOs	Low Power / Low Interest
29.	Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI)	Low Power / Low Interest
30.	CSOs	Low Power / Low Interest
IV	Local Community	
31.	Township Development Committees or Local Leaders (TDC/ LL)	High Power/ High Interest
32.	Potential Project Affected Person – (PAP) (either positive or negative)	High Power/ High Interest
33.	Local Agricultural Input Suppliers (LAIS)	Low Power / High Interest
34.	Local Water Distributor (LWD)	Low Power / Low Interest
35.	Local farmers and Rice Mill Owners (F&RM owners)	Low Power/ High Interest
36.	Local People (LP)	Low Power / Low Interest
37.	<i>Project Staffs</i>	Low Power / High Interest
38.	<i>Exporters and Wholesalers (E&WS)</i>	Low Power/ High Interest
39.	<i>Other Interested Person (OIP)</i>	Low Power / High Interest
40.	<i>Environmental Activists (EA)</i>	Low Power / Low Interest
41.	<i>Conservation Groups (CG)</i>	Low Power / Low Interest
42.	<i>Transportation Authorities (TA)</i>	Low Power / Low Interest
43.	<i>Media</i>	Low Power / Low Interest

- The positions that a stakeholder is allocated on the following grid shows the actions that the project needs. **High power, highly interested people (Engage them closely):** the project proponent has to put adequate efforts to keep them satisfied but they should not be overwhelmed by the amount of information given for their attention. The engagement activities will involve public consultation meetings (PCM), stakeholder meetings (SHM) and review team meetings (RTM), etc.
- **High power, less interested people (Keep them satisfied):** the project proponent will put sufficient work to understand the expectation of the stakeholder group and ensure that these expectations are satisfied, but not so much that they become bored with the proponent’s message about the project. The mode of engagement will include public consultation meetings (PCM), stakeholder meetings (SHM) and review team meetings (RTM), etc.
- **Low power, highly interested people (Keep them informed):** the project proponent must adequately inform these people and talk to them to ensure that no major issues arise from them. The type of engagement will include public consultation meetings (PCM), stakeholder meetings (SHM) and face-to-face interviews with them if necessary. The project proponent will also need to have the grievance redress mechanism so that their voice could be heard and considered in the project’s implementation and impact assessment.
- **Low power, less interested people (Monitor them):** The project proponent needs to ensure that this stakeholder group is adequately informed and engaged to address any concerns. This includes holding public consultation meetings (PCM), stakeholder meetings (SHM), and conducting face-to-face interviews if needed. Additionally, the project proponent must establish a grievance redress mechanism to ensure their input is heard and considered during the project's implementation and impact assessment.



8.3 Outline of Public Consultation

Public participation should be considered as the required element of the IEE process. In fulfillment of the public consultation and disclosure obligation for the project, the proponent invited governmental officials and local community near the project site and the public consultation meeting were held at Pathein Industrial City, on 19th December 2024. The number of attendances in the meeting is briefly shown in Table (8-3)

It is aimed at disclosing the findings of environmental and social studies and the likely impacts upon them as well as mitigation and monitoring schemes to remediate the impacts caused by the project activities. The impacts were studied for all activities to be carried out operation phase. It is also aimed at receiving public recommendations, feedbacks upon the studies. All feedbacks from public consultation meetings will be addressed and considered in the formulation of EMP and environmental monitoring plan.

Table 8-3 Attendance Lists of Public Consultation

No.	Category	Number of Participants
1	Government Officers	5
2	Private Company	6
3	Local People	6
Total		17

8.4 Public Consultation Meeting Activities

Public Consultation Meeting of the Initial Environmental Examination (IEE) for Rice, Corn and Bean Milling, Production and Exporting Project implemented by Green Shine Co., Ltd. in Pathein Industrial City was conducted in accordance with the following agenda.

1. Opening of the meeting
2. Opening Remarks by U Ye Wai Phy, General Manager of Green Shine Co., Ltd.
3. Presentation about the project description by U Ye Wai Phy, General Manager of Green Shine Co., Ltd.
4. Presentation of Initial Environmental Examination, IEE report study for Rice, Corn and Bean Milling, Production and Exporting Project by U Soe Min, Principal Consultant of E Guard Environmental Services.
5. Questions, Suggestions and Recommendations by the attendees.
6. Closing Remarks by U Thura Phy, Assistant Director of Environmental Conservation Department, Pathein.
7. Closing of the meeting.

Agenda 1. Opening Ceremony

Public Consultation Meeting of the Initial Environmental Examination (IEE) prepared for the Rice, Corn and Bean Milling, Production and Exporting Project implemented by Green Shine Co., Ltd. in Pathein Industrial City was held as per the agenda.

Agenda 2. Opening Remarks by U Ye Wai Phyo, General Manager of Green Shine Co., Ltd.

The General Manager of Green Shine Co., Ltd, U Ye Wai Phyo, first extended a warm welcome to all attendees of the ceremony, Director from the Directorate of Investment and Company Administration, Assistant Director from Environmental Conservation Department, representatives from Department of Industrial Supervision and Inspection under the Ministry of Industry, officials from the Public Health Department, responsible personnel from the Patheingyi Industrial Zone, officials from partner companies near the Patheingyi Industrial Zone, village administrators from Chaung Sauk Village Tract in Kangyidaunt Township, and all local residents in attendance, wishing them health and prosperity.

Regarding the rice, beans, and corn milling operations being implemented by Green Shine Co., Ltd., it was stated that these activities are being carried out in compliance with the guidelines of the Directorate of Investment and Company Administration, the policies of the Rice, Paddy, and Rice Industry Association, the directives of the Regional Government, and the economic guidelines at the national level. The objectives of these operations include generating foreign income for the country, promoting the development of the agro-industrial sector, improving the socio-economic conditions of local farmers, and creating increased employment opportunities for local residents. To achieve these goals, advanced machinery for rice milling, beans, and corn has been installed. The factory is located at No. 53-C, Patheingyi Industrial City, Patheingyi-Ngapatun Road, Chaung Sauk Village Tract, Kangyidaunt Township, Patheingyi District, Ayeyarwady Region, on a land area of 3.36 acres. Furthermore, to ensure that the operations do not have any environmental impacts, an Initial Environmental Examination was conducted by a third-party organization, E Guard Environmental Services. This was carried out to verify the environmental safety of the production activities at the facility.

It was stated that consultants from E Guard Environmental Services, Third-party responsible for conducting the Initial Environmental Examination, would provide a briefing to the government officials and the local people in attendance.

Agenda 3. Explain about Project Description by U Ye Wai Phyo, General Manager of Green Shine Co., Ltd.

It was stated that Green Shine Co., Ltd. was registered as a private company with the approval of the Directorate of Investment and Company Administration on October 7, 2022. It commenced operations with a total initial capital of 6,200 million Myanmar Kyats.

In terms of utility consumption, it was stated that the company primarily uses electricity and water. For electricity, a 500 KVA transformer and a gasifier are used as the main power sources, while a diesel generator is utilized as a backup power source. Energy consumption is approximately 80 MW per month. Regarding diesel usage, about 480 gallons of diesel, equivalent to 10 barrels, are consumed monthly, averaging around 16 gallons per day. For water usage, approximately 10,000 gallons of groundwater are consumed daily. The wastewater is treated and recycled for sprinkling purposes.

Regarding the solid waste management, it was mentioned that solid waste is disposed of once a week at the Nantha Kone dump site in Chaung Sauk Village. For wastewater management, the wastewater is treated in a sedimentation tank measuring 30 feet in length, 24 feet in width,

and 7 feet in depth. The tank is layered with broken bricks, charcoal, and gravel, which are used for filtering in successive stages, allowing the sediment to settle. The water that exits the sedimentation tank is discharged into a drainage system and reused as part of a recycling process for the sprinkler system. The sedimentation tank will be inspected every six months and the broken bricks, charcoal, and gravel will be replaced. As for the ash byproducts from the sedimentation tank are sent to nearby agricultural farms to be reused as fertilizer. In terms of fire safety measures for the factory, it was stated that fire prevention plans are in place, implemented in accordance with the guidelines of the Myanmar Fire Services Department. Fire safety drills are conducted regularly and 50 fire extinguishers have been installed at appropriate locations within the factory.

It was stated that, as part of corporate social responsibility program, the company has contributed to social welfare activities, including support for religious and cultural ceremonies, funerals, and traditional events, as well as initiatives in education, healthcare, employment development, and agricultural technological advancement for farmers. These efforts have been carried out by allocating 2% of the project's profits to these activities.

It was stated that in 2023, the company contributed donations to community welfare activities and disaster recovery efforts in the villages. In 2024, contributions were made in the form of rice and financial support for religious, social, and village development activities. With regard to the rice, beans, and corn milling operations implemented by Green Shine Co., Ltd., it was mentioned that efforts are being made to successfully complete the Initial Environmental Examination (IEE). The company requested the support and cooperation of the distinguished attendees to ensure the successful implementation of these activities and expressed its commitment to adhering respectfully to the provided guidelines.

Agenda 4. Presentation of Initial Environmental Examination, IEE report by U Soe Min, Principal Consultant of E Guard Environmental Services.

He explained about that Initial Environmental Examination (IEE) is required to be conducted according to Environmental Conservation Law (2012), Environmental Conservation Rule (2014) and Environmental Impact Assessment Procedure (2015). He also explained objective of Stakeholder Meeting, the profile of E Guard that conduct Initial Environmental Examination. According to paragraph (34) of the Environmental Assessment Procedure (2015), public consultation, the performance of public participation activities, and the relevant opinions and information would be disclosed. In terms of IEE study, he presented about field assessment and environmental quality measurements at the project site and sampling locations, potential impacts and how to mitigate these potential impacts. He also explained environmental quality measurement results, implementation of environmental management plan, environmental monitoring plan and emergency response plan for this project. Finally, he said that the purpose of stakeholder meetings is to explain the project and gather public opinion related to this project and the suggestions and recommendations from the stakeholder meeting will be attached to IEE report.

Agenda 5 Questions, Suggestions and Recommendations by the attendees.

There are no questions in accordance with the rice mill project, however, the guidance, discussion, and suggestions are given by the government sectors and private sectors, which are described below.

Guidance, Discussion, and suggestions

(1) U Thura Phyo (Assistant Director, Environmental Conservation Department, Patheingyi District)

The Assistant Director of the Environmental Conservation Department provided the following recommendations and guidelines to plan effective implementation during the meeting: to systematically manage ash, tar, wastewater, and waste produced from the gasifier process, to avoid storing raw materials and finished products in fire-prone areas and to establish systematic measures for fire risk prevention, to conduct fire safety training programs as necessary, to develop and implement systematic emergency response plan and conduct related training programs, to ensure that smoke and particulate emissions from chimneys comply with National Environmental Quality (Emission) Guidelines, to compare and manage groundwater quality according to the National Drinking Water Quality Standards, and to ensure that the project, as a rice mill operation, contributes long-term benefits for the local community and residents in terms of food security and sustainability.

(2) U Thet Paing (Director, Directorate of Investment and Company Administration)

The Director of DICA highlighted several important points regarding the upcoming project, which involves rice milling operations. He said that the project may produce particulates and need to management systematically to control high dust emission. And, it is necessary to establish a CSR program focusing on health-related initiatives, attention to effective measures, medical check-ups should be conducted every six months for employees, and support plans for any injuries or health impacts. Furthermore, proper disposal systems for ash and wastewater should be implemented systematically, displaying the contact numbers for emergency response of nearby fire bridges, police stations, and hospitals clearly on walls for easy access.

(3) U Myo Nyunt Aung (Township Medical Officer, Department of Public Health, Ministry of Health)

He clarified the surrounding environments around the project and emphasized that wastewater disposal is a major health issue. He highlighted that as the project should conduct inspections for wastewater filtration tank every six months, and it should be systematic management of wastewater discharge and long-term health services for employees. Additionally, he mentioned that COVID-19 has not been completely eradicated, and therefore, preventive measures as vaccine and health services should be a priority for employees.

(4) U Chan Myae Aung (District Officer, Directorate of Industrial Supervision and Inspection, Ministry of Industry)

The District Officer emphasized the importance of electricity use during operations. He suggested the management and handling of electricity and coordinating with the department for electricity-related matters and also the use of boilers. Furthermore, he recommended to provide training for employees and workers and ensuring systematic handling of electrical equipment and machinery.

(5) U Than Zaw Oo (Responsible Person, Patheingyi Industrial City)

He emphasized that ongoing projects within the industrial zone are continuously monitored under industrial project supervision, and also mentioned that the industrial zone has a CSR plan in place and that arrangements have been made for employees to receive free healthcare services.

(6) U Maung Maung Win (President, Rice Industry Association, Patheingyi District)

He reported that rice milling operations within the industrial zone have been effective and beneficial, however, he emphasized the need for electricity and the importance of systematic management in the use of Gasifiers. He also stated that wastewater disposal to be implemented systematically. The association invited the proponent to collaborate for other necessary actions and social activities. He highlighted the importance of managing environmental impact. And there is safety within the industrial zone, while also being open to discussing and cooperating on future projects.

(7) U Saw Rocky (Deputy Mill Master, Arise Myanmar Co., Ltd. Patheingyi Industrial City)

He discussed about Gasifier usage that his milling factory also one Gasifier currently in use due to the need for electricity when there is a power outage. But there may be impact from gasifier. Therefore, Solar panels have been installed for electricity usage in his project, and the solar panels for the Green Shine Rice Mill project also should be available in the future.

Agenda 6. Closing Remark by U Thura Phyo (Assistant Director, Environmental Conservation Department, Patheingyi District)

He delivered the closing remarks emphasizing the importance of systematic management, environmental conservation, and community well-being. By addressing the guidelines and suggestions above, the Assistant Director encouraged the project to ensure that the project, as a rice mill operation, contributes long-term benefits for the local community and residents in terms of food security and sustainability.

Agenda 7. Closing Ceremony

According to Agenda 7, the Public Consultation of the Initial Environmental Examination (IEE) for the Rice, Corn and Bean Milling, Production and Exporting Project implemented by Green Shine Co., Ltd. in Patheingyi Industrial City was closed.



Attendance Registration



MC Announcement

Opening Remark by U Ye Wai Phyo,
Green Shine Co., Ltd.



Projection Description by U Ye Wai Phyo,
Green Shine Co., Ltd



IEE process by U Soe Min, E Guard
Environmental Services



Comments and Suggestion from Environmental
Conservation Department, Patheingyi



Suggestion from Directorate of Investment and
Company Administration



Suggestion from Department of Public Health



Suggestion from Directorate of Industrial
Supervision and Inspection

	
<p>Answer by Responsible Person from Pathien Industrial City</p>	<p>Suggestion from Arise Myanmar Co., Ltd.</p>
	
<p>Suggestion from Rice Industry Association, Pathein</p>	<p>Closing Remark by Assistant Director from ECD, Pathein</p>

8.5 Feedback and Comments of the Local People

The project owner has the responsibility to make sure that every stakeholder could raise their voices related to the opinions on the development of the project during the impact assessment (EIA Procedure, 2015). The project proponent should consider every feedback of the local people during the whole lifespan of the project as opinions on the development of the project are important for the successful operation of the project.

Methodology

The study team prepared the feedback form to collect the feedback of the local people living in the vicinity of the project area. Well-prepared forms to collect the feedback were distributed to the local people who attended the public consultation meeting held at the project site on 19th December 2024. It is requested to fill in the feedback form after the stakeholders meeting and return to the E Guard team after filling it up by the respondents. The feedback form is composed of the following information related to the personal data of the attendees, estimated impacts of the project, opinions of the local people on the project, and suggestions given by the locals to the project proponent.

Table 8-4 Description and parameters of feedback form

Sr.	Description	Parameters
1	Profile of the respondent	Name, age, gender, address, phone number, occupation
2	Opinions on the project	Impacts, opinions and suggestions to the project proponent

Source: E Guard's Study Team

Results of Feedback Survey

The results of the feedback survey carried out after the public consultation held on 19th December 2024 for this project were summarized in the following table.

Table 8-5 Profile of respondents and summary of feedback

Sr.	Name	Age	Gender	Address	Occupation	Impacts	Opinions	Suggestion
1	Respondent 1	70	Male	Kangyidaunt Township	Farmer	The project's implementation provides employment for local people. This project will cause any negative impact on the environment.	I have no objection for the implementation of the project.	The project should be continued as there is no environmental impact.
2	Respondent 2	50	Male	Kansu Village Chaung Sauk Village Tract	Farmer	I think local people may get jobs from the project.	I hope it could be beneficial for the regional development.	No Answer.
3	Respondent 3	62	Male	Pathein Township	Assistant Factory Manager of Arise Myanmar Co. Ltd.	It can provide more job opportunities for workers and help in expanding regional development activities. Rice mill is the main industry in Ayeyarwady Region, and it is environmentally friendly.	Since the rice mill use electricity, it would be beneficial to use solar system without depending on EPC electricity entirely.	I suggest using rice husks to produce rice husk charcoal to have positive environmental impact. I prefer to utilize the rice husk, ash and water discharged from the rice mill as fertilizer by farmers to minimize the environmental impact. I suggest provision of accommodation for workers.
4	Respondent 4	57	Male	Chaung Sauk Village Tract	Farmer	The advantage of the project is that it provides job opportunities for villagers. There are no complaints.	Everything is going well.	No Answer.
5	Respondent 5	60	Male	No (7) Ward	Rice Mill Industry	It can provide socio-economic and national economic benefits. There is no side effect because it works in an industrial zone.	No Answer.	No Answer.
6	Respondent 6	55	Male	Mayanchaung, Pathein	Manager (MAC)	It can develop the region's economy. It is situated in the industrial zone and away from residential areas, ensuring no impact on nearby communities. Local job opportunities may increase due to the project.	No Answer.	No Answer.

Sr.	Name	Age	Gender	Address	Occupation	Impacts	Opinions	Suggestion
7	Respondent 7	64	Male	Chaung Sauk, Kansu Village Tract	Farmer	The project can provide jobs. There is no negative impact.	Everything is fine.	No suggestion.
8	Respondent 8	65	-	Kamala	Farmer	Rural people can get jobs.	No Answer.	I suggest reducing pollution as much as possible. I suggest to consider the social environment.

Source: E Guard Study Team

9 DESCRIPTION OF PROPOSED MITIGATION MEASURE AND RESIDUAL IMPACTS

9.1 Proposed Mitigations Measures for Anticipated Impacts by the Project Phase

This section provides the recommended mitigation measures for predicted environmental impacts arising from operation and decommissioning (dismantling machinery process) phases. The suggested mitigations are based on the significance level of each anticipated impact presented in Table 7-3 and Table 7-4. The detailed mitigation measures for each impact type are provided in the following sections, including the mitigation measures provided by the project proponent for implementing the white rice milling project.

9.2 Mitigations Measures for Anticipated Impacts During the Operation Stage

9.2.1 Mitigation Measures for Air Quality Impact

The impact on air quality is primarily significant due to dust and particulate emissions from the milling process, VOC emissions from the use of heavy machinery and the gasifier process used to generate electricity. Furthermore, dismantling machinery can release dust, particulate matter (PM), and VOCs, causing localized air pollution. Residual materials like lubricants, fuels, and ash from equipment and gasifiers contribute to harmful emissions. Activities such as cutting or grinding metal components further generate fine particulate matter, increasing air quality risks. The effective mitigation measures for the high significant impacts of dust and particulate matter, VOC emissions and biomass gasifier emission are described for each phase in the followings.

Operation Phase

- Install high-efficiency dust collectors or electrostatic precipitators in the milling process to capture airborne dust particles.
- Introduce additional wetting systems in dust-prone area, such as spraying water or using mist systems in high-dust zones to reduce airborne particles.
- Use fully enclosed or sealed conveyor systems to minimize the release of dust from material handling processes.
- Introduce regular dust cleaning protocols.
- Ensure good indoor air circulation systems and in all maintenance and high-emission areas to prevent the accumulation of VOCs.
- Use scrubbers and filters to remove CO, NO_x, SO₂ from the exhaust gasses generated by the biomass gasifier.
- Regularly monitor the emissions from the gasifier and perform maintenance checks to ensure minimal pollutant release.
- Improve the ventilation and exhaust systems around the gasifier room to ensure that any residual gases are properly dispersed and do not affect indoor air quality.

Decommissioning Phase

- Use water sprays or misting systems around dismantling zones to prevent dust from becoming airborne, particularly in areas with loose rice husk or ash residues.

- Conduct dismantling work within temporary enclosures or sealed tarpaulin structures to limit the dispersion of particulate matter.
- Carefully remove residual ash and tar deposits from the gasifier before dismantling to minimize the release of harmful emissions.
- Before dismantling, thoroughly clean machinery and storage units to remove residues such as lubricants, tar, or charred materials that could emit VOCs.
- Use cutting tools equipped with extraction systems to capture fine metal particles generated during the dismantling of gasifier and other metal components.
- Regularly monitor air quality at the dismantling site for particulate matter, VOCs, and other pollutants to ensure compliance with emission standards.
- Provide personal protective equipment (PPE), such as respirators and goggles, to workers involved in dismantling activities to safeguard against inhaling pollutants.
- Clean machinery and structures thoroughly before dismantling to minimize residual pollutants.

By adapting the mitigation measures, the environmental impact of the operation and dismantling phases can be minimized, ensuring better air quality and safety for workers and the surrounding community.

9.2.2 Mitigation Measures for Noise Pollution

The noise and vibration impacts caused by heavy machinery and gasifiers process in rice milling facility and dismantling process of machinery is also significant. These sources of pollution on noise and vibration need effective mitigation measures. The followings are the mitigation measures for these significant impacts.

Operation Phase

- Enclose noisy machinery, such as gasifiers and generators within soundproof cabinets.
- Use noise barriers and materials that absorb sound to reduce noise levels within the facility.
- Conduct regular maintenance on machinery to ensure it operates smoothly.
- Replace or lubricate worn parts of machinery to reduce mechanical noise.
- Use rubber pads under machines to absorb vibrations and reduce the transmission of noise through the floors and provide stability for heavy equipment.
- Apply dampening materials around machine foundations and other high-vibration areas.
- Provide earplugs or earmuffs for workers exposed to high noise levels, especially those working directly with the heavy machinery, generators or milling equipment.
- Implement rotated schedules to minimize continuous exposure to high-noise areas, reducing the risk of hearing damage.
- Regular monitoring noise and vibration level within the facility to ensure they remain within permissible exposure limits.

Decommissioning Phase

- Install temporary noise barriers, or soundproof enclosures around dismantling areas to reduce noise propagation.
- Schedule high-noise activities during daytime hours to minimize disturbances to nearby communities.
- Regularly maintain equipment to reduce excessive noise from worn-out or malfunctioning parts.
- Provide workers with noise-cancelling earplugs or earmuffs to prevent hearing damage.
- Inform nearby communities about the dismantling schedule and potential noise levels.
- Conduct periodic noise level measurements to ensure compliance with permissible limits and adjust activities as needed.
- Assess the structural stability of nearby buildings and sensitive equipment before dismantling to identify potential risks.
- Place vibration-dampening mats or pads under heavy machinery to absorb and reduce ground vibrations.

By implementing these measures, the rice milling facility can significantly reduce noise and vibration impacts on workers, building structures and the surrounding community, improving the overall working environment during both operation and dismantling process.

9.2.3 Mitigation Measures for Impacts of Water Consumption and Water Quality

Water consumption is significant, as water is essential for multiple stages of milling operation. Additionally, water quality impacts are notably serving due to the discharge of gasifier waste, maintenance activities of machinery. To mitigate these impacts, efficient water management practices, such as recycling and treatment systems, need to be integrated into operations. Filtration and sedimentation mechanisms is being established to treat gasifier waste and reduce pollutant loads.

Operation Phase

- Recycle and reuse water for dust suppression, cleaning or cooling processes.
- Set up rainwater collection and storage to supplement the water supply, especially during the rainy season, reducing dependence on groundwater.
- Ensure regular checks and repairs of pipes, tanks to prevent leaks and reduce water wastage.
- Use integrated sedimentation tanks and filtration systems than current used to treat wastewater and ash water before release.
- Ensure water discharge meets pH standards by monitoring to prevent harmful impacts on local waterways.
- Store rice husk ash and other waste byproducts in covered areas to prevent runoff during rain.
- Develop and implement standard operating procedures for water management, clearly defining guidelines for water conservation, and proper disposal practices.

Decommissioning Phase

- Use high-pressure water jets for cleaning and dust suppression to minimize water consumption while maintaining efficiency.
- Use recirculating water-cooling systems for metal cutting and grinding to minimize wastage.
- Install sedimentation tanks or oil-water separators to remove sediments, oils, and grease from wastewater before discharge.
- Treat wastewater through multi-stage filtration, including activated carbon filters, to remove fine particles, heavy metals, and VOCs.
- Pre-clean the gasifier and ash filtration tank to remove loose ash and tar before dismantling.
- Transfer ash to lined and sealed containers for safe transport to a certified disposal facility.
- Avoid washing ash directly into drains or water bodies.
- Store wastewater containing ash and tar in containment ponds or tanks lined with impermeable material to prevent seepage.
- Obtain necessary permits for wastewater discharge and adhere to local environmental regulations.
- Remove solid ash deposits manually or using vacuum systems before rinsing with water.
- Use biodegradable cleaning agents to dissolve stubborn residues.
- Establish a temporary water treatment unit to handle wastewater generated during dismantling, including pre-filtration, and pollutant removal.

By implementing these measures, rice milling project can reduce both their water footprint and environmental impact, ensuring compliance with environmental standards and contributing to sustainable production. Regular monitoring and adaptation of these measures will support sustainable water use and protect local water resources.

9.2.4 Mitigation Measures for Impacts on Soil Quality

To address the risks to soil quality from by-products and waste generated during operational and decommissioning stages of rice milling project, the following mitigation measures must be considered.

Operation Phase

- Implement designated secure, covered storage areas of rice husk from gasifier filter, ash and other by-products to prevent wind dispersion and runoff, especially during rain.
- Use impermeable linings in storage area for ash and rice husk to prevent leaching into the soil and groundwater.
- If using ash in agriculture, control applied amounts, as excessive ash can alter soil pH and impact soil health.
- Install spill containment systems around fuel storage and refueling areas such as spill trays, and absorbent barriers to ensure accidental spills.

- Develop a spill response plan, including spill kits and staff training to quickly remediate any oil or fuel spills.
- Regular inspect storage tanks, gasifier systems and pipelines to ensure to ensure no leaks or drips.
- Monitor the health of surrounding vegetation, as changes may indicate soil quality issues.

Decommissioning Phase

- Store residual ash, charred materials, waste oils, and lubricants in sealed, leak-proof containers in designated areas with impermeable flooring to prevent seepage.
- Collect ash and fine particles during dismantling and transport them carefully to prevent spillage and dispersion.
- Use drip trays beneath equipment during dismantling to collect any leaks or spills from machinery.
- Restrict the refueling and maintenance of equipment to designated areas with impermeable surfaces.
- Conduct regular inspections of storage containers, machinery, and work areas for signs of leaks or spills.
- Use water sprays, misting systems, or other dust control methods to prevent ash and fine particles from settling on the ground.
- Avoid on-site burial or burning of waste materials, which can degrade soil quality.
- Use natural methods, such as planting grasses to restore soil health if contamination occurs.

By following these mitigation measures, can minimize the impact on soil quality, ensuring safe disposal of by-products and preventing contamination from spills or ash. These practices contribute to a more sustainable operation and help maintain the health of surrounding ecosystems.

9.2.5 Mitigation Measures for Impacts Biological Components

In terms of the project site location, the proposed rice milling project is being conducted within the Pathein Industrial City and there is no designated protected area around the project area. Therefore, the significance of impact level on biological components are likely to be very low. However, there may still be some impacts on biological components (flora and fauna) due to soil and water contamination, waste generation, water use, noise pollution etc. within the project area. The following mitigations are essential to mitigate these impacts during the rice milling operation and decommissioning stage (dismantling of machinery).

Operation Phase

- Use enclosed high-dust-generating machinery to prevent dust spread and regular water sprays in high-dust areas to reduce airborne particles.
- Plant local vegetation, trees and shrubs around the facility to serve as windbreaks and natural dust filters, reducing dust dispersion and serve as noise barrier reducing noise pollution.

- Enclose noisy machinery and use acoustic barrier around the facility, and keep machinery regular maintenance to prevent excessive noise which can increase vibration levels and noise emissions.
- Ensure the gasifier operates efficiently, with proper combustion to minimize emission level.
- Install more sufficient wastewater treatment systems to remove particulates, organic matter and contaminants than currently used and regular monitor discharged water to meet local environmental standards.
- Store any ash or solid waste in dedicated storage areas to prevent leaching of contaminants into soil or water.
- Educate staffs on the importance of environmental protection and best practices for minimizing operation impacts.

Decommissioning Phase

- Use water sprays, mist systems, or biodegradable dust suppressants to minimize dust generation during dismantling.
- Periodically clean dust-covered vegetation to reduce the risk of damage, using water or air sprays.
- Use low-noise machinery or install sound barriers to reduce disturbance to species.
- Install containment barriers, such as liners, to prevent leaks or spills from reaching soil and water bodies.
- Treat wastewater generated during dismantling to remove contaminants before discharge, ensuring compliance with environmental standards.
- Replant native species or repair damaged vegetation after dismantling activities are completed.

By reducing and managing pollutants, maintaining nature of local habitats and to protect the surrounding biological environment, these presented mitigation measures must be considered.

9.2.6 Mitigation Measures for Impacts of Occupational Health and Safety

Mitigation measures for occupational health and safety in milling operations and decommissioning (dismantling machinery) phases focus on controlling dust, noise, machinery and slip hazards to protect the employees. By implementing the following measures, a safety working environment can be created and minimizing risks.

Operation Phase

- Install ventilation and dust extraction systems to capture dust at its sources.
- Provide dust masks (PPE) to employees in high-dust area to reduce respiratory risks.
- Implement daily cleaning procedures to remove accumulated dust from floors, surfaces and equipment to prevent it from becoming airborne.
- Install sound barriers around noisy machinery to reduce ambient noise.
- Supply employees with earplugs and enforce their use, especially near machinery.
- Train employees in proper machinery use and safety procedures to minimize risks of accidental injury.

- Implement emergency stop mechanisms and ensure they are easily accessible.
- Regularly clean milling areas to prevent the buildup of grain and water on the floors, which can cause slips.
- Conduct regular training on occupational health and safety practices, including emergency response for spills, injuries and equipment malfunctions,
- Encourage reporting of near-misses or incidents and analyze them to improve safety protocols.

Decommissioning Phase

- Use water sprays or mists during cutting and grinding activities to suppress dust generation at the source.
- Use industrial vacuum cleaners or wet cleaning methods to clean floors and equipment, avoiding dry sweeping, which can re-suspend dust.
- Provide workers with PPE (higher-grade masks) designed to filter fine particulate matter.
- Rotate workers to limit their time in high-dust areas and reduce overall exposure.
- Limit dismantling activities to standard daytime working hours to reduce noise disturbance to adjacent businesses.
- Install temporary sound barriers around high-noise areas to minimize the spread of noise.
- Use quieter machinery and tools where feasible, and ensure proper maintenance to reduce noise emissions.
- Use impermeable liners and bunded areas for the temporary storage of waste materials to prevent spills or leaks.
- Prepare a spill response plan and provide spill containment kits on-site to manage accidental releases effectively.
- Adhere to local environmental and industrial safety regulations for waste management and dismantling activities.
- Inform nearby businesses in advance about the dismantling schedule, expected noise levels, and mitigation measures.

By implementing these measures, the dismantling phase can be managed responsibly, minimizing health, safety, and environmental risks.

9.2.7 Mitigation Measures for Impacts of Community Health and Safety

Operation Phase

The rice milling project is being conducted in Pathein Industrial City, there may not be significant impacts on community health and safety. To mitigate the minor impacts on air quality, noise and water sources from the operation process, several measures can be applied. For air quality and dust control, installing dust extraction and suppression systems, such as bag filters at key emission points will capture particulate matter. For noise control, using soundproofing materials, restricting high-noise activities to daytime hours, and regular maintaining machinery will help minimize disruption to surrounding environment. Regarding

the water quality management, the use of effective wastewater treatment plant to filter the effluent before discharge will protect local water bodies and groundwater. Additionally, health and safety training, emergency response drills and clear sign board at hazardous places can provide worker and visitor health and safety. By implementing these measures, reduce environmental and health impacts ensuring a safer workplace and minimal disruption to surrounding areas.

Decommissioning Phase

During the dismantling process, potential impacts on community health and safety in the Pathein Industrial Zone are expected to be minimal. Dust control can be achieved by employing water sprays or misting systems to suppress airborne particles, particularly during cutting, grinding, and debris handling. Noise and vibration impacts can be reduced by restricting high-noise activities to daytime hours, using sound-dampening equipment, and maintaining machinery regularly to minimize disruption. To protect water quality, wastewater from cleaning and dismantling activities should be treated using filtration systems to remove contaminants before discharge. Worker and visitor safety can be ensured by using proper personal protective equipment (PPE), clear signage at hazardous areas, and emergency response drills. Implementing these measures will help mitigate potential health and environmental impacts, ensuring safety and minimal disruption to surrounding areas.

9.2.8 Mitigation Measures for Waste Disposal Impact

Operation Phase

To mitigate the impacts of waste generated during the rice milling operation, a comprehensive waste management plan must be implemented. For solid waste, ash waste and rice husk waste should be repurposed as fertilizer, or soil filling material, while bran and broken rice can be sold as animal feed. Storage facilities for milling waste need to ensure preventing fire hazards. Liquid waste from wash water and gasifier processes should be treated using sedimentation tanks and filtration systems to remove ash particles and contaminants, ensuring compliance with discharge standards before release. For hazardous waste, including tar, ash, and maintenance byproducts like lubricants and filters must be in leak-proof containers and disposal through environmental regulations. Regular maintenance of gasifier machinery can minimize hazardous waste, while training staff on waste handling and emergency response will further reduce risks.

Decommissioning Phase

During the decommissioning phase, an effective waste management plan must address the safe handling and disposal of all waste types. For solid waste, metal scrap, machinery parts, and packaging materials should be segregated for recycling, while ash, charred residues, and other byproducts from dismantling the rice husk gasifier must be stored securely to prevent contamination and fire hazards before proper disposal. Liquid waste such as cleaning fluids, residual oils, and wastewater should be treated to remove contaminants like oils, solvents, and heavy metals, ensuring they meet discharge standards before disposal or reuse. For hazardous waste, including oils, lubricants, filters, and toxic residues from the gasifier, secure containment in leak-proof containers and disposal need to be careful.

9.3 Mitigation Measures for Fire Hazard Impacts

Operation Phase

During the operation stage of the rice milling project, particularly with the use of the biomass gasifier, it is essential to implement comprehensive fire safety measures to prevent and mitigate the fire hazards. This includes providing regular fire safety training for all employees, focusing on the safe handling of biomass gasifier operations, and emergency procedures. Regular conducting fire drills need to ensure that all staff are familiar with emergency protocols. All equipment and machinery, especially the biomass gasifier and associated fuel storage areas must undergo regular inspections and maintenance to prevent fire risks. A strict no-smoking policy must be enforced in and around areas containing flammable materials and working areas must be kept clean and organized to minimize combustible materials. Additionally, fire monitoring systems should be in place to detect any unusual heat or gas emission from the gasifier. Emergency response plans must be developed and communicate to all employees ensuring effective action in case of a fire. The rice milling project can reduce fire hazards during operation stages by adopting these mitigation measures.

Decommissioning Phase

Fire safety measures should be implemented to mitigate fire hazards during the decommissioning phase. It should be careful in designation of store flammable materials and fireproof containers away from high-risk areas. Employ cutting and grinding tools and work areas are ensure free of combustible materials. Use fire-resistant blankets or barriers to shield sparks during operations. Fire extinguishers, fire blankets, and other firefighting equipment strategically need to be ready near dismantling zones. Maintain emergency exits and fire alarms in functional condition throughout the phase. Provide workers with fire safety training, including the proper handling of tools, flammable materials, and response protocols for fire incidents. Develop and rehearse a fire response plan in coordination with the local fire department to ensure rapid action during an incident. By incorporating these measures, the project can safeguard workers, equipment, and the surrounding environment while minimizing disruptions and environmental harm.

9.4 Residual Impacts

Some residual impacts may still occur during the operation and dismantling stages of the rice milling project although the outlined mitigation measures are implemented. These impacts include low level of VOC emissions and dust or particulate matter especially when there are strong winds or cleaning activities before dismantling. Noise and vibrations from machinery might still affect workers' long-term health and nearby structures. Water consumption might still stress local water resources during dry seasons, and contaminants from gasifier dismantling process may remain in wastewater if treatment systems is not sufficient. Minor soil contamination might occur due to occasional spills or storage mishaps, potentially affecting nearby vegetation. Waste disposal of ash or tar deposits requires ongoing monitoring to prevent the risk of fire due to unforeseen malfunctions or human error remains. In terms of occupational health, residual respiratory risks and long-term noise exposure may remain for workers. Moreover, emissions from the biomass gasifier still fluctuate leading to residual air quality

impacts. These residual impacts can be minimized with continuous monitoring, regular maintenance and ongoing improvements in operational practices and improve technology.

10 ENVIRONMENTAL MANAGEMENT PLAN AND BUDGETS REQUIERED FOR THE IMPLEMENTATION OF THE EMP

10.1 Introduction

The Environmental Management Plan (EMP) is a comprehensive framework designed to guide the systematic identification, assessment, and management of potential environmental impacts associated with a project or activity. Essentially, an EMP serves as a proactive tool, outlining strategies and measures to mitigate adverse effects on the environment, ensuring sustainable practices throughout the project's lifecycle. With a keen focus on promoting responsible environmental stewardship, the EMP aims to strike a balance between development aspirations and the preservation of ecological integrity. This document outlines the scope of the Environmental Management Plan, delving into the specific areas it covers and the methodologies employed to safeguard environmental resources and foster long-term sustainability.

10.1.1 Scope of EMP

The Environmental Management Plan (EMP) is developed to ensure that the project is prepared in an environmentally sustainable manner where all contractors and subcontractors, including project proponents and project consultants understand the potential environmental risks arising from the proposed project and take appropriate actions to manage properly that risk.

There are eight main sections in this EMP and detailed EMP based on the project activities.

- (1) Environmental Management Plan and budget allocation for EMP
- (2) Environmental Monitoring Plan
- (3) Waste Management Plan
- (4) Occupational Health and Safety Plan
- (5) Emergency Preparedness and Response Plan
- (6) Corporate Social Responsibility Plan
- (7) Grievance Redress Mechanism

10.1.2 Purpose and Objectives of EMP

The EMP Serve as a commitment and reference for the proponent to implement the EMP including the conditions of approval from the Environmental Conservation Department (ECD), Ministry of Natural Resources, and Environmental Conservation (MONREC).

It is a guiding document for environmental and social monitoring activities. It provides detailed specifications for the management and mitigation of activities that have the potential for negative impacts on the environment.

10.1.3 Responsibilities of Implementation of EMP for Compliance

The goals and structure of the EMP and Environmental Monitoring Plan (EMoP) have been outlined in the preceding sections of this chapter. It is imperative to establish a suitable 'Institutional Framework' to ensure the efficient execution of the devised environmental management and monitoring plan. The components of this 'Institutional Framework' will collaborate and operate in conjunction with one another throughout the project lifecycle, encompassing operational stages.

The execution of planned environmental mitigation measures involves associated expenses, necessitating the inclusion of budgeting for the Environmental Management Plan (EMP). The proposed components of the 'Institutional Framework' responsible for implementing the EMP and EMoP for the project are outlined as follows:

- a) Green Shine Co., Ltd.
- b) Environmental Conservation Department (Pathein)
- c) Third-party Environmental Consultant Firm

The above stated elements are part of the 'Institutional Framework' who will work together to effectively implement the formulated 'Environmental Management Plan'. The roles & responsibilities of these elements are given in the tables below.

Table 10-1 Environmental Management Organization during Operation

Name of Organization	Roles and Responsibilities
Green Shine Co., Ltd.	<ul style="list-style-type: none"> • Initiate the co-ordinate process among the concerned departments/sections of Green Shine Co., Ltd. for EMP implementation. • To guide and support to establish Environmental Management System (EMS) by Green Shine Co., Ltd. for implementation of approved EMP by ECD. • Prepare Environmental Report based on submitted documents from Concerned Departments/ Sections of Green Shine Co., Ltd. • Provide financial assistance for EMP implementation according to the environmental budgets. • Implements EMP (mitigation measures) of the approved IEE report by establishing and EMS.
Environmental Authorized Agency (ECD/MONREC)	<ul style="list-style-type: none"> • ECD to review the EMR and validate it before the next six months report is submitted. • ECD will initiate an inspection if <ol style="list-style-type: none"> 1. EMR is not submitted in time 2. complaints from the public received by ECD 3. ECD found out that EMP implementation is incompliance 4. when environment compliances fail and reported due to accident, accidental spill or failure of EMS (Environmental Management System). • ECD may find third party auditor or inspector to do environmental auditing and/or inspection on behalf of ECD. • ECD may fine project proponent according to the report of inspection by ECD staff or third party.
Third-party Consultant Firm	<ul style="list-style-type: none"> • Periodically review the EMP to ensure it reflects the latest environmental regulations, technological advancements, and project changes. • Collaborate with the project proponent to address gaps or outdated practices promptly. • Use internationally recognized environmental standards or local regulations as benchmarks for EMP performance. This ensures that audits are both objective and comprehensive. • Provide detailed audit reports that outline strengths, weaknesses, and areas for improvement. Share actionable recommendations with the project proponent for better implementation.

The project proponent should designate a Health, Safety, and Environment (HSE) Coordinator to oversee and facilitate the implementation of the Environmental Management Plan (EMP).

The responsibilities of HSE Coordinator

The HSE Coordinator is tasked with overseeing the Health, Safety, and Environment (HSE) aspects of the project and ensuring the effective implementation of the Environmental Management Plan (EMP) during both the operational and decommissioning phases. Primary responsibilities include:

- Observe HSE regulations, wears all required safety equipment, encourages safe working practices, corrects obvious hazards immediately or reports them to the Operation Manager.
- Assists management in the annual inspection of workplaces to assure safe and healthful conditions for workers.
- Assists management and supervision in investigating accidents and developing measures to prevent recurrences.
- Carry out regular site inspections to check policies and procedures are being properly implemented.
- Ensure the effective execution of the EMP throughout the milling operational and decommissioning phases, including the monitoring of environmental performance.
- Collaborate with internal teams, contractors, local authorities, and community representatives to address environmental concerns and promote sustainability.
- Conduct training programs for operation staff to raise awareness of environmental policies, practices, and emergency response procedures.
- Prepare regular environmental reports to track the progress of the EMP and ensuring transparent communication of environmental performance to stakeholders.
- Review and updating the EMP periodically, especially during operational changes, to address emerging environmental risks and improve practices.

10.2 Environmental Management and Monitoring Plans by Project Phase

10.2.1 Environmental Management Plans

The Environmental Management Plan (EMP) prepared for the proposed project covers the anticipated impacts of the said project, mitigation measures, management and monitoring plans during each of the phases:

- Operation Phase and
- Decommissioning Phase

The detailed EMP based on the project activities is described in Table 10-2 and environmental monitoring plan based on the environmental concern is mentioned in Table 10-3.

Table 10-2 Environmental Management Plan during Operation Phase

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
<p>The estimated budget may vary based on project conditions and currency fluctuations. Additional funds may be allocated if the projected costs increase due to specific circumstances. Estimated prices can also change depending on the implementation timeline and the selected service providers. The project proponent must provide any additional funds necessary for the implementation of the Environmental Management Plan (EMP) and its associated mitigation measures, including the monitoring plan, if the initial cost estimate is found to be insufficient throughout the project lifespan.</p>					
I	Impact on Air Quality				
1.	Release of dust and particulate matter from milling processes including cleaning, polishing stages and volatile organic compounds (VOCs) during machinery maintenance.	<ul style="list-style-type: none"> - Install high-efficiency dust collectors or electrostatic precipitators in the milling process to capture airborne dust particles. - Introduce additional wetting systems in dust-prone area, such as spraying water or using mist systems in high-dust zones to reduce airborne particles. - Use fully enclosed or sealed conveyor systems to minimize the release of dust from material handling processes. - Introduce regular dust cleaning protocols. - Ensure good indoor air circulation systems and in all maintenance and high-emission areas to prevent the accumulation of VOCs. 	2,000,000	Low	Green Shine Co., Ltd.
2.	Exhaust emissions from biomass gasifiers, diesel generators and transportation activities	<ul style="list-style-type: none"> - Use scrubbers and filters to remove CO, NOx, SO2 from the exhaust gasses generated by the biomass gasifier. - Regularly monitor the emissions from the gasifier and perform maintenance checks to ensure minimal pollutant release. - Improve the ventilation and exhaust systems around the gasifier room to ensure that any residual gases are properly dispersed and do not affect indoor air quality. 			
II	Impact of Noise and Vibration				
1.	Milling operations, use of gasifiers, diesel generators and transportation vehicles for raw rice deliveries and white rice export.	<ul style="list-style-type: none"> - Use noise barriers and soundproof cabinets that absorb sound to reduce noise levels within the facility. - Conduct regular maintenance on machinery to ensure it operates smoothly. 	1,500,000	Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
		<ul style="list-style-type: none"> - Replace or lubricate worn parts of machinery to reduce mechanical noise. - Use rubber pads under machines to absorb vibrations and reduce the transmission of noise through the floors and provide stability for heavy equipment. - Provide earplugs or earmuffs for workers exposed to high noise levels, especially those working directly with the heavy machinery, generators or milling equipment. - Implement rotated schedules to minimize continuous exposure to high-noise areas, reducing the risk of hearing damage. 			
III	Impact of Water Consumption and Water Quality				
1.	<ul style="list-style-type: none"> - Water consumption for the cleaning and polishing process to remove impurities and ensure white rice quality. - Cooling ash from gasifier which generates heat and maintenance of water flow for safe operating temperatures and overheating. 	<ul style="list-style-type: none"> - Recycle and reuse water for dust suppression, cleaning or cooling processes. - Set up rainwater collection and storage to supplement the water supply, especially during the rainy season, reducing dependence on groundwater. - Ensure regular checks and repairs of pipes, tanks to prevent leaks and reduce water wastage. 	3,000,000	Low	Green Shine Co., Ltd.
2.	Wastewater generated from cooling ash from gasifier, equipment cleaning and machinery maintenance.	<ul style="list-style-type: none"> - Use integrated sedimentation tanks and filtration systems than current used to treat wastewater and ash water before release. - Ensure water discharge meets pH standards by monitoring to prevent harmful impacts on local waterways. - Store rice husk ash and other waste byproducts in covered areas to prevent runoff during rain. 			
IV.	Impact on Soil Quality				
1.	Soil contamination due to disposal of by-products, rice husk waste from gasifier filter, ash and, charred	<ul style="list-style-type: none"> - Implement designated secure, covered storage areas of rice husk from gasifier filter, ash, charred materials and other by-products to prevent wind dispersion and runoff, especially during rain. 	1,000,000	Very Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	material and accidental spills of oil and fuel.	<ul style="list-style-type: none"> - Use impermeable linings in storage area for ash and rice husk to prevent leaching into the soil and groundwater. - If using ash in agriculture, control applied amounts, as excessive ash can alter soil pH and impact soil health. - Install spill containment systems around fuel storage and refueling areas such as spill trays, and absorbent barriers to ensure accidental spills. - Develop a spill response plan, including spill kits and staff training to quickly remediate any oil or fuel spills. - Regular inspect storage tanks, gasifier systems and pipelines to ensure to ensure no leaks or drips. 			
V.	Impact on Biological Components (Flora and Fauna)				
	<ul style="list-style-type: none"> - Dust generation from milling and polishing processes, high noise level and vibration due to milling machinery may disturb local species causing disruptions in their natural behaviors. - Emissions from the gasifier and diesel generators could alter air quality, impacting nearby plant life. - Wastewater and solid waste including rice husk ash may contaminate local soil and water sources affecting soil organisms. 	<ul style="list-style-type: none"> - Use enclosed high-dust-generating machinery to prevent dust spread and regular water sprays in high-dust areas to reduce airborne particles. - Plant local vegetation, trees and shrubs around the facility to serve as windbreaks and natural dust filters, reducing dust dispersion and serve as noise barrier reducing noise pollution. - Enclose noisy machinery and use acoustic barrier around the facility, and keep machinery regular maintenance to prevent excessive noise which can increase vibration levels and noise emissions. - Ensure the gasifier operates efficiently, with proper combustion to minimize emission level. - Install more sufficient wastewater treatment systems to remove particulates, organic matter and contaminants than currently used and regular monitor discharged water to meet local environmental standards. - Store any ash or solid waste in dedicated storage areas to prevent leaching of contaminants into soil or water. - Educate staffs on the importance of environmental protection and best practices for minimizing operation impacts. 	1,000,000	Very Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
VI.	Impact of Occupational and Community Health and Safety				
1.	<p>Occupational Health and Safety</p> <ul style="list-style-type: none"> - Respiratory risk, skin or eyes due to dust generation from milling, and high noise level from machinery. - Machinery hazards like risks of cuts or crush injuries, slips, trips and falls due to equipment like conveyors and operating machines 	<ul style="list-style-type: none"> - Install ventilation and dust extraction systems to capture dust at its sources. - Provide dust masks (PPE) to employees in high-dust area to reduce respiratory risks. - Implement daily cleaning procedures to remove accumulated dust from floors, surfaces and equipment to prevent it from becoming airborne. - Install sound barriers around noisy machinery to reduce ambient noise. - Supply employees with earplugs and enforce their use, especially near machinery. - Train employees in proper machinery use and safety procedures to minimize risks of accidental injury. - Regularly clean milling areas to prevent the buildup of grain and water on the floors, which can cause slips. - Conduct regular training on occupational health and safety practices, including emergency response for spills, injuries and equipment malfunctions, - Encourage reporting of near-misses or incidents and analyze them to improve safety protocols. 	2,000,000	Low	Green Shine Co., Ltd.
2.	<p>Community Health and Safety</p> <ul style="list-style-type: none"> - Minor residual impacts on air quality as the milling process generates dust and particulate matter, - Noise pollution also less of a concern for distant residential areas could disrupt adjacent businesses and 	<ul style="list-style-type: none"> - Install dust extraction and suppression systems, such as bag filters, at key emission points. - Regular maintenance of dust control equipment to ensure efficiency. - Use soundproofing materials in high-noise areas. - Restrict high-noise activities to daytime hours. - Regularly maintain machinery to reduce noise emissions. - Operate an effective wastewater treatment plant to filter effluents before discharge. - Monitor treated water quality to ensure compliance with environmental standards. - Place clear signboards in hazardous areas to warn workers and visitors. 	1,000,000	Very Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	<ul style="list-style-type: none"> - Water contamination nearby water bodies, local water sources and groundwater quality due to wastewater discharge. 				
VII.	Impact on Waste Disposal				
1.	<p>Solid Waste (Hazardous and Non-Hazardous)</p> <ul style="list-style-type: none"> - General solid waste from routine operations includes packaging materials, such as plastic bags and woven bags, generated from rice supply deliveries and equipment and office waste. - Significant solid wastes as primarily rice husk, bran, and broken rice from milling operation. - Risk of fire hazard due to improper handling of flammable milling waste. 	<ul style="list-style-type: none"> - Install separate bins specifically for woven bags, plastic bags, and other recyclables. - Reuse the plastic bags for waste segregation or organizing materials within the office. - Reuse the woven bags for storing bran, rice husk waste and ash waste. - Repurpose rice husk and ash waste as fertilizer or soil-filling material. - Sell bran and broken rice as animal feed. - Use fire-safe storage facilities for milling waste to prevent fire hazards. - Store hazardous waste, such as tar, ash, used lubricants, and filters, in leak-proof containers. - Dispose of hazardous waste following environmental regulations. - Perform regular maintenance of gasifier machinery to reduce hazardous waste generation. - Provide staff with training on proper waste handling procedures. - Conduct emergency response drills to manage accidental spills or leaks effectively. 	1,500,000	Low	Green Shine Co., Ltd.
	<p>Liquid Waste (Hazardous and Non-Hazardous)</p> <ul style="list-style-type: none"> - Liquid waste includes wash water from facilities and general domestic wastewater from toilet, sink and showers of staff housing. 	<ul style="list-style-type: none"> - Treat gasifier liquid waste using sedimentation tanks and filtration systems to remove ash particles and contaminants. - Create vegetative buffer zones around the facility to filter potential runoff and protect nearby water bodies. - Ensure treated liquid waste complies with discharge standards before release. - Dispose of hazardous waste following environmental regulations. 			

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	<ul style="list-style-type: none"> - Significant liquid waste primarily from water filtration and cooling system discharge that can pollute nearby groundwater quality, local water bodies affecting aquatic life and downstream water quality. 				
VIII. Impact on Fire Hazards					
1.	<ul style="list-style-type: none"> - Significant fire hazards due to the generation of large amount of fine dust, rice husk, other highly combustible biomass materials. - Overheating of motors or electrical faults can become ignition sources and improper handling of flammable materials and fuel storage and - Improper storage of flammable materials. 	<ul style="list-style-type: none"> - Enforce a strict no-smoking policy in and around flammable material storage and working areas. - Keep working areas clean and organized to minimize the accumulation of combustible materials. - Install fire detection and alarm systems in high-risk areas. - Equip the facility with adequate fire extinguishers and ensure they are easily accessible and regularly maintained. - Provide regular fire safety training for all employees, focusing on the safe operation of biomass gasifiers and emergency procedures. - Conduct regular fire drills to ensure staff are familiar with emergency protocols. - Develop and communicate emergency response plans to all employees. - Perform regular inspections and maintenance on all equipment, particularly the biomass gasifier and fuel storage areas. - Monitor for unusual heat, gas emissions, or equipment malfunctions using fire detection systems. 	1,500,000	Low	Green Shine Co., Ltd.

Table 10-3 Environmental Management Plan for Decommissioning Phase

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
<p>The estimated budget may vary based on project conditions and currency fluctuations. Additional funds may be allocated if the projected costs increase due to specific circumstances. Estimated prices can also change depending on the implementation timeline and the selected service providers.</p>					
<p>I Impact on Air Quality</p>					
1.	<p>Release of dust, particulate matter, and emissions from residual materials from disassembled equipment, storage areas, and structural components and harmful emissions due to residual ash and charred materials inside the gasifier.</p>	<ul style="list-style-type: none"> - Use water sprays or misting systems around dismantling zones to prevent dust from becoming airborne, particularly in areas with loose rice husk or ash residues. - Conduct dismantling work within temporary enclosures or sealed tarpaulin structures to limit the dispersion of particulate matter. - Carefully remove residual ash and tar deposits from the gasifier before dismantling to minimize the release of harmful emissions. - Provide personal protective equipment (PPE), such as respirators and goggles, to workers involved in dismantling activities to safeguard against inhaling pollutants. - Clean machinery and structures thoroughly before dismantling to minimize residual pollutants. 	1,500,000	Low	Green Shine Co., Ltd.
2.	<p>VOCs and exhaust gases emission from traces of tar or other byproducts and dismantling activities involving cutting or grinding metal components and transportation vehicles for dismantled components.</p>	<ul style="list-style-type: none"> - Before dismantling, thoroughly clean machinery and storage units to remove residues such as lubricants, tar, or charred materials that could emit VOCs. - Use cutting tools equipped with extraction systems to capture fine metal particles generated during the dismantling of gasifier and other metal components. - Regularly monitor air quality at the dismantling site for particulate matter, VOCs, and other pollutants to ensure compliance with emission standards. 			
<p>II Impact of Noise and Vibration</p>					
1.	<p>Significant noise from cutting, grinding, hammering, and the use of heavy equipment and dismantling of</p>	<ul style="list-style-type: none"> - Install temporary noise barriers, or soundproof enclosures around dismantling areas to reduce noise propagation. 	1,000,000	Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	the gasifier and vibration caused by heavy machinery can affect the structural stability of nearby buildings.	<ul style="list-style-type: none"> - Schedule high-noise activities during daytime hours to minimize disturbances to nearby communities. - Provide workers with noise-cancelling earplugs or earmuffs to prevent hearing damage. - Inform nearby communities about the dismantling schedule and potential noise levels. - Conduct periodic noise level measurements to ensure compliance with permissible limits and adjust activities as needed. - Place vibration-dampening mats or pads under heavy machinery to absorb and reduce ground vibrations. 			
III	Impact of Water Consumption and Water Quality				
1.	Water consumption is significant due to cleaning and suppressing dust during the removal of machinery and equipment and cleaning residual ash, tar, and other contaminants additionally, for cooling metal surfaces during cutting or grinding operations to prevent overheating and equipment damage.	<ul style="list-style-type: none"> - Use high-pressure water jets for cleaning and dust suppression to minimize water consumption while maintaining efficiency. - Use recirculating water-cooling systems for metal cutting and grinding to minimize wastage. - Set up rainwater collection and storage to supplement the water supply, especially during the rainy season 	1,500,000	Low	Green Shine Co., Ltd.
2.	Water quality degradation due to improper handling of wastewater from gasifier dismantling containing sediments, oils, grease, and residual byproducts such as ash and tar.	<ul style="list-style-type: none"> - Establish a temporary water treatment unit to handle wastewater generated during dismantling, including pre-filtration, and pollutant removal. - Install sedimentation tanks or oil-water separators to remove sediments, oils, and grease from wastewater before discharge. - Treat wastewater through multi-stage filtration, including activated carbon filters, to remove fine particles, heavy metals, and VOCs. - Pre-clean the gasifier and ash filtration tank to remove loose ash and tar before dismantling. 			

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
		<ul style="list-style-type: none"> - Transfer ash to lined and sealed containers for safe transport to a certified disposal facility. - Avoid washing ash directly into drains or water bodies. - Store wastewater containing ash and tar in containment ponds or tanks lined with impermeable material to prevent seepage. - Obtain necessary permits for wastewater discharge and adhere to local environmental regulations. - Remove solid ash deposits manually or using vacuum systems before rinsing with water. 			
IV.	Impact on Soil Quality				
1.	<ul style="list-style-type: none"> - Soil contamination due to improper handling and disposal of by-products, such as residual ash, charred materials from the gasifier, and waste oils or lubricants from machinery. - Reducing soil fertility due to accidental spills of fuel, oils, or cleaning agents used during dismantling. 	<ul style="list-style-type: none"> - Store residual ash, charred materials, waste oils, and lubricants in sealed, leak-proof containers in designated areas with impermeable flooring to prevent seepage. - Collect ash and fine particles during dismantling and transport them carefully to prevent spillage and dispersion. - Use drip trays beneath equipment during dismantling to collect any leaks or spills from machinery. - Restrict the refueling and maintenance of equipment to designated areas with impermeable surfaces. - Conduct regular inspections of storage containers, machinery, and work areas for signs of leaks or spills. - Avoid on-site burial or burning of waste materials, which can degrade soil quality. - Use natural methods, such as planting grasses to restore soil health if contamination occurs. 	1,000,000	Very Low	Green Shine Co., Ltd.
V.	Impact on Biological Components (Flora and Fauna)				
	<ul style="list-style-type: none"> - Damaging plant health due to dust generation from cutting and grinding machinery and exhaust 	<ul style="list-style-type: none"> - Use water sprays, mist systems, or biodegradable dust suppressants to minimize dust generation during dismantling. 	1,000,000	Very Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	<p>emission from diesel-powered machinery.</p> <ul style="list-style-type: none"> - Disruptions to natural habitats of sensitive species and aquatic life due to noise and vibrations from heavy machinery and wastewater discharged. 	<ul style="list-style-type: none"> - Periodically clean dust-covered vegetation to reduce the risk of damage, using water or air sprays. - Use low-noise machinery or install sound barriers to reduce disturbance to species. - Install containment barriers, such as liners, to prevent leaks or spills from reaching soil and water bodies. - Treat wastewater generated during dismantling to remove contaminants before discharge, ensuring compliance with environmental standards. - Replant native species or repair damaged vegetation after dismantling activities are completed. 			
VI.	Impact of Occupational and Community Health and Safety				
1.	<p>Occupational Health and Safety</p> <ul style="list-style-type: none"> - Respiratory issues, skin irritation, or eye injuries due to dust and particulate matter generated during cutting, grinding, or handling of machinery. - Hearing loss due to noise levels from heavy machinery and power tools without adequate hearing protection. - Significant risks, such as cuts, crush injuries, or falls due to the use of sharp tools and heavy components and occurrence of slips and trips from spilled oils, residual water, or loose debris on the floor. 	<ul style="list-style-type: none"> - Use industrial vacuum cleaners or wet cleaning methods to clean floors and equipment, avoiding dry sweeping, which can re-suspend dust. - Use water sprays or mists during cutting and grinding activities to suppress dust generation at the source. - Provide workers with PPE (higher-grade masks) designed to filter fine particulate matter. - Rotate workers to limit their time in high-dust areas and reduce overall exposure. - Limit dismantling activities to standard daytime working hours to reduce noise disturbance to adjacent businesses. - Install temporary sound barriers around high-noise areas to minimize the spread of noise. - Use impermeable liners and banded areas for the temporary storage of waste materials to prevent spills or leaks. - Prepare a spill response plan and provide spill containment kits on-site to manage accidental releases effectively. 	2,000,000	Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
		<ul style="list-style-type: none"> - Adhere to local environmental and industrial safety regulations for waste management and dismantling activities. - Inform nearby businesses in advance about the dismantling schedule, expected noise levels, and mitigation measures. 			
2.	<p>Community Health and Safety</p> <ul style="list-style-type: none"> - Minimal noise pollution from heavy machinery and improper handling of waste materials, such as oils, ash, and tar residues, could lead to localized soil and water contamination. 	<ul style="list-style-type: none"> - Restrict noisy activities to daytime hours to minimize disruption to nearby residents and businesses. - Use impermeable, leak-proof storage containers for oils, ash, and tar residues to prevent spills and leaks. - Maintain vegetated buffer zones around the facility to act as natural barriers against contamination spread. - Implement drainage systems to capture and direct potentially contaminated runoff to treatment facilities before discharge. 	1,000,000	Very Low	Green Shine Co., Ltd.
VII.	Impact on Waste Disposal				
1.	<p>Solid Waste (Hazardous and Non-Hazardous)</p> <ul style="list-style-type: none"> - Generation of solid waste, including metal scrap, machinery parts, packaging materials, and waste from dismantled equipment. - Significant amounts of ash, charred residues, and other byproducts from rice husk gasifier and improper disposal of these materials. - Fire hazard due to the accumulation of combustible materials. 	<ul style="list-style-type: none"> - Separate waste into categories such as recyclable (metal scrap, machinery parts), non-recyclable, hazardous (ash, charred residues), and general waste (packaging materials). - Designate clearly labeled, segregated storage areas for each waste category to prevent mixing and ensure proper disposal pathways. - Store ash and residues in sealed, impermeable containers to prevent wind dispersal or leaching into soil. - Conduct high-dust-generating activities in enclosed or semi-enclosed areas to minimize particulate dispersion. - Store combustible waste separately from ignition sources and other waste types. - Regularly remove combustible waste from the worksite to prevent buildup that could exacerbate fire risks. 	1,000,000	Low	Green Shine Co., Ltd.

Items	Project Activities/ Impacts	Proposed Mitigation Measure	Estimated Cost (MMK)	Residual Impact	Responsible Party
	<p>Liquid Waste (Hazardous and Non-Hazardous)</p> <ul style="list-style-type: none"> - Soil and water contamination due to improper disposed of liquid waste, including cleaning fluids, residual oils, and wastewater from decommissioning equipment and machinery. 	<ul style="list-style-type: none"> - Pre-treat these liquids using sedimentation tanks or filtration systems to remove dissolved solids and contaminants before disposal. - Discharge treated water only after ensuring compliance with local water quality standards. - Install drainage systems with collection basins to capture and treat runoff before it reaches natural water bodies. - Establish vegetative buffer zones around the site to act as barriers against potential spills and runoff. 			
VIII.	Impact on Fire Hazards				
1.	<ul style="list-style-type: none"> - Fire hazards due to the presence of residual flammable materials such as rice husk, biomass, oils, and other combustible substances left in machinery and improper handling and storage of flammable materials. - Generation of sparks or heat which can serve as ignition sources from cutting, grinding or using tools for gasifier dismantling. 	<ul style="list-style-type: none"> - Store flammable materials, including rice husk and oils, in well-ventilated areas away from dismantling activities and ignition sources. - Clean machinery and equipment, including the gasifier, to remove residual biomass, oils, and other combustible substances before dismantling. - Use water mist or cooling systems to maintain safe temperatures on equipment and materials. - Conduct toolbox talks focused on fire safety before dismantling activities begin. - Develop a fire safety plan outlining emergency procedures, firefighting strategies, and evacuation routes specific to dismantling activities. - Ensure all workers are trained in their use. - Regularly inspect dismantling activities and storage areas to identify and address fire hazards immediately. - Notify the local fire department about dismantling activities and request standby support for high-risk periods. 	1,000,000	Low	Green Shine Co., Ltd.

10.2.2 Environmental Monitoring Plans

It is essential for monitoring the expected social and environmental effects in the impacted area to assess the effectiveness of the mitigation measures and ensure compliance with legal requirements. Monitoring will be done throughout the operation and decommissioning stages to ensure that recommended mitigation measures for negative impacts and improvement initiative for positive impacts are implemented effectively.

The environmental monitoring plan defines how to evaluate and monitor environmental quality. It is a valuable tool for preparing environmental impact assessments and in case when human activities can harm the natural environmental. Each monitoring approach serves a distinct purpose, such as determining the current environmental status and anticipating the effects of future developments of changes in existing activities.

The Environmental Monitoring Plan will be active during the project's phases to monitor various parameters, including air, noise and water quality. A clear environmental monitoring plan will be led by trained staff from the Environmental Management Committee (EMC). This will ensure compliance with the Environmental Management Plan (EMP) and National Emission Quality (Emission) Guidelines (2015), NEQ(E)G.

Table 10-4 Environmental Monitoring Plan during Operation Phase

Component	Parameter	Standard Guidelines	Method	Area to be monitored	Monitoring Frequency	Estimated Cost (MMK) per year	Responsible Person
The estimated budget may vary based on project conditions and currency fluctuations. Additional funds may be allocated if the projected costs increase due to specific circumstances. Estimated prices can also change depending on the implementation timeline and the selected service providers.							
Ambient Air Quality	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ , O ₃ , CO ₂ , CO	Within NEQEG, WHO, ACGIH Guidelines showed in Table (5-1)	Relevant Air Quality Monitoring Equipment	Same as baseline measurement points Point 1 (Outdoor) (16°43'13.37"N and 94°44'52.54"E) Point 2 (Indoor) (16°43'14.00"N and 94°44'54.00"E)	Biannually	2,000,000	Green Shine Co., Ltd
Water Quality	Groundwater as presented in Table (6-15)	National Drinking Water Standard Myanmar (5-4)	Relevant Laboratory	Same as baseline measurement points GW (16°43'10.00"N and 94°44'52.00"E)	Biannually	1,500,000	Green Shine Co., Ltd
	Wastewater from Ash Filtration Tank Table (6-16)	Within NEQE Guideline (general), Table (5-5)	Relevant Laboratory	Same as baseline measurement points EF-1 (16°43'11.00"N and 94°44'53.00"E)	Biannually	1,500,000	Green Shine Co., Ltd
	Wastewater from final discharge point project site Table (6-17)	Within NEQE Guideline (general), Table (5-5)	Relevant Laboratory	Same as baseline measurement points EF-2 (16°43'16.00"N and 94°44'54.00"E)	Biannually	1,500,000	Green Shine Co., Ltd
Noise and Vibration Level	Noise level (dB(A) scale)	Within NEQE Guideline, Table (5-2) and Japan Guidelines Table (5-3)	Relevant Noise Meter Equipment dB	Same as baseline measurement points Point 1 (Outdoor) (16°43'13.37"N and 94°44'52.54"E) Point 2 (Indoor) (16°43'14.00"N and 94°44'54.00"E)	Biannually	1,500,000	Green Shine Co., Ltd
Waste Disposal	Ash waste, packaging waste, general office	Volume of solid waste (ton or Kg)	According to the specific guideline for	Temporary Storage Sites at project (20°01'48.60"N and 96°16'9.70"E)	Daily	500,000	Green Shine Co., Ltd

Component	Parameter	Standard Guidelines	Method	Area to be monitored	Monitoring Frequency	Estimated Cost (MMK) per year	Responsible Person
	waste and domestic waste		each waste types.				
Occupational, Health and Safety	Use of PPE, provide safety training and prepare a report for accident	Zero accident cases	According to the SOP of (53-C) factory	(53-C) factory milling operation area (16°43'14.00"N and 94°44'54.00"E)	Daily	500,000	Green Shine Co., Ltd

Table 10-5 Environmental Monitoring Plan during Decommissioning Phase

Component	Parameter	Target Level	Method	Area to be monitored	Monitoring Frequency	Estimated Cost (MMK)	Responsible Person
Ambient Air Quality	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ , O ₃ , CO ₂ , CO	Within NEQEG, WHO, ACGIH Guidelines showed in Table (5-1)	Relevant Air Quality Monitoring Equipment	Same as baseline measurement points Point 1 (Outdoor) (16°43'13.37"N and 94°44'52.54"E)	once	1,000,000	Green Shine Co., Ltd
Water Quality	Groundwater as presented in Table (6-15)	National Drinking Water Standard Myanmar (5-4)	Relevant Laboratory	Same as baseline measurement points GW (16°43'10.00"N and 94°44'52.00"E)	once	700,000	Green Shine Co., Ltd
	Wastewater from discharge point of Ash Filtration Tank Table (6-16)	Within NEQE Guideline (general), Table (5-5)	Relevant Laboratory	Same as baseline measurement points EF-1 (16°43'11.00"N and 94°44'53.00"E)	once	700,000	Green Shine Co., Ltd

Component	Parameter	Target Level	Method	Area to be monitored	Monitoring Frequency	Estimated Cost (MMK)	Responsible Person
	Wastewater from final discharge point project site Table (6-17)	Within NEQE Guideline (general), Table (5-5)		Same as baseline measurement points EF-2 (16°43'16.00"N and 94°44'54.00"E)	once	700,000	Green Shine Co., Ltd
Noise and Vibration Level	Noise level (dB(A) scale)	Within NEQE Guideline, Table (5-2) and Japan Guidelines Table (5-3)	Relevant Noise Meter Equipment dB	Same as baseline measurement points Point 1 (Outdoor) (16°43'13.37"N and 94°44'52.54"E)	once	700,000	Green Shine Co., Ltd
Waste Disposal	Ash waste, packaging waste, general office waste and domestic waste	Volume of solid waste (ton or Kg)	According to the specific guideline for each waste types.	Temporary Storage Sites at project (20°01'48.60"N and 96°16'9.70"E)	Daily	500,000	Green Shine Co., Ltd
Occupational, Health and Safety	Use of PPE, provide safety training and prepare a report for accident	Zero accident cases	According to the SOP of (53-C) factory	(53-C) factory milling operation area (16°43'14.00"N and 94°44'54.00"E)	Daily	500,000	Green Shine Co., Ltd

10.3 Waste Management Plan

The factory has installed a gasifier to generate electricity for the operation of the rice mill. As a by-product of the gasification process, both ash and wastewater are produced. A separate channel is designated for each by-product: the wastewater is directed to a treatment tank where a carbon absorption method is used, while the ash is channeled through a different system. However, it has been observed that the level of phenol, oil and grease, and manganese concentration in the treated wastewater remains significantly above acceptable levels. This indicates that the current treatment system may not be sufficient to fully eliminate significant compounds. The project proponent must comply with the following regulations: The Environmental Conservation Law (2012), Environmental Conservation Rules (2014), Environmental Impact Assessment Procedure (2015), National Environmental Quality (Emission) Guidelines (2015), and other relevant legislation. Therefore, the project proponent should implement additional mitigation measures.

- Conduct regular performance of the carbon absorption system to ensure it is operating optimally.
- Ensure that the carbon filters are not overloaded or deactivated and are functioning at their maximum efficiency.
- Regenerate or replace activated carbon when it has reached its maximum adsorption capacity to maintain treatment effectiveness.
- Set a clear schedule for the periodic regeneration or replacement of activated carbon
- Ensure that ash is not directed into the wastewater treatment tank
- Use proper ash collection systems to separate and collect fly ash from the gas stream, preventing it from affecting the treatment process.
- Clean and maintain the discharge area regularly to prevent blockages and ensure proper system function.
- Regularly clean the gasifier to ensure its proper operation and prevent the accumulation of contaminants.
- Implement regular maintenance and cleaning schedules for the gasifier to ensure consistent and efficient operation.
- If the carbon absorption method is insufficient, consider integrating pre-treatment or post-treatment processes to further reduce phenol concentrations.
- Explore opportunities to recycle treated wastewater within the facility, reducing the volume of wastewater discharged.
- Investigate the use of other adsorption materials, such as activated alumina or specialized resins, which may have a higher phenol adsorption capacity.
- Ensure that the feedstock used in the gasifier is of consistent quality, as variations in feedstock can influence the amount of contaminants produced.
- Increase the amount of activated carbon in the wastewater treatment tank if necessary
- Ensure that the channel through which ash is directed has an impervious layer.

10.4 Occupational Health and Safety Plan

In the proposed milling project, workers are exposed to various occupational hazards during the operational phase. Health impacts arise due to unsuitable working environment like poor ventilation and excessive noise. Machinery hazards are also significant as equipment like conveyors and operating machines. A significant factor in these hazards is the lack of awareness among employees regarding safety protocols.

The overall goal of the occupational health and safety (OHS) measures to be put is to safeguard the health of the workers and to prevent accidents leading to injuries. However, if accidents do occur, the objective is to make sure that routines for providing lifesaving first-aid and stabilization of the injured workers are in place.

Awareness and Trainings

In order to achieve the objectives defined in the OHS plan, the project proponent should ensure that personnel on all levels in the organization are aware of and participate in OHS activities.

- Offer training to ensure safe job performance and provide operating procedures for machinery.
- Establish and maintain arrangements to ensure that all persons with OHS responsibilities are competent to perform their duties.
- Provide clear standard operation procedures (SOP) for operating machines, ensuring available in local language to facilitate safe and effective operation.
- Support training programs related to gasification
- Establish an OHS unit to monitor and supervise regarding compliance and standards.
- Organize and conduct site inspections in collaboration with contractor representatives.

Personal Protective Equipment (PPE)

The project proponent needs to provide proper safety equipment and drafting emergency regulations, including fire and electric shock prevention, first-aid boxes with rescue facilities.

- Provide appropriate PPE, including helmet, safety boots, eye and ear protection, and heat protective gloves.
- Provide dust masks to milling operation workers for respiratory protections.
- Provide working clothing with strong colors and wide reflecting bands.

Incidents Reporting and Investigations

- Identify all incidents including accidents, near misses or occupational diseases.
- Conduct thorough investigations of each incident and analyze the causes and contributing factors.
- Record detail findings and conclusion of every investigation.
- Submit investigation reports to OHS team without delay.
- Maintain accurate incident reports for injuries and environmental damage.

Health and Safety Facilities

- Ensure clean, well-maintained and sufficient number of restrooms.

- Provide clear and visible instructions for hazards, PPE requirements and emergency protocols.
- Provide changing rooms for worker to store personal items and change clothes.
- Provide designated spaces for meals to avoid contamination in working places.
- Proper storage for helmets, gloves, masks and other protective equipment and easily accessible for worker to collect and replace equipment.

Fire and Electrical Safety

- Follow electrical safety protocols and mark energized devices with warning signs.
- Inspect electrical equipment regularly and ensure proper wiring.
- Strategically place fire safety equipment and implement emergency alarm systems.
- Conduct regular fire drills and train employees on firefighting procedures.

10.4.1 Gasifier Management Plan

There are common causes of gasifier failures in industrial facilities, including improper operation, inadequate maintenance, and accumulation of ash or tar. Careful management is essential to prevent accidents. The followings are recommended safety precautions and tips for gasifier operation and maintenance teams.

(a) Precautions and Procedures to Be Carried Out During Start-Up

- Perform a system pressure test to ensure there are no leaks in the gasifier system.
- Verify that fuel feed mechanisms are clear and operational before introducing biomass.
- Inspect filters, valves, and tar separators for blockages or wear before starting the gasifier.
- Ensure the ignition system is functioning correctly, and safety devices, such as flame arrestors, are in place.
- Confirm that all exhaust outlets are clear and free from obstructions to avoid back-pressure build-up.

(b) Precautions and Procedures to Be Carried Out Regularly

- Inspect the gasifier chamber for the buildup of tar or ash and clean it as per the maintenance schedule.
- Test the efficiency of the gasifier's cooling and cleaning systems to avoid overheating or contamination.
- Check the integrity of all piping and joints for leaks or corrosion.
- Perform regular maintenance of gas filtration units to avoid clogging and system inefficiency.
- Regularly inspect and lubricate moving parts, such as fans and feedstock conveyors, for smooth operation.

(c) Precautions and Procedures to Be Carried Out Occasionally

- Conduct thermal performance testing to confirm the efficiency of the gasifier under varying loads.

- Clean secondary and tertiary gas cleaning systems to remove residues that may reduce gas quality.
- Check the alignment of feedstock input systems to ensure consistent fuel supply.
- Evaluate the gasifier's performance under emergency shutdown scenarios to identify potential risks.

(d) Gasifier Safety Precautions and Procedures

- Always operate the gasifier according to the manufacturer's guidelines.
- Operators must wear appropriate personal protective equipment (PPE), including gloves, goggles, and flame-resistant clothing.
- Training programs must be conducted regularly to ensure operators are skilled in gasifier operations and emergency responses.
- Ensure proper ventilation in gasifier rooms to avoid the accumulation of flammable gases.
- Establish and test emergency shutdown procedures to mitigate risks during malfunctions.
- Maintain a clean and organized workspace around the gasifier to avoid fire hazards.
- Conduct routine safety drills to prepare the team for incidents such as gas leaks or fires.

10.5 Emergency Preparedness and Response Plan

Emergency preparedness and response are essential to preparing for, responding to, and recovering from natural disasters or other unforeseen events. This process includes risk assessment, implementing mitigation strategies, disaster planning, and educating communities. The primary objective is to enhance safety by preparing for potential disasters, responding quickly to minimize damage, and reducing exposure to hazardous materials or other dangers. Regular updates and testing of emergency plans are essential to maintain their effectiveness. The project proponent shall develop an emergency preparedness and response plan in order to prevent the consequences of natural disasters such as fire and man-made disasters. This plan aims to minimize the loss of lives and property in the event of disasters that occurs at the proposed project site. The project proponent must conduct this plan throughout the project cycle. Potential emergencies include:

- Fire (due to rice husk accumulation, milling dust, or electrical faults).
- Flooding (due to heavy rainfall or nearby water sources).
- Gasifier-related incidents (fire, explosion, or malfunction).
- Accidents (e.g., machinery-related injuries, slips, and falls).
- Oil Spills (from machinery or storage).

Emergency Response Team (ERT)

- Emergency Manager: Oversees the response and makes critical decisions.
- Safety Officer: Ensures safety protocols are followed.
- First Aid Team: Provides medical assistance and first aid.

- Fire Response Team: Handles fire outbreaks and ensures the safe use of fire extinguishers.
- Operations Team: Manages machinery and equipment shutdown if necessary.

Emergency Control Room

- Located at a central and accessible place within the facility.
- Equipped with communication tools to contact emergency services, key staff, and contractors.
- Linked to plant control rooms and emergency services (e.g., local fire department, hospitals).

Preparedness Measures

- Risk Assessments: Regularly identify potential hazards in the milling process and storage areas.
- Training: Conduct regular emergency drills (e.g., fire drills, first aid practice).
- PPE: Ensure workers have access to and are trained to use personal protective equipment (e.g., fire-resistant clothing, masks, gloves, helmets).
- Emergency Supplies: Stock first aid kits, fire extinguishers, and emergency response equipment at key locations.

Emergency Procedures

Fire Emergency:

- Activate fire alarm to notify all personnel.
- Evacuate workers to designated assembly points.
- Fire Response Team to use extinguishers on small fires or isolate the affected area.
- Shut down gasifier and machinery if necessary, to prevent further fire spread.
- Contact Fire Department for large-scale incidents.

Flooding:

- Monitor water levels and flood forecasts regularly.
- Evacuate personnel from flooded areas immediately.
- Shut down machinery to avoid electrical hazards.

Gasifier Incident:

- Shut down gasifier immediately if it shows signs of malfunction or safety breach.
- Evacuate personnel from the gasifier room and affected areas.
- Call emergency services for support and proper handling of gasifier-related incidents.

Accidents and Injuries:

- Call for medical assistance immediately for severe injuries.
- Administer first aid for minor injuries while waiting for medical help.

- Report the accident to the Emergency Response Team for investigation and corrective action.

Training and Drills

- Initial training on emergency procedures, including evacuation, fire safety, first aid, and equipment shutdown.
- Regular Fire drills, evacuation drills, and mock emergency situations will be conducted periodically.
- Regular refresher courses to ensure employees remain familiar with emergency protocols.

Review and Improvement

- Conduct annual reviews of the emergency response plan.
- Implement feedback from emergency drills, real incidents, and staff suggestions to improve the plan’s effectiveness.

The above Emergency Preparedness and Response Plan ensures that all employees are equipped and ready to respond to emergencies, minimizing risks to health, safety, and property.

10.6 Grievance Redress Mechanisms

The Grievance Redress Mechanism (GRM) serves as a structured process to address, validate, and resolve complaints and concerns from affected individuals or stakeholders regarding the project. The GRM ensures that grievances related to environmental, social, or operational impacts are addressed promptly, transparently, and without retaliation. Through the GRM, Green Shine Co., Ltd. shall promptly address affected people’s concerns, complaints, and grievances about the project’s environmental performance without retribution. It is proposed that a joint grievance redress mechanism be instituted for both environmental and social related issues.

People who live in the project effective area or stakeholder can complain about the impacts that they suffer through Grievance Committee, which includes the responsible persons of Green Shine Co., Ltd., administrator of Chaung Zauk Village Tract, representative of general admonition of Kangyidaunt Township. If there have no satisfaction in solving problem through the Grievance Committee level, it can be submitted to higher responsible authorities and finally decided by the court in legal terms. Figure 10-1 shows the steps of Grievance Redress Mechanism of Green Shine Co., Ltd.

Table 10-6 Detail Contact Information of the GRM Management

Name	U Naing Lin Htun
Position	Admin HR Executive
Address	Green Shine Co., Ltd, (53-C) Factory, Pathein Industrial City, Chaung Zauk Village Tract, Kangyidaunt Township.
Phone	+95(9) 799599720
Email	greenshinec53adm@gmail.com

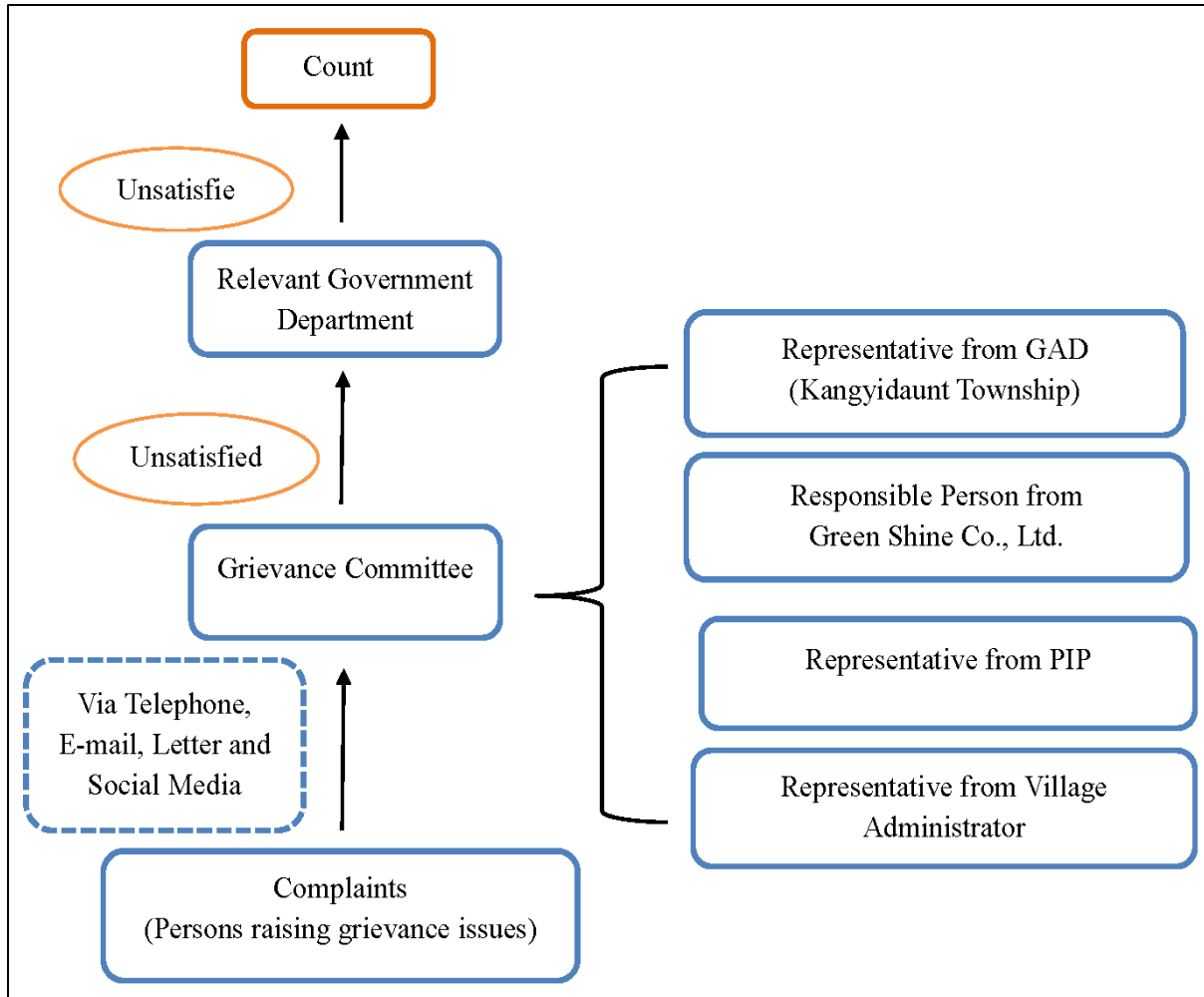


Figure 10-1 Steps of Grievance Redress Mechanisms of Green Shine Co., Ltd.

10.7 Corporate Social Responsibility (CSR) Plan

Corporate Social Responsibility (CSR) refers to the actions and strategies that organizations use to support the community, and contribute to its development. CSR helps build a strong relationship between the organization and the community. Through social responsibility, organizations can provide direct or indirect benefits to the community. The project proponent will implement CSR Plan together with Environmental and Social Management Plan (EMP) throughout the project lifespan. The objective of this plan is improving the well-being of the local community.

The project proponent has the plan to use 2% of the Annual Net Profit for the corporate social responsibility fund. In 2023, the company contributed donations to community welfare activities and disaster recovery efforts in the villages. In 2024, contributions were made in the form of rice and financial support for religious, social, and village development activities. The community involvement and development program will implement as follows Table 10-8.

Table 10-7 CSR Fund Allocation

No.	Aspects	Frequency	Proposed allocated Percent of CSR budget (%)
1.	Community Involvement	Annually	15
2.	Education	Annually	20
3.	Health	Annually	15
4.	Culture	Annually	10
5.	Employment Creation and Skills Development	Annually	15
6.	Technology Development	Annually	15
7.	Social Investment	Annually	10
Total			100 %

11 CONCLUSION AND RECOMMENDATION

It is important that the project owner of the rice milling project aware of the cost implications of implementing, monitoring, and reporting the Environmental Management Plan (EMP). Effective EMP implementation requires not only budget allocation but also sufficient manpower and capacity-building efforts. The project team must submit Environmental Monitoring Reports (EMR) to the Environmental Conservation Department (ECD) every six months during the operation phase. The EMP implementation team is responsible for carrying out all mitigation measures, ensuring compliance, and maintaining evidence of their implementation activities.

The project team should maintain comprehensive records, including system specifications, operational manuals for equipment such as water treatment systems, wastewater treatment systems, and gasifiers.

The rice milling project could have various significant impacts, including but not limited to:

- *Environmental Impact:* The generation of waste, including ash and wastewater, requiring proper treatment and disposal to avoid environmental degradation.
- *Resource Consumption:* High usage of water, energy, and other resources for milling operations, emphasizing the need for resource-efficient practices.
- *Wastewater Management:* Potential contamination of water bodies due to untreated wastewater, necessitating advanced wastewater treatment systems to meet environmental standards.
- *Community Development:* Contribution to local socio-economic conditions through employment opportunities and engagement with local farmers for raw material supply.
- *Health and Safety:* Risks to workers from occupational hazards, including exposure to dust, noise, and gasifier operations, requiring proper safety measures and provision of PPE.
- *Economic Impact:* Positive economic effects through job creation, fostering agro-industrial development, and earning foreign exchange through rice exports.
- *Capacity Building:* Enhancement of local workforce skills and promotion of sustainable agricultural practices in the region.
- *Operational Challenges:* Need for consistent maintenance of equipment, infrastructure, and compliance with environmental and safety regulations to ensure smooth operations.

In addition, environmental quality assessments indicate compliance for most parameters, such as air quality, noise, vibration, and soil quality, while highlighting issues with groundwater quality, which exceeds standards for manganese, and effluent water, which contains phenols, oil and grease, and ammonia levels above permissible limits. To address these concerns, it is recommended to install advanced wastewater treatment systems to mitigate effluent contaminants, implement manganese filtration for groundwater, and regularly monitor wastewater. Proper waste management practices will be established to handle ash waste and develop sustainable disposal or reuse plans for solid and liquid waste. Continuous environmental monitoring of air quality, noise, and effluent water, alongside transparent communication of results to stakeholders, is critical. Regular engagement with local

stakeholders and environmental authorities ensures alignment with community and regulatory expectations. Additionally, the allocation of 2% CSR funds and EMP budgets should support for worker's health, water treatment projects and awareness programs on sustainability.

In conclusion, mitigation measures such as advanced wastewater treatment, efficient resource use, proper waste management, staff training, and adherence to occupational health and safety standards are essential to minimize negative impacts. Implementing these measures will ensure the sustainable and efficient operation of the rice milling project, contributing positively to environmental preservation, community well-being, and economic growth.


This report only highlighted for the process of rice milling. Therefore, if corn and bean milling operations are to be implemented, the project owner must follow the guidance of Environmental Conservation Department.

12 References

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13 Appendix

Appendix 1 Remark from ECD to prepare IEE Report



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ညွှန်ကြားရေးမှူးချုပ်ရုံး

စာအမှတ်/IEIA-၁/၇/သဘောထား(PP)(၂၀၁၁ /၂၀၂၃)
ရက်စွဲ ၊ ၂၀၂၃ ခုနှစ် ဇန်နဝါရီလ ၁၇ ရက်

လင်စာမက်ပုံတော် ၆၉၆၈

ရက်စွဲ/ အရက် ၂၃-၁-၂၀၂၃

လက်မှတ်: *[Signature]*

ညွှန်ကြားရေးမှူးရုံး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ဧရာဝတီတိုင်းဒေသကြီး

အကြောင်းအရာ။ Green Shine Co., Ltd. ၏ ဆန်၊ ပြောင်းကြိတ်ခွဲခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ စီမံကိန်းအဆိုပြုလွှာအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း

ရည် ညွှန်း ချက်။ (၁) ညွှန်ကြားရေးမှူးရုံး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ဧရာဝတီတိုင်းဒေသကြီး၏ ၁၄-၁၂-၂၀၂၂ ရက်စွဲပါစာအမှတ် ၊ EIA/ARIC (စားသောက်ကုန်)/(၂၁၇၀/ ၂၀၂၂)

(၂) ပြည်ထောင်စုဝန်ကြီးရုံး၏ ၂၂-၄-၂၀၂၁ ရက်စွဲပါ စာအမှတ်၊ (သစ်တော) ၃(၂)/၀၃(EC)/(၁၀၉၄/၂၀၂၁)

၁။ အကြောင်းအရာပါကိစ္စနှင့် ပတ်သက်၍ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ငပုတောကားလမ်း၊ ပုသိမ်စက်မှုမြို့တော်၊ အမှတ်(စီ-၂၈)၊ ဧရိယာ(၃.၃၆)ဧကပေါ်တွင် စင်္ကာပူနိုင်ငံရှိ GMEC PTE. Ltd က ၃၅% ၊ မြန်မာနိုင်ငံရှိ Ayeyar Hinthar Trading Co., Ltd. က ၁၆% ၊ မြန်မာနိုင်ငံသား ဦးမင်းဂေါင်ဦးက ၂၉.၄% ၊ ဒေါ်ခင်မိုးသူက ၁၉.၆% အသီးသီးထည့်ဝင်၍ ဖက်စပ်နိုင်ငံခြား ရင်းနှီးမြှုပ်နှံမှုဖြင့် တည်ထောင်ထားသည့် Green Shine Co., Ltd. သည် ဆန်၊ ပြောင်းကြိတ်ခွဲ ထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ ဧရာဝတီတိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ သဘောထားမှတ်ချက် တောင်းခံလာမှုအပေါ် ညွှန်ကြားရေးမှူးရုံး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ဧရာဝတီတိုင်းဒေသကြီးမှ စီမံကိန်းအဆိုပြုလွှာ (Project Proposal) ကို ရည်ညွှန်း(၁)ပါစာဖြင့် တင်ပြလာပါသည်။

၂။ တင်ပြလာသည့် စီမံကိန်းအဆိုပြုလွှာအား စိစစ်ရာ အောက်ပါအတိုင်း စိစစ်တွေ့ရှိရပါသည်-

- (က) စက်ရုံမှ ဆန်ကြိတ်ခွဲခြင်းအား တစ်ရက်လျှင် တန်ချိန်(၂၀၀)နှင့် ပြောင်း ကြိတ်ခွဲခြင်းအား တစ်ရက်လျှင် တန်(၇၀) ထုတ်လုပ်မည်ဖြစ်ကြောင်း၊
- (ခ) ရင်းနှီးမြှုပ်နှံမှု ပမာဏမှာ ၀.၈၄၁၅၁ USD ဖြစ်ကြောင်း၊ လုပ်ငန်းသက်တမ်းကာလမှာ (၁၀)နှစ်ဖြစ်ကြောင်း၊

J

- (ဂ) စက်ရုံတွင် Paddy Milling Machine Non-Parbiled စက် (၁)လုံး၊ Gasifier (၁)လုံး၊ Colour Sorter Machine (၂)လုံး၊ Sewing Machine (၁)လုံး၊ Packaging Machine (၁)လုံး၊ Test Milling Machine (၁) လုံး အသုံးပြုမည်ဖြစ်ကြောင်း၊
- (ဃ) ကုန်ကြမ်း၊ ကုန်ချောဆန်များ သိုလှောင်ထားရှိရန် ဧရိယာ (190'x 415') 12500 တန်ဆွဲ (White Rice Ware House - 12500 TPU) ၁ လုံး တည်ဆောက်မည်ဖြစ်ကြောင်း၊
- (င) ဆန်စက်အမျိုးအစားမှာ ဆန်ပြန်လည်ကြိတ်ဖွတ်စက်နှင့် ဆန်နှင့် ဆန်ကွဲ ရောနှောစက် (Re milling and Rice Mixing Plant) တို့ဖြစ်ကြောင်း၊
- (စ) စီမံကိန်းလည်ပတ်ရန်အတွက် ဝန်ထမ်း(၇၉)ဦးဖြင့် ဆောင်ရွက်မည်ဖြစ်ကြောင်း၊

၃။ အဆိုပြုလုပ်ငန်းနှင့် ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း နောက်ဆက်တွဲ (က) ပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်း ဆောင်ရွက်ရန်လိုအပ်သည့် စီမံကိန်း လုပ်ငန်း အမျိုးအစားများ သတ်မှတ်ချက်ဇယားအမှတ်စဉ် (၅၀) အရ “နှံစားသီးနှံကုန်ကြမ်းများ ထုတ်လုပ်ခြင်းလုပ်ငန်း” အတွက် “တစ်ရက်လျှင် တန် ၁၀၀ နှင့်အထက်၊ တန် ၃၀၀ အောက် (တစ်နှစ်လျှင် အများဆုံး ရက်ပေါင်း ၉၀ လည်ပတ်ဆောင်ရွက်လျှင် တစ်ရက်လျှင် တန် ၆၀၀ အောက်) ” သည် ကနဦး ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန် လိုအပ်ပြီး “တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက် (တစ်နှစ်လျှင် အများဆုံး ရက်ပေါင်း ၉၀ လည်ပတ် ဆောင်ရွက်လျှင် တစ်ရက်လျှင် တန် ၆၀၀ နှင့် အထက်)” သည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းပြုလုပ်ရန် လိုအပ်သည်ဟု ပြဋ္ဌာန်းထားပါသည်။

၄။ ဆန်၊ ပြောင်းကြိတ်ခွဲ ထုတ်လုပ်မှုလုပ်ငန်းစဉ်မှ ပတ်ဝန်းကျင်အပေါ် ထိခိုက်နိုင်မှုများမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်-

- (က) ကြိတ်ခွဲခြင်း လုပ်ငန်းဆောင်ရွက်ခြင်းများကြောင့် လည်းကောင်း၊ သိုလှောင်ခြင်း နှင့် သယ်ယူပို့ဆောင်ခြင်း လုပ်ငန်းများကြောင့် လည်းကောင်း၊ ဘေးထွက် ထုတ်ကုန်(By-Product) များကြောင့်လည်းကောင်း ဖုန်မှုန့်များ (including Particulate Matter) ထွက်ရှိပြီး၊ လုပ်ငန်းခွင်နှင့် ၎င်းအနီး ပတ်ဝန်းကျင်တဝိုက်တွင် လေထုညစ်ညမ်းမှုများ ဖြစ်ပေါ်နိုင်ခြင်း၊
- (ခ) စက်ပစ္စည်းသန့်ရှင်းခြင်းလုပ်ငန်းစဉ်မှ ထွက်ရှိမည့်ရေအား ကောင်းမွန်စွာ သန့်စင်မှု မလုပ်ဆောင်နိုင်ပါက ရေဆိုးရေညစ်များ ဖြစ်ပေါ်နိုင်ခြင်း၊
- (ဂ) ဆူညံသံနှုန်း (Noise Index Level) မြင့်မားမှုကြောင့် လုပ်ငန်းခွင်ရှိ လုပ်သားများ၏ ကျန်းမာရေးနှင့် ဒေသခံပြည်သူများအား အနှောင့်အယှက်များ ဖြစ်ပေါ်စေနိုင်ခြင်း၊
- (ဃ) ကြိတ်ခွဲခြင်းလုပ်ငန်းစဉ်မှ စပါးခွံ၊ ဖွဲနု၊ ပြောင်းရိုးများကြောင့်လည်းကောင်း၊ ထုပ်ပိုးပစ္စည်း (Packing Material) များမှလည်းကောင်း၊ စက်ရုံသန့်ရှင်းရေးလုပ်ငန်းများမှ

ထွက်ရှိမည့် အမှိုက်များကြောင့်လည်းကောင်း အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ ထွက်ရှိနိုင်ခြင်း၊

(င) လောင်စာဆီများ ယိုဖိတ်ခြင်းမှ ရေနှင့် မြေဆီလွှာအား ထိခိုက်စေနိုင်ခြင်း၊

(စ) မီးဘေးအန္တရာယ် ဖြစ်ပေါ်နိုင်မည့်အခြေအနေ(Fire Risk) မြင့်မားစေနိုင်ခြင်း၊

၅။ သို့ဖြစ်ပါ၍ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းဆောက် ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ငပုတောကားလမ်း၊ ပုသိမ်စက်မှုမြို့တော်၊ အမှတ်(စီ-၂၈)၊ ဧရိယာ(၃.၃၆)ဧကပေါ်တွင် Green Shine Co., Ltd. မှ ဆန်၊ ပြောင်းကြိတ်ခွဲ ထုတ်လုပ် တင်ပို့ရောင်းချခြင်း လုပ်ငန်းနှင့် ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း နောက်ဆက်တွဲ (က) ပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်း ဆောင်ရွက်ရန် လိုအပ်သည့် စီမံကိန်း လုပ်ငန်းအမျိုးအစားများ သတ်မှတ်ချက်ဇယား အမှတ်စဉ် (၅၀) အရ ကနဦး ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအား အောက်ပါ သတ်မှတ်ချက်များအတိုင်း ဆောင်ရွက်ရန် လိုအပ်ကြောင်း ရည်ညွှန်း(၂)ပါခွင့်ပြုချက်အရ အကြောင်းကြားပါသည်-

- (က) ကနဦး ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ဆောင်ရွက်မည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းအား ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၃၂ နှင့်အညီ ဦးစီးဌာနသို့ တင်ပြအတည်ပြုချက်ရယူရန်၊
- (ခ) တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းအတွက် အတည်ပြုချက် ရရှိပြီးပါက ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၃၄၊ ၃၅၊ ၃၆၊ ၃၇၊ ၃၈ တို့နှင့် အညီ ကနဦး ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာအား သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြအတည်ပြုချက်ရယူရန်၊
- (ဂ) စီမံကိန်းတည်ရှိရာ ဒေသခံပြည်သူလူထု၏ ဆန္ဒနှင့် သဘောထားများကိုရယူဆောင်ရွက်ရန်၊
- (ဃ) ဆက်စပ်ဌာနများမှ လုပ်ငန်းနှင့် ပတ်သက်၍ ရရှိထားရမည့် လုပ်ငန်း လုပ်ကိုင်ခွင့် လိုင်စင်များ ရယူထားရှိရန်။

(Handwritten signature)

(လှမောင်သိန်း)
ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကို
ပြည်ထောင်စုဝန်ကြီးရုံး၊ သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊
ရုံးအမှတ် (၂၈)
ရုံးလက်ခံ၊ မျှောစာတွဲ



ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ညွှန်ကြားရေးမှူးရုံး
ဧရာဝတီတိုင်းဒေသကြီး
စာအမှတ်၊ EIA/ARIC(စာသောက်ကုန်)(၅၁၈ /၂၀၂၃)
ရက်စွဲ ၂၀၂၃ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၂၇ ရက်

သို့

အတွင်းရေးမှူး

ဧရာဝတီတိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ

အကြောင်းအရာ။ Green Shine Co.,Ltd ၏ ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်း
လုပ်ငန်းအတွက် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း

- ရည်ညွှန်းချက်။
- (၁) ဧရာဝတီတိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ၏ ၂-၁၂-၂၀၂၂ ရက်စွဲပါ စာအမှတ်၊ ဧရက/ အ-၀၇၇/ စက်မှု/ ၂၀၂၂ (၁၁၁)
 - (၂) ဧရာဝတီတိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ၁၄-၁၂-၂၀၂၂ ရက်စွဲပါ စာအမှတ်၊ EIA/ ARIC (စားသောက်ကုန်)/ (၂၁၇၀ /၂၀၂၂)
 - (၃) ဧရာဝတီတိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ၁၆-၁-၂၀၂၃ ရက်စွဲပါ စာအမှတ်၊ EIA/ ARIC (စားသောက်ကုန်)/ (၁၅၃/၂၀၂၃)
 - (၄) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်ရုံး၏ ၂၇-၁-၂၀၂၃ ရက်စွဲပါ စာအမှတ်၊ EIA-၁/၇/သဘောထား (pp) (၂၁၁/၂၀၂၃)

၁။ အထက်အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးတောင်မြို့နယ်၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ငပုတော ကားလမ်း၊ ပုသိမ်စက်မှုစိမ့်ကိန်း၊ အမှတ် (စီ-၂၈)၊ ဧရိယာ (၃.၃၆) ဧကပေါ်တွင် ဖက်စပ်နိုင်ငံခြား ရင်းနှီးမြှုပ်နှံမှုဖြင့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအား Green Shine Co.,Ltdမှ အကောင်အထည်ဖော်ဆောင်ရွက်ခြင်းနှင့်ပတ်သက်၍ သဘောထားမှတ်ချက်ပြန်ကြား ပေးပါရန် ဧရာဝတီတိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ ရည်ညွှန်း(၁)ပါစာဖြင့် အကြောင်းကြား လာမှုအပေါ် ဧရာဝတီတိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ရည်ညွှန်း(၂)ပါစာဖြင့်

ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ညွှန်ကြားရေးမှူးရုံး
ဧရာဝတီတိုင်းဒေသကြီး
စာအမှတ်၊ EIA/ARIC(သဘောထား)/၂၀၂၄/၂၀၂၄
ရက်စွဲ ၂၀၂၄ ခုနှစ်၊ မေလ ၂၈ ရက်

သို့

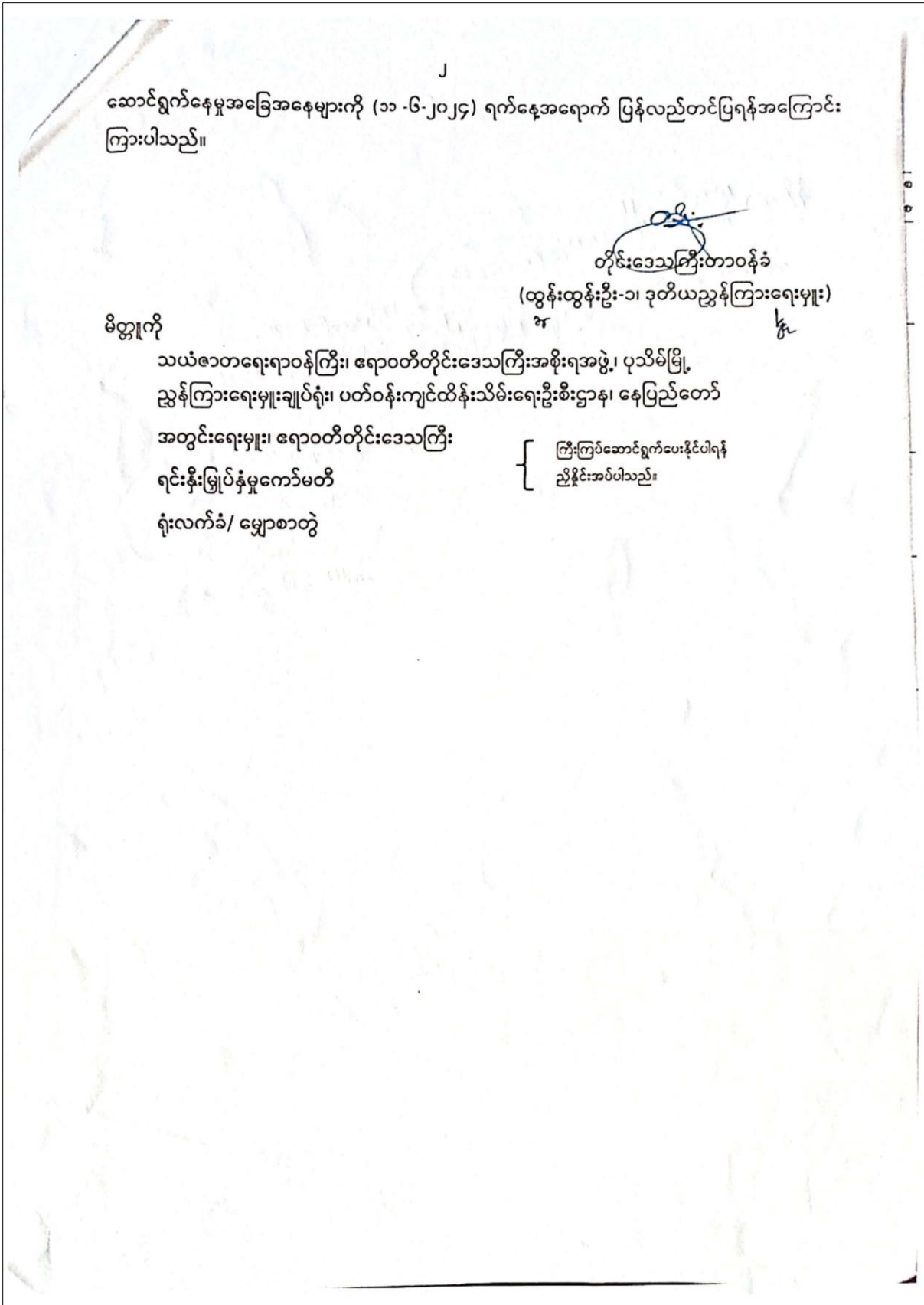
လုပ်ငန်းရှင်
Green Shine Co., Ltd
ကုန်သွယ်ရေးလမ်း၊ ပုသိမ်မြို့နယ်၊ ပုသိမ်မြို့

အကြောင်းအရာ။ ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်းအစီရင်ခံစာများရေးဆွဲရန် သဘောထား
မှတ်ချက်ပြန်ကြားခဲ့မှုအပေါ် ဆောင်ရွက်ထားရှိမှုအခြေအနေအား ပြန်လည်
တင်ပြရန် အကြောင်းကြားခြင်း

ရည်ညွှန်းချက်။ နိုင်ငံတော်စီမံအုပ်ချုပ်ရေးကောင်စီလက်ထက် ဧရာဝတီတိုင်းဒေသကြီး ရင်းနှီး
မြှုပ်နှံမှုကော်မတီမှခွင့်ပြုပေးခဲ့သည့် ရင်းနှီးမြှုပ်နှံမှုလုပ်ငန်းရှင်များနှင့် လုပ်ငန်း
ညှိနှိုင်းအစည်းအဝေးညွှန်ကြားချက်

၁။ အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ ဧရာဝတီတိုင်းဒေသကြီးအစိုးရအဖွဲ့မှ အစည်းအဝေး
ခန်းမ(၁)တွင် ၂၃-၅-၂၀၂၄ ရက်နေ့ကျင်းပပြုလုပ်ခဲ့သည့် နိုင်ငံတော်စီမံအုပ်ချုပ်ရေးကောင်စီလက်ထက်
ဧရာဝတီတိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှုကော်မတီမှခွင့်ပြုပေးခဲ့သည့် ရင်းနှီးမြှုပ်နှံမှု လုပ်ငန်းရှင်များနှင့်
လုပ်ငန်းညှိနှိုင်းအစည်းအဝေးတွင် ဧရာဝတီတိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ တိုင်းဒေသကြီး
အတွင်းဆောင်ရွက်လျက်ရှိသည့် စီမံကိန်းလုပ်ငန်းများနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ဆိုင်ရာသဘောထား
မှတ်ချက်များတောင်းခံလာခြင်းအပေါ် ဆောင်ရွက်ထားရှိမှုအား ရှင်းလင်းဆွေးနွေးခဲ့ရာ တိုင်းဒေသကြီး
ဝန်ကြီးချုပ်မှ ယခုကဲ့သို့သော လုပ်ငန်းညှိနှိုင်းအစည်းအဝေးများအား (၂) လလျှင်(၁) ကြိမ် ကွင်းပ
ဆောင်ရွက်သွားမည်ဖြစ်ရာ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ သဘောထားပြန်ကြားခဲ့သည့်
ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအစီရင်ခံစာ(EIA/ IEE/ EMP) များအား သတ်မှတ်ကာလအတွင်း အချိန်မီ
ပြီးစီးအောင်ရေးဆွဲတင်ပြရန်လိုအပ်ကြောင်း လမ်းညွှန်မှာကြားခဲ့ပါသည်။

၂။ သို့ဖြစ်ပါ၍ အဆိုပါလုပ်ငန်းညှိနှိုင်းအစည်းအဝေးတွင်ဆွေးနွေးခဲ့သည့် စီမံကိန်းလုပ်ငန်း အမျိုး
အစား(၁၇)ခုနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ဆိုင်ရာသဘောထားမှတ်ချက်များအပေါ် လုပ်ငန်းလည်ပတ်
ဆောင်ရွက်လျက်ရှိသော်လည်း အစီရင်ခံစာပြုစုတင်ပြရန်ကျန်ရှိနေသည့် ပူးတွဲဖော်ပြပါလုပ်ငန်းများ
အနေဖြင့် အစီရင်ခံစာများပြုစုရေးဆွဲ၍ ပြန်လည်တင်ပြရန်လိုအပ်ကြောင်းနှင့် အစီရင်ခံစာများရေးဆွဲ



Appendix 2 Submission on Selecting of Third Party to Prepare IEE Report



C-53, Pathein Industrial Zone, Pathein-Nga Pu Taw road, Pathein Township, Ayarwaddy Region, Myanmar 10011

စာအမှတ်။ ။ GS/Management/၀၀၃

ရက်စွဲ ။ ။ ၂၀၂၄ ခုနှစ်၊ ဩဂုတ်လ (၆) ရက်

သို့

ညွှန်ကြားရေးမှူးချုပ်ရုံး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ရုံးအမှတ် (၅၈) ၊ နေပြည်တော်

အကြောင်းအရာ။ Green Shine Co., Ltd. ၏ ဆန်၊ ပြောင်းကြိတ်ခွဲခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ ကနဦးပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) အစီရင်ခံစာ ရေးသားပြုစုမည့် တတိယ အဖွဲ့အစည်း နှင့်ပတ်သက်၍ တင်ပြခြင်းကိစ္စ။

ရည်ညွှန်းချက် ။ (၁) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်ရုံး၊ ဧရာဝတီတိုင်းဒေသကြီး၏ ၂၈-၅-၂၀၂၄ ရက်စွဲပါ စာအမှတ်၊ EIA/ARIC (သဘောထား)/ (၁၅၁၈/၂၀၂၄)

၁။ အကြောင်းအရာပါကိစ္စနှင့် ပတ်သက်၍ Green Shine Co., Ltd. မှ အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ပုသိမ်-ငပုတော ကားလမ်း၊ ပုသိမ်စက်မှုစီမံကိန်း၏ အမှတ် (စီ-၅၃) ၊ ဧရိယာ (၃.၃၆) ဧကပေါ်တွင် ဖက်စပ်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုဖြင့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ် တင်ပို့ရောင်းချခြင်း ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) အစီရင်ခံစာ ရေးဆွဲ၍ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြအတည်ပြုချက် ရယူရန် ရည်ညွှန်းချက်(၁) ပါစာဖြင့် သဘောထားမှတ်ချက် ပြန်ကြားခဲ့ပါသည်။

၂။ အဆိုပါ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို ရေးဆွဲဆောင်ရွက်ရန် အတွက် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင် ရရှိထားသော တတိယအဖွဲ့အစည်းဖြစ်သည့် E Guard Environmental Services Co., Ltd. အား Green Shine Co., Ltd. မှ စိစစ်ရွေးချယ်ခဲ့ပါသည်။



C-53, Patheingyi Industrial Zone, Patheingyi-Nga Pu Taw road,
Patheingyi Township, Ayeyarwady Region, Myanmar 10011

၃။ သို့ဖြစ်ပါ၍ E Guard Environmental Services Co., Ltd. မှ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာကို ရေးဆွဲဆောင်ရွက်နိုင်ရေးအတွက် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာနမှ တတိယအဖွဲ့အစည်း ရွေးချယ်တင်ပြခြင်းကိစ္စအား စိစစ်ခွင့်ပြုပေးနိုင်ပါရန် လိုအပ်သော စာရွက်စာတမ်း အထောက်အထားများအား ပူးတွဲပေးပို့တင်ပြအပ်ပါသည်။

ပူးတွဲပါ -

၁။ Submission Form of Selected Consultants for Environmental Impact Assessment

၂။ တတိယအဖွဲ့အစည်းနှင့် သက်ဆိုင်သော စာရွက်စာတမ်းအထောက်အထားများ (၁) စုံ

လေးစားစွာဖြင့်

Operation General Manager

Green Shine Co.,Ltd.

မိတ္တူကို

- ညွှန်ကြားရေးမှူးရုံး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၊ ဧရာဝတီတိုင်းဒေသကြီး။
- E Guard Environmental Services Co., Ltd.။
- ရုံးလက်ခံ။

Appendix 3 Third Party Confirmation Letter



ပတ် ဝန်း ကျင် ထိန်း သိမ်း ရေး ဦး စီး ဌာ န
ညွှန် ကြား ရေး မှူး ရုံး
ဧ ရာ ဝ တီ တိုင်း ဒေ သ ကြီး
စာအမှတ် ၊ EIA/ IEE/ TP (အတည်ပြု) (၂၅၂၅/၂၀၂၄)
ရက်စွဲ ၊ ၂၀၂၄ ခုနှစ်၊ စက်တင်ဘာလ ၂ ရက်

သို့

မန်နေဂျင်းဒါရိုက်တာ
Green Shine Co., Ltd.

အကြောင်းအရာ။ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာရေးဆွဲမည့် တတိယ
အဖွဲ့အစည်းနှင့် စပ်လျဉ်း၍ သဘောထားမှတ်ချက်ပြန်ကြားခြင်း

ရည် ညွှန်း ချက် ။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်ရုံး၏ ၂၉-၈-၂၀၂၄
ရက်စွဲပါစာအမှတ်၊ EIA- ၁/၇/သဘောထား(TP-R) (၃၇၈၉/၂၀၂၄)

၁။ အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ Green Shine Co., Ltd. မှ ဧရာဝတီတိုင်းဒေသကြီး၊
ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းစောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်- (၆၇)၊ ပုသိမ်-
ငပုတောကားလမ်း၊ ပုသိမ်စက်မှုဇုန်၊ အမှတ် (စီ-၅၃) ရှိ မြေဧရိယာ (၃.၃၆) ဧကတွင် အကောင်
အထည်ဖော်ဆောင်ရွက်မည့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအတွက်
ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာအား E- Guard Environmental Services Co.,
Ltd. ဖြင့် ဆောင်ရွက်ခွင့်ပြုနိုင်ပါရန် လုပ်ငန်းရှင်မှ ဦးစီးရုံးချုပ်သို့ တင်ပြခဲ့မှုအပေါ် ဦးစီးရုံးချုပ်က
အောက်ဖော်ပြပါအတိုင်းဆောင်ရွက်ရန် လိုအပ်ကြောင်း လုပ်ငန်းရှင်သို့ ဆက်လက်ပြန်ကြားရန်
ရည်ညွှန်းချက်ပါစာဖြင့် အကြောင်းကြားလာပါသည်-

- (က) E- Guard Environmental Services Co., Ltd. အား Green Shine Co., Ltd. မှ
ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းစောက်
ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်- (၆၇)၊ ပုသိမ်- ငပုတောကားလမ်း၊ ပုသိမ်စက်မှုဇုန်၊
အမှတ် (စီ-၅၃) ရှိ မြေဧရိယာ (၃.၃၆) ဧကတွင် အကောင်အထည်ဖော်ဆောင်ရွက်
မည့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအတွက် ကနဦး
ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာကို ပူးတွဲပါလေ့လာဆန်းစစ်ရေး
အဖွဲ့ဝင်များဖြင့် ဆောင်ရွက်မည့်အပေါ် အတည်ပြုကြောင်းနှင့် Supporting Staff
(၂) ဦးအား ဆောင်ရွက်ခွင့်ပြုကြောင်း၊

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(ခ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၃၄၊ ၃၅၊ ၃၆၊ ၃၇ ပါ သတ်မှတ်ချက်များနှင့်အညီ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာကို ရေးဆွဲပြုစု၍ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြအတည်ပြုချက်ရယူရန်။

၂။ သို့ဖြစ်ပါ၍ Green Shine Co., Ltd. မှ ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့် မြို့နယ်၊ ချောင်းစောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ် - (၆၇)၊ ပုသိမ် - ငပုတောကားလမ်း၊ ပုသိမ် စက်မှုဇုန်၊ အမှတ် (စီ-၅၃) ရှိ မြေဧရိယာ (၃.၃၆) ဧကတွင် အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာနှင့်စပ်လျဉ်း၍ အထက်အပိုဒ် (၁) ပါ အချက်များအား လိုက်နာဆောင်ရွက်ရန် လိုအပ်ကြောင်း ဆက်လက်အကြောင်းကြားပါသည်။

ပူးတွဲ - Green Shine Co., Ltd. မှ အကောင်အထည်ဖော်ဆောင်ရွက်မည့် ဆန်၊ ပြောင်း ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ရောင်းချခြင်းလုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာ ဆောင်ရွက်မည့် လေ့လာဆန်းစစ်ရေးအဖွဲ့ဝင်များစာရင်း

တိုင်းဒေသကြီးတာဝန်ခံ
(ထွန်းထွန်းဦး-၁၊ ဒုတိယညွှန်ကြားရေးမှူး)
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မိတ္တူကို
E-Guard Environmental Services Co., Ltd. ၊ အကြံပေးအဖွဲ့အစည်းအမျိုးအစား (က) (EIA
CO (A)-001/2023)
ရုံးလက်ခံ/ မျှောစာတွဲ

Appendix 4 E Guard Consultant Organization License




ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
 The Government of the Republic of the Union of Myanmar
 သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
 Ministry of Natural Resources and Environmental Conservation
 ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
 Environmental Conservation Department
 ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်းလိုင်စင် (အဖွဲ့အစည်း)
Environmental Impact Assessment License (Organization)

E Guard Environmental Services Co.,Ltd ၊ ကုမ္ပဏီမှတ်ပုံတင်အမှတ်-၁၁၀၄၈၇၂၂၃ အား အကြံပေးအဖွဲ့အမျိုးအစား(က) အဖြစ် လုပ်ကိုင်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ငန်းလိုင်စင်ကို ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းလုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ဤဝန်ကြီးဌာန၏ အတည်ပြုချက်ဖြင့် ထုတ်ပေးလိုက်သည်။

It is hereby issued that E Guard Environmental Services Co.,Ltd ၊ Registration No.110487223 has fulfilled the requirements for obtaining an Environmental Impact Assessment License to conduct as an **Consulting Organization Type (A)** under the Licensing Procedure for the Third Persons or Organizations Undertaking Initial Environmental Examination and Environmental Impact Assessment, approved by the Ministry of Natural Resources and Environmental Conservation.

လေ့လာဆန်းစစ်ခွင့်ရှိသည့် စီမံကိန်းလုပ်ငန်းအုပ်စုများမှာ ပူးတွဲပါအတိုင်း ဖြစ်သည်။
 The categories of projects, eligible to be conducted, are as attached.

လိုင်စင်နံပါတ် License Number	: EIA-CO(A)001/2023 (ထပ်တိုး)
ထုတ်ပေးသည့် ရက်စွဲ Date of Issue	: 1-1-2024
ကုန်ဆုံးသည့် ရက်စွဲ Date of Expiry	: 31-12-2026






(သိန်းတိုး)
 ညွှန်ကြားရေးမှူးချုပ်

E Guard Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(A)001/2023

(က) အဓိကအကြံပေးပုဂ္ဂိုလ်များ

စဉ်	အမည်	လုပ်ငန်းလိုင်စင်အမှတ်	မှတ်ချက်
၁	၂	၃	၄
(က) အကြံပေးပုဂ္ဂိုလ်			
၁	ဦးအေးသီဟ	EIA-C 005/2023	
၂	ဒေါ်သိမ်မွေခင်	EIA-C 006/2023	
၃	ဦးသော်တာထွန်း	EIA-C 007/2023	
၄	ဦးအောင်မြင့်မြတ်	EIA-C 008/2023	
၅	ဒေါ်ယုဝေယံသိန်းတန်	EIA-C 009/2023	
၆	ဦးစိုးမင်း	EIA-C 031/2023	
၇	ဦးတင်အောင်မိုး	EIA-C 055/2024	
၈	ဒေါ်သက်မျိုးခင်	EIA-C 054/2024	
၉	ဒေါက်တာရွှေစင်ကိုကို	EIA-C 061/2024	
(ခ) တွဲဖက်အကြံပေးပုဂ္ဂိုလ်			
၁	ဒေါ်ထက်ရွှေစင်အောင်	EIA-AC 002/2023	
၂	ဒေါ်မေသူဝင်း	EIA-AC 003/2023	
၃	ဦးငြိမ်းချမ်းအောင်	EIA-AC 004/2023	
၄	ဒေါ်ဟေမာန်နှင်း	EIA-AC 005/2023	
၅	ဦးအောင်စည်သူသိန်း	EIA-AC 006/2023	
၆	ဒေါ်မေပွင့်ဖူး	EIA-AC 007/2023	
၇	ဒေါ်ရွှေယမင်းဘို	EIA-AC 009/2023	
၈	ဦးအောင်မိုးဦး	EIA-AC 010/2023	
၉	ဦးမြင့်အောင်	EIA-AC 011/2023	
၁၀	ဒေါ်ရတနာစွမ်းထက်ကျော်	EIA-AC 087/2024	
၁၁	ဦးစည်သူအောင်	EIA-AC 094/2024	
၁၂	ဦးထက်အောင်	EIA-AC 095/2024	
၁၃	ဦးကျော်စိုးမိုး	EIA-AC 088/2024	
၁၄	ဒေါ်မိုးစက်ဝဿန်	EIA-AC 098/2024	

E Guard Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(A)001/2023

(ခ) အဓိကမဟုတ်သော အကြံပေးပုဂ္ဂိုလ်များ

စဉ်	အမည်	လုပ်ငန်းလိုင်စင်အမှတ်	မှတ်ချက်
၁	J	၃	၄
(က) အကြံပေးပုဂ္ဂိုလ်			
၁	မရှိပါ		
(ခ) တွဲဖက်အကြံပေးပုဂ္ဂိုလ်			
၁	ဒေါက်တာသန်းခင်	EIA-AC 012/2023	

E Guard Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(A)001/2023

အဖွဲ့အစည်းက လေ့လာဆန်းစစ်ခွင့်ရှိသော စီမံကိန်းလုပ်ငန်းအုပ်စုများ

စဉ်	လုပ်ငန်းလိုင်စင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်း ပုံစံ (ခ) ပါ စီမံကိန်းလုပ်ငန်းအုပ်စုများ	ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း နောက်ဆက်တွဲ (က) ပါ စီမံကိန်းနံပါတ်များ
၁။	ကုန်းတွင်းရေနံနှင့် သဘာဝဓာတ်ငွေ့စီမံကိန်းလုပ်ငန်း	(၁၂) မှ (၁၄)
၂။	ကမ်းလွန်ရေနံနှင့် သဘာဝဓာတ်ငွေ့စီမံကိန်းလုပ်ငန်း	(၁၅) မှ (၁၇)
၃။	ရေနံနှင့် သဘာဝဓာတ်ငွေ့ ပြုပြင်သန့်စင်ထုတ်လုပ်ခြင်းစီမံကိန်းလုပ်ငန်း	(၁၈) မှ (၂၀) နှင့် (၂၅)
၄။	ရေနံနှင့် သဘာဝဓာတ်ငွေ့ သယ်ယူပို့ဆောင်ခြင်း၊ သိုလှောင်ခြင်းနှင့် ဖြန့်ဖြူးခြင်းလုပ်ငန်း	(၂၁) မှ (၂၃)
၅။	ဓာတ်ငွေ့ရည် (LPG)၊ သဘာဝဓာတ်ငွေ့ (CNG) နှင့် စက်သုံးဆီအရောင်းဆိုင် လုပ်ငန်း	(၂၄)
၆။	ကျောက်မီးသွေးသုံးလျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၅)
၇။	ရေအားလျှပ်စစ်စီမံကိန်းလုပ်ငန်း	(၂)
၈။	အခြားပြန်ပြည့်မြဲစွမ်းအင် စီမံကိန်းလုပ်ငန်း	(၇)၊ (၁၀) နှင့် (၁၁)
၉။	သဘာဝဓာတ်ငွေ့သုံး သို့မဟုတ် ဇီဝဓာတ်ငွေ့သုံး လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း လုပ်ငန်း	(၄)
၁၀။	ဓာတ်ငွေ့၊ အပူစွမ်းအင်နှင့် အပူငွေ့သုံး လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၈) နှင့် (၉)
၁၁။	စွန့်ပစ်ပစ္စည်းမှ လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၆)
၁၂။	လျှပ်စစ်ဓာတ်အား ဖြန့်ဖြူးခြင်းလုပ်ငန်း	(၂၆) မှ (၂၈)
၁၃။	စိုက်ပျိုးရေးထုတ်ကုန်များ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၂၉) နှင့် (၃၀)
၁၄။	မွေးမြူရေးဆိုင်ရာလုပ်ငန်း	(၃၁) မှ (၃၃)၊ (၃၇) နှင့် (၃၈)
၁၅။	ရေလုပ်ငန်းဆိုင်ရာလုပ်ငန်း	(၃၄) မှ (၃၆)
၁၆။	သစ်တောထိန်းသိမ်းအုပ်ချုပ်ခတ်လှဲထုတ်လုပ်ခြင်းဆိုင်ရာ ဖွံ့ဖြိုးရေးလုပ်ငန်း	(၃၉) နှင့် (၄၀)
၁၇။	အစားအစာ ပြုပြင်မွမ်းမံထုတ်လုပ်ခြင်းလုပ်ငန်း	(၄၂) မှ (၅၂) နှင့် (၅၇)
၁၈။	အဖျော်ယမကာ ပြုပြင်မွမ်းမံထုတ်လုပ်ခြင်းလုပ်ငန်း	(၅၃) မှ (၅၆)
၁၉။	အဝတ်အထည်၊ ချည်ထည် ထုတ်လုပ်ခြင်းနှင့် ဆေးဆိုးခြင်းလုပ်ငန်း	(၅၈) နှင့် (၅၉)
၂၀။	သားရေထည်ပစ္စည်း ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၆၀) နှင့် (၆၁)
၂၁။	သစ်စက်၊ သစ်အချောထည်ပစ္စည်း၊ သစ်သားပြားနှင့် သစ်အပိုင်းအစ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၆၂) နှင့် (၆၃)
၂၂။	ပျော့ဖတ်နှင့် စက္ကူထုတ်လုပ်ခြင်းလုပ်ငန်း	(၆၄)
၂၃။	ပုံနှိပ်လုပ်ငန်းနှင့်အခြားအလှဆင်လုပ်ငန်း	(၆၅)

E Guard Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(A)001/2023

အဖွဲ့အစည်းက လေ့လာဆန်းစစ်ခွင့်ရှိသော စီမံကိန်းလုပ်ငန်းအုပ်စုများ

စဉ်	လုပ်ငန်းလိုင်စင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်း ပုံစံ (ခ) ပါ စီမံကိန်းလုပ်ငန်းအုပ်စုများ	ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း နောက်ဆက်တွဲ (က) ပါ စီမံကိန်းနံပါတ်များ
၂၄။	ဓာတုပစ္စည်းထုတ်လုပ်ခြင်းလုပ်ငန်း	(၆၆) မှ (၇၅)
၂၅။	ပေါက်ကွဲစေတတ်သော ပစ္စည်းများထုတ်လုပ်ခြင်းလုပ်ငန်း	(၇၆) မှ (၇၈)
၂၆။	ဖန်ထည်/မှန်ထည်နှင့် ကြောထည်ပစ္စည်းထုတ်လုပ်ခြင်းလုပ်ငန်း	(၇၉) နှင့် (၈၀)
၂၇။	ဘီလပ်မြေ၊ အခြားဆောက်လုပ်ရေးကုန်ကြမ်းပစ္စည်းများနှင့် နိုင်လွန်ကတ္တရာ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၈၁) မှ (၈၄)
၂၈။	သတ္တုပစ္စည်းထုတ်လုပ်သန့်စင်ခြင်းလုပ်ငန်း	(၈၅) မှ (၈၈)
၂၉။	သင်္ဘောကျင်း၊ သင်္ဘောနှင့် ရထားတည်ဆောက်ပြုပြင်တပ်ဆင်ခြင်းလုပ်ငန်း	(၈၉) နှင့် (၉၀)
၃၀။	ရာဘာ နှင့် စက်မှုလုပ်ငန်းသုံးကုန်ကြမ်းပစ္စည်းများ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၉၁) မှ (၉၃)
၃၁။	လျှပ်စစ်ပစ္စည်းနှင့် အီလက်ထရောနစ်ပစ္စည်းများ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၉၄) မှ (၉၆)
၃၂။	စက်ပစ္စည်း၊ ယာဉ်နှင့် စက်ကိရိယာပစ္စည်းများ ထုတ်လုပ်ပြုပြင်တပ်ဆင်ခြင်း လုပ်ငန်း	(၉၇) မှ (၁၀၁)
၃၃။	ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်း ပြန်လည် အသုံးပြုခြင်း၊ စွန့်ပစ်ခြင်းနှင့် မီးရှို့ခြင်းလုပ်ငန်း	(၁၀၃) မှ (၁၀၅)
၃၄။	ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း ပြန်လည်အသုံးပြုခြင်းနှင့် စွန့်ပစ်ခြင်း လုပ်ငန်း	(၁၀၆) နှင့် (၁၀၇)
၃၅။	စွန့်ပစ်ရေနှင့် ရေဆိုးများ ပြုပြင်သန့်စင်တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၀၈) နှင့် (၁၀၉)
၃၆။	စက်မှုလုပ်ငန်း၊ စိုက်ပျိုးရေးလုပ်ငန်း သို့မဟုတ် မြို့ပြရေပေးဝေရေးအတွက် မြေအောက်ရေဖွံ့ဖြိုးရေးလုပ်ငန်း	(၁၁၀)
၃၇။	ဆည်၊ ရေလှောင်တံနှင့် ဆည်မြောင်း စနစ် တည်ဆောက်ခြင်းလုပ်ငန်း	(၄၁) နှင့် (၁၁၁)
၃၈။	အများပြည်သူကို ထိခိုက်စေနိုင်သော ရေကန်၊ မြစ်၊ ချောင်း၊ တူးမြောင်းများ မြေဖို့ခြင်းလုပ်ငန်း	(၁၁၂)
၃၉။	မြို့ပြတည်ဆောက်ရေးအတွက် မြစ်ရေ၊ ပင်လယ်ရေထိန်း နှံ့ရံတည်ဆောက်ခြင်း၊ ကမ်းလွန်ပင်လယ်ရေ တားဆီးခြင်း လုပ်ငန်း	(၁၁၃)
၄၀။	သောင်တူးခြင်းနှင့်မြစ်ကြောင်းထိန်းသိမ်းခြင်းလုပ်ငန်း	(၁၁၄)နှင့်(၁၁၅)
၄၁။	စက်မှုဇုန်တည်ဆောက်ရေးနှင့် ဖွံ့ဖြိုးရေးလုပ်ငန်း	(၁၁၈)
၄၂။	ဆေးရုံတည်ဆောက်ခြင်းလုပ်ငန်း	(၁၁၉)
၄၃။	သုသာန်၊ သင်္ချိုင်း တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၂၀)
၄၄။	ဟိုတယ်နှင့် ခရီးသွားဖွံ့ဖြိုးရေးလုပ်ငန်း	(၁၂၁)
၄၅။	ဂေါက်ကွင်းတည်ဆောက်ခြင်းလုပ်ငန်း	(၁၂၂)
၄၆။	လူနေအိမ်ရာဖွံ့ဖြိုးရေး၊ ပြန်လည်နေရာချထားရေးဆိုင်ရာ မြို့ပြဖွံ့ဖြိုးရေးနှင့် မြို့သစ်တည်ဆောက်ရေး စီမံကိန်း လုပ်ငန်း	(၁၄၂)
၄၇။	မြစ်ချောင်း၊ အင်းအိုင်၊ ကမ်းရိုးတန်း၊ သဘာဝအရင်းအမြစ်များ၊ ယဉ်ကျေးမှုအမွေအနှစ်များနှင့် ဆက်စပ်သောလုပ်ငန်း	(၁၅၁)မှ (၁၅၅)

E Guard Environmental Services Co.,Ltd

လိုင်စင်နံပါတ် License Number : EIA-CO(A)001/2023

အဖွဲ့အစည်းက လေ့လာဆန်းစစ်ခွင့်ရှိသော စီမံကိန်းလုပ်ငန်းအုပ်စုများ

စဉ်	လုပ်ငန်းလိုင်စင်ဆိုင်ရာလုပ်ထုံးလုပ်နည်း ပုံစံ (ခ) ပါ စီမံကိန်းလုပ်ငန်းအုပ်စုများ	ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း နောက်ဆက်တွဲ (က) ပါ စီမံကိန်းနံပါတ်များ
၄၈။	အိပ်ဆောင်များ၊ ကွန်ဒိုမီနီယံအဆောက်အဦ တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၄၃)
၄၉။	ဘက်စုံအားကစားကွင်း တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၄၄)
၅၀။	အထူးစီးပွားရေးဇုန်တည်ဆောက်ရေးနှင့် ဖွံ့ဖြိုးရေးစီမံကိန်းလုပ်ငန်း	(၁၄၅)
၅၁။	ကုန်တိုက်ကြီးများ၊ ကုန်သွယ်ရေးဌာန၊ အဆင့်မြင့်ဈေးများ တည်ဆောက်ခြင်း လုပ်ငန်း	(၁၄၆)
၅၂။	မြေအောက်ထပ် တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၄၇)
၅၃။	အခြေခံအဆောက်အအုံလုပ်ငန်း	(၁၄၈)
၅၄။	စားသောက်ဆိုင်လုပ်ငန်း	(၁၅၀)
၅၅။	မီးရထားနှင့် လျှပ်စစ်ရထား ပို့ဆောင်ရေးလုပ်ငန်း	(၁၂၃)
၅၆။	ကြိုးတပ်ကား တပ်ဆင်ပြေးဆွဲခြင်းလုပ်ငန်း	(၁၂၄)
၅၇။	လေဆိပ်နှင့် လေယာဉ်ပြေးလမ်း တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၂၅)
၅၈။	တံတား၊ မြစ်ကူးတံတား၊ ဂုံးကျော်တံတား တည်ဆောက်ခြင်းနှင့် အဆင့်မြင့် တင်ခြင်းလုပ်ငန်း	(၁၂၆) နှင့် (၁၂၇)
၅၉။	ဥမင်လိုဏ်ခေါင်းဖောက်လုပ်ခြင်းလုပ်ငန်း	(၁၂၈)
၆၀။	အဝေးပြေးလမ်းမအသစ် ဖောက်လုပ်ခြင်းလုပ်ငန်း	(၁၂၉)
၆၁။	လမ်းတည်ဆောက်ခြင်းနှင့် အဆင့်မြင့်တင်ခြင်းလုပ်ငန်း	(၁၃၀) နှင့် (၁၃၁)
၆၂။	သင်္ဘောသွားလာရေးလုပ်ငန်း	(၁၁၆)
၆၃။	ဆိပ်ကမ်းတည်ဆောက်ခြင်းလုပ်ငန်း	(၁၁၇)
၆၄။	အဝေးပြေးကားဂိတ်ကြီးများ တည်ဆောက်ခြင်းလုပ်ငန်း	(၁၄၉)
၆၅။	ကျောက်သဲထုတ်လုပ်ခြင်း၊ ဆောက်လုပ်ရေးလုပ်ငန်းသုံးနှင့် ကြွေထည် မြေထည် လုပ်ငန်းသုံး ကုန်ကြမ်းပစ္စည်းများ ထုတ်လုပ်ခြင်းလုပ်ငန်း	(၁၃၂) နှင့် (၁၃၃)
၆၆။	စက်မှုတွင်းထွက်ကုန်ကြမ်း တူးဖော်ထုတ်လုပ်ခြင်းနှင့် သန့်စင်ခြင်းလုပ်ငန်း	(၁၃၄)
၆၇။	မြေပေါ်နှင့် မြေအောက် သတ္တုတူးဖော်ထုတ်လုပ် ပြုပြင်သန့်စင်ခြင်းလုပ်ငန်း	(၁၃၅) မှ (၁၄၁)
၆၈။	ဆက်သွယ်ရေးကွန်ရက်ဖွံ့ဖြိုးရေးလုပ်ငန်း	(၁၅၆) နှင့် (၁၅၇)

Appendix 5 Company Registration License



ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်
Certificate of Incorporation

GREEN SHINE COMPANY LIMITED
Company Registration No. 134987804

မြန်မာနိုင်ငံကုမ္ပဏီများဥပဒေ ၂၀၁၇ အရ
GREEN SHINE COMPANY LIMITED
အား ၂၀၂၂ ခုနှစ် အောက်တိုဘာလ ၇ ရက်နေ့တွင်
အစုရှယ်ယာအားဖြင့် တာဝန်ကန်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ
အဖြစ် ဖွဲ့စည်းမှတ်ပုံတင်ခွင့်ပြုလိုက်သည်။

This is to certify that
GREEN SHINE COMPANY LIMITED
was incorporated under the Myanmar Companies Law 2017 on 7 October
2022 as a Private Company Limited by Shares.



ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ
Registrar of Companies
ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန
Directorate of Investment and Company Administration



DICA
Directorate of Investment and
Company Administration

Appendix 6 MIC Permit



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်
အမှတ်(၁)၊ သစ္စာလမ်း၊ ရန်ကင်းမြို့နယ်၊ ရန်ကုန်မြို့



တယ်လီဖုန်း-၀၁-၆၅၇၈၉၃
ဖက်(စ်) -၀၁-၆၅၇၈၂၄
သို့

စာအမှတ်၊ မရက-၉ / မ- ထွေ / ၂၀၂၃ (၆၆၉၂)
ရက်စွဲ ၂၀၂၃ ခုနှစ်၊ စက်တင်ဘာလ ၂၃ ရက်

မန်နေဂျင်းဒါရိုက်တာ
Green Shine Co.,Ltd.

အကြောင်းအရာ ။ Green Shine Co.,Ltd. က စီးပွားဖြစ်စတင်သည့်နေ့သတ်မှတ် ပေးပါရန် တင်ပြလာခြင်းကိစ္စ

ရည် ညွှန်း ချက် ။ Green Shine Co.,Ltd. ၏ ၄-၉-၂၀၂၃ ရက်စွဲပါစာ

၁။ ရောဝတီတိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ၏ ၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ ၁၉ ရက်စွဲပါ အတည်ပြုမိန့်အမှတ် ရော-(၀၇၀/၂၀၂၃)အရ အမှတ်(စီ-၅၃)၊ ပုသိမ်စက်မှုမြို့တော်၊ ပုသိမ်- ငပတောလမ်း၊ ကွင်းအမှတ်(၆၇)၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ကန်ကြီးထောင့်မြို့နယ်၊ ပုသိမ်ခရိုင်၊ ရောဝတီတိုင်းဒေသကြီးတွင် ဆန်၊ ပြောင်း၊ ပဲအမျိုးမျိုးကြိတ်ခွဲထုတ်လုပ် တင်ပို့ရောင်းချခြင်းလုပ်ငန်း ဆောင်ရွက်လျက်ရှိသည့် Green Shine Co.,Ltd. ၏ စီးပွားဖြစ်စတင်သည့်နေ့ကို ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ ၃ ရက်နေ့အဖြစ် အတည်ပြုသတ်မှတ်ပါသည်။

၂။ သို့ဖြစ်ပါ၍ မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုဥပဒေပုဒ်မ ၇၅၊ ပုဒ်မခွဲ(က) အရ စီးပွားဖြစ်လုပ်ငန်း စတင်သည့် ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ ၃ ရက်နေ့မှစ၍ ဝင်ငွေခွန်ကင်းလွတ်ခွင့်ကာလ ၅ နှစ် ခံစားခွင့်ပြုသဖြင့် သက်ဆိုင်ရာဌာနများနှင့် ဆက်သွယ်ဆောင်ရွက်နိုင်ရန် အကြောင်းကြားပါသည်။

ဥက္ကဋ္ဌ(ကိုယ်စား)
(သန့်စင်လွင်၊ အတွင်းရေးမှူး)

မိတ္တူကို
ရောဝတီတိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ
ပြည်ထောင်စုဝန်ကြီးရုံး၊ စီမံကိန်းနှင့်ဘဏ္ဍာရေးဝန်ကြီးဌာန

Appendix 7 Department of Public Health Recommendation



ပြည်ထောင်စုမြန်မာနိုင်ငံတော်
ကျန်းမာရေးဝန်ကြီးဌာန
ကန်ကြီးထောင့်မြို့နယ်ပြည်သူ့ကျန်းမာရေးဦးစီးဌာန

ကျန်းမာရေးဘေးအန္တရာယ်ကင်းရှင်းကြောင်း ထောက်ခံချက်

ရောဂါတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်ပြည်သူ့ ကျန်းမာရေး ဦးစီးဌာနသည် အများပြည်သူတို့အား ဘေးအန္တရာယ်ဖြစ်စေတတ်သော လုပ်ငန်းကို စစ်ဆေးရာတွင် ကျန်းမာရေးစည်းကမ်းချက်များနှင့် ကိုက်ညီကြောင်း စစ်ဆေးတွေ့ရှိရသဖြင့် အောက်ဖော်ပြပါလုပ်ငန်းအား အများပြည်သူအတွက် ကျန်းမာရေးဘေးအန္တရာယ် ကင်းရှင်းကြောင်း ထောက်ခံချက်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်။

လုပ်ငန်းအမျိုးအစား	- GREEN SHINE Co.Ltd (ဆန်ကြိတ်ခွဲထုတ်လုပ်တင်ပို့ခြင်းလုပ်ငန်း)
လုပ်ငန်းပိုင်ရှင်အမည်	- ဦးမင်းဂေါင်ဦး (၁၂/မဟန (နိုင်) ၀၉၀၃၃၃)
လုပ်ငန်းလိပ်စာ	- ချောင်းစောက်ကျေးရွာ၊ ကန်ကြီးထောင့်မြို့နယ်၊
ထုတ်ပေးသည့်ရက်စွဲ	- (၄ . ၁၂ . ၂၀၂၄)

လက်မှတ် 

အမည် ဒေါက်တာ ဝင်းမာလွင်

ရာထူး ဆေး-၁၇၀၈၄

ရုံးတံဆိပ် ပြည်သူ့ကျန်းမာရေးဦးစီးဌာန၊
ကန်ကြီးထောင့်မြို့နယ်

Appendix 8 Recommendation from Fire Service Department



သို့

သက်ဆိုင်ရာ

မြို့နယ် မီး သတ် ဦး စီး မှူး ရုံး
ကန်ကြီးထောင့်မြို့နယ် ၊ ကန်ကြီးထောင့်မြို့
စာအမှတ်၊ ၈၇၉ / ၁၀ / ၁ / ဦး - ၁
ရက် စွဲ၊ ၂၀၂၄ခုနှစ်၊ ဒီဇင်ဘာလ ၃ ရက်

အကြောင်းအရာ။ ထောက်ခံချက်ပေးခြင်း

၁။ အထက်အကြောင်းရာပါ ကိစ္စနှင့်ပတ်သက်၍ ရောဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းစောက်ကျေးရွာနေ (ဘ)ဦးညီညီဦး၏(သား) ဦးမင်းဂေါင်ဦး၊ နိုင်ငံသားစိစစ်ရေးကဒ်ပြားအမှတ်၁၂/ဗဟန(နိုင်)၀၉၀၃၃၃ ကိုင်ဆောင်သူသည်၎င်းပိုင်ဆိုင်သော မြေနေရာပေါ်တွင် GREEN SHINE Co.,LTD ပိုင်ဆိုင်သော တန်(၂၀၀)ဆန်ကြိတ်ခွဲထုတ်လုပ် တင်ပို့ခြင်းနှင့် သိုလှောင်ရုံ လုပ်ငန်းလိုင်စင်ပြုလုပ်ရန် လျှောက်ထားလာမှုအပေါ် မီးသတ်ဦးစီးဌာန အနေဖြင့် အောက်ပါအတိုင်းအကြံပြုအပ်ပါသည်-

- (က) စက်ရုံပတ်လမ်းများတွင် မီးသတ်ကားများအလွယ်တကူဝင်/ထွက်သွားလာနိုင်အောင် ပြုလုပ်ထားရန်။
- (ခ) အရေးပေါ်ဖြစ်ပွားလာပါက မီးငြိမ်းသတ်ရန်အတွက် (5KG)DCPမီးသတ်ဆေးဘူး အနည်းဆုံးဘူး (၅၀)ထားရှိရန်။
- (ဂ) အရေးပေါ်ဖြစ်ပွားလာပါက အသုံးပြုရန်အတွက် ရေဂါလန်(၁၅၀၀၀)ဆုံမီးသတ် ရေကန်ထားရှိရန်။
- (ဃ) လူမြင်သာထင်ရှားသောနေရာများတွင် မီးလောင်မှုဖြစ်ပွားပါက အရေးပေါ် ဆက်သွယ်ရန် ဖုန်းနံပါတ်(၁၉၁)အားချိတ်ဆွဲထားရှိရန်။
- (င) ဝင်ပေါက်/ ထွက်ပေါက်များအနီးတွင် အသုံးဆောင်ပစ္စည်းများထားရှိခြင်းမပြုရန်။
- (စ) အဆောက်အအုံတွင်ထည့်သွင်းတည်ဆောက်ထားသော(Steel Structure) အစိတ်အပိုင်းများအား အပူလျှောက်ကူးခြင်း (Heat Conduction)မှ ကာကွယ်ရန် အတွက် မီးဒဏ်ခံဆေး(Fire Rated Paint) သုတ်လိမ်းပေးရန်နှင့် ဆေးသတ်တမ်း (Warrenty) ကုန်ဆုံးပါက ပြန်လည်သုတ်လိမ်းပေးရန်။
- (ဆ) လက်ဖြင့် ကိုင်တွယ်အသုံးပြုနိုင်သော အပေါ့စားမီးသတ်စက် ပစ္စည်းကိရိယာ များ(Portable Hand Operated Approved Appliances) ကိုတပ်ဆင်ထားရှိရန်။
- (ဇ) ထွက်ပေါက်နှင့် လွတ်မြောက်ပေါက်လမ်းညွှန် သင်္ကေတဆိုင်ဘုတ်များ(Exit & Indicati- On Sing)များကို အဆောက်အအုံရှိ မီးဘေးလွတ်မြောက်ရာ လမ်းကြောင်းများ၊ ထွက်ပေါက်များအနီးနှင့် လူသွားစင်္ကြန်များ တစ်လျှောက်တွင် တပ်ဆင်ထားရှိရန်။

(ဈ) မီးလန့်အချက်ပေးစနစ်များ(Fire Alarm System)ကို အဆောက်အဦတွင် တပ်ဆင်ထားရှိရန်။

(ည) မီးသတ်ရေပတ်ပိုက်ခွေ (Fire Hose Reel)များကိုအဆောက်အဦ၏ အထပ်တိုင်းတွင်တပ်ဆင်ထားရှိပြီး အနည်းဆုံးရေဖိအား 2.5 bar နှင့် ရေထွက်နှုန်း (0.4L/S)ရှိအောင်စီစဉ်ထားရှိရန်နှင့်အနည်းဆုံး(၆)ခုထားရှိရန်။

(ဋ) မြေတွင်းပိုက်ခေါင်း (Hydrant) များကို အဆောက်အဦ၏ ပြင်ပချည်းကပ်လမ်းဘေး တွင်တစ်ခုနှင့်တစ်ခုကြား မီတာ(၁၀၀)ထက်ပိုမဝေးရ။ မြေတွင်းရေပိုက်ခေါင်း (Hydrant)အား Diesel Driving Auto System ဖြင့်အနည်းဆုံးရေဖိအား (3.5 to5.5)bar ထက်ရှိအောင်စီစဉ်ထားရှိရမည်။

၂။ အထက်ပါဖော်ပြပါအကြံပြုချက်များနှင့် အခါအားလျော်စွာမီးသတ်ဦးစီးဌာနမှထုတ်ပြန်သည့် ညွှန်ကြားချက်များအား လိုက်နာဆောင်ရွက်မည်ဆိုပါက ကန့်ကွက်ရန်မရှိပါ။

မှတ်ချက်-(လုပ်ငန်းလိုင်စင်ပြုလုပ်ရန်)


မြို့နယ်မီးသတ်ဦးစီးမှူး
ကန်ကြီးထောင့်မြို့

မိတ္တူ

ရုံးလက်ခံ


Appendix 9 Recommendation from Ward Administrative



ကျေးရွာ အုပ်ချုပ်ရေးမှူးရုံး
ချောင်းတော်ကျေးရွာကန်ကြီးထောင့်မြို့နယ်
စာအမှတ်၊ ၅ / ၄၃ - () / ဦး ၆
ရက်စွဲ၊ ၁၀/၂/၂၀၂၄ ခုနှစ်၊ ဇန်နဝါရီလ ၃ ရက်

ထောက်ခံချက်

ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းတော်ရပ်ကွက်/ကျေးရွာ အုပ်ချုပ်ရေးမှူးရုံး (ပုသိမ်)
နေ ဦး/ ဒေါ် မင်းဂေါ်ဇွဲ နိုင်ငံသားစိစစ်ရေးကော်မရှင်အမှတ်၊ ၁၂ / ဗဟု (ပိုင်) ၀၉၀၃၃၃
(ဘ)ဦး ခင်စိန်ဦး ၏ သား/အမီးသည် ဆန်ကြီးထောင့်မြို့နယ်၊ ချောင်းတော်ရပ်ကွက်
လုပ်ငန်းလုပ်ကိုင်ခြင်းနှင့်ပတ်သက်၍ ကန်ကွက်ရန်မရှိကြောင်း ထောက်ခံအပ်ပါသည်။


အုပ်ချုပ်ရေးမှူး
(ပိုးအောင်)
ကျေးရွာအုပ်ချုပ်ရေးမှူး
ချောင်းတော်ကျေးရွာအုပ်စု
ကန်ကြီးထောင့်မြို့နယ်


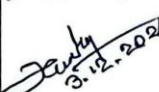


Form11

Appendix 10 Recommendation from Community

ပတ်ဝန်းကျင် ထောက်ခံချက်

ရက်စွဲ။ ဇူလိုင်လ ၁၁ . ၂၀၂၄

ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းအောင်-ရန်ကွက်/ကျေးရွာ အင်းဒုလ္လံမြို့နယ်၊ ၂၁၁၆ နေ ဦး/ ခေါ်-မင်းလင်းမြို့နယ်၊ နိုင်ငံသားစိစစ်ရေးကော်မရှင်းအမှတ်၊ ၁၂/ဗဟု(ခွင့်) ၀၉၀၃၃၃ ကိုင်ဆောင်သူသည် ~~အင်းဒုလ္လံမြို့နယ်၊~~ လုပ်ငန်းလုပ်ကိုင်မည့် နေရာ၏ အရှေ့၊ အနောက်၊ တောင်၊ မြောက်တွင် နေထိုင်သူများမှ ကန်ကွက်ရန်မရှိကြောင်း အောက်တွင် လက်မှတ်ရေးထိုးပါသည်။



အရပ်မျက်နှာ	အမည်	နိုင်ငံသားစိစစ်ရေးကော်မရှင်းအမှတ်	လက်မှတ်
အရှေ့ဘက်	ဦးစော ရှေ့က ၂၁၁- စိစစ်ရေးအမှတ် ၆၄၈၅၅၈ အနက်	၁၄/၈၈၈(ခွင့်) ၁၃၈၃၉၀	 3/11/24
အနောက်ဘက်	ဦးစောဝင်း Power Allstar တို့ ကော်ပို	၁၂/ဗဟု(ခွင့်) ၀၄၂၅၇၄	 3/12/24
တောင်ဘက်	ဦးခင်မောင်မောင်	၇/ပခ(ခွင့်) ၀၀၈၃၅၇	 3/12/24
မြောက်ဘက်	ဦးခင်မောင်မောင်	၁၂/ဗဟု(ခွင့်) ၀၄၇၅၄၈	 3/11/24

၎င်းလုပ်ငန်း လုပ်ကိုင်သည်မှာ မှန်ကန်ကြောင်းနှင့် ကန်ကွက်ရန် မရှိကြောင်း (ထပ်ဆင့်) ထောက်ခံပါသည်။


အုပ်ချုပ်ရေးမှူး
(ဒီးအောင်)
ကျေးလက်စုအုပ်ချုပ်ရေးမှူး
ချောင်းအောင်ကျေးရွာအုပ်စု
ကန်ကြီးထောင့်မြို့နယ်



Form 12

Appendix 11 Water Quality Lab Results

	The Government of the Republic of the Union of Myanmar Ministry of Natural Resources and Environmental Conservation Department of Forest Forest Research Institute Water Quality Laboratory, Yezin		
Ref : WQL/0415/2024 Date: 29-10-2024			
ANALYTICAL TEST REPORT			
Project Name : Initial Environmental Examination for Rice, Corn and Bean Milling Production and Exporting Project			
Customer Address : U Khin Zaw Min (Eguard)			
Assignment number	2024-123-3	Sampling Location	-
Sample name	EW-1	Sampling Date	-
Sample type	Effluent Water	Sample received date	7-10- 2024
Comments			

Parameter	Result	Unit	Method reference	Instruments
pH	6.54	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Temperature	26.96	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Fluoride	1.05	mg/L	ISO 10304-1: 2009	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Ammonia	16.85	mg/L	ISO 14911:1998	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Nickel	2.52	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Arsenic	101	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Cadmium	0.731	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Lead	7.64	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Zinc	1.44	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Copper	4.20	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Mercury	3.07	ug/L	EPA 245.7	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Total Suspended Solid	27	mg/L	NS 4733:1983/NS-EU 872:2005	Circulation and Filtration System
Total Phosphorus	50.25	ug/L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000, SA 1100
BOD	4.02	mg/L	Potetiometric	YSI Pro DO Tester
COD	31	mg/L	Titrimetric	Titratior

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

Tested by Signature :  Name : Dr. Thida Cho Assistant Research Officer	Approved by Signature :  Name : Dr. Thida Swe Assistant Research Officer
---	---



The Government of the Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation



Department of Forest
Forest Research Institute
Water Quality Laboratory, Yezin

Ref : WQL/0416/2024

Date: 29-10-2024

ANALYTICAL TEST REPORT

Project Name : **Initial Environmental Examination for Rice, Corn and Bean Milling Production and Exporting Project**

Customer Address : U Khin Zaw Min (Eguard)

Assignment number	2024-123-4	Sampling Location	-
Sample name	EW-2	Sampling Date	-
Sample type	Effluent Water	Sample received date	7-10- 2024
Comments			

Parameter	Result	Unit	Method reference	Instruments
pH	6.90	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Temperature	27	-	ISO 10523:2008	ManTech Robot (PC-1300-475E)
Fluoride	0.067	mg/L	ISO 10304-1: 2009	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Ammonia	11.53	mg/L	ISO 14911:1998	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Nickel	3.90	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Arsenic	1.30	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Cadmium	0.561	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Lead	3.28	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Zinc	0.582	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Copper	ND	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Mercury	0.679	ug/L	EPA 245.7	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Total Suspended Solid	98	mg/L	NS 4733:1983/NS-EU 872:2005	Circulation and Filtration System
Total Phosphorus	690.97	ug/L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000, SA 1100
BOD	5.19	mg/L	Potetiometric	YSI Pro DO Tester
COD	36	mg/L	Titrimetric	Titratior

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

Tested by

Signature :



Name : Dr. Thida Cho
Assistant Research Officer

Approved by

Signature :



Name : Dr. Thida Swe
Assistant Research Officer



The Government of the Republic of the Union of Myanmar
Ministry of Natural Resources and Environmental Conservation



Department of Forest
Forest Research Institute
Water Quality Laboratory, Yezin

Ref : WQL/0413/2024

Date: 29-10-2024

ANALYTICAL TEST REPORT

Project Name: - Initial Environmental Examination for Rice, Corn and Bean Milling Production and Exporting Project

Customer Address : U Khin Zaw Min (Eguard)

Assignment number	2024-123-1	Sampling Location	Ayeyarwady Region
Sample name	GW	Sampling Date	-
Sample type	Ground Water	Sample received date	7-10- 2024
Comments			

Parameter	Result	Unit	Method reference	Instruments
Color	ND	mg Pt/l	ISO 7887:2011	ManTech Robot (UV mini - 1240)
Chloride	159.87	mg/L	ISO 14911:1998	Ion Chromatography (Thermo Scientific, DIONEX AQUION)
Arsenic	1.05	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Cadmium	0.453	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Chromium	3.24	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Zinc	1.02	ug/L	EPA 200.9	Atomic Absorption Spectrophotometer AA 500, PG Instruments
Total Phosphorus	4.56	ug/L	NS 4725	SFA(SKALAR SAN plus Analyzer) SA 3000/5000, SA 1100
Total Nitrogen	2.15	mg/L	Kjeldahl Method	Kjeldahl Digestion and Distillation Unit
BOD	0.80	mg/L	Potentiometric	YSI Pro DO Tester
COD	5.4	mg/L	Titrimetric	Titration

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

Tested by

Signature :



Name : **Dr. Thida Cho**
 Assistant Research Officer

Approved by

Signature :



Name : **Dr. Thida Swe**
 Assistant Research Officer

PRO LAB
ANALYTICAL LABORATORY

Myanmar Innovation Group of Co., Ltd
Address : No. (9), Sabae Housing, Pyi Htaung Su Road,
(26) Ward, South Dagon Tsp, Yangon, Myanmar.
Tel : 09-893 767 424
E-mail : info@prolabmyanmar.com

LABORATORY ANALYSIS REPORT

- 1 Client Name : Initial Environmental Examination for Rice, Corn and Bean Milling Production and Exporting Project
- 2 Location : No. C - 53, Pathein Industrial City, Pathein - Nga Pu Taw Road, Pathein Tsp, Ayeyarwady Region
- 3 Type of Sample : Effluent Water - 2
- 4 Sample No. : 01265/2024
- 5 Contact Person : Eguard Environmental Services
- 6 Phone No. : 09-797005212
- 7 Date Received : 08.10.2024
- 8 Date of Test Performed : 08.10.2024
- 9 Date of Issued : 21.10.2024
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Chromium (Total)	< 0.005	mg/L	-	Inductively Coupled Plasma-Optical Emission Spectrometry (IPC-OES) Method
2	Cyanide	0.012	mg/L	-	Hach DR 3900 Spectrophotometer, Pyridine - Pyrazalone Method
3	Iron	1.96	mg/L	-	^(a) 3500-F B, Phenanthroline Method
4	Oil and Grease	17	mg/L	-	^(a) 5520D, Soxhlet Extraction Method
5	Phenols	0.36	mg/L	-	^(a) 5530D, Direct Photometric Method
6	Silver	0.043	mg/L	-	Inductively Coupled Plasma-Optical Emission Spectrometry (IPC-OES) Method
7	Sulfide	57	µg/L	-	Hach DR 3900 Spectrophotometer, USEPA Methylene Blue Method
8	Selenium	0.11	mg/L	-	Microwave Plasma Atomic Emission Spectroscopy Method
9	Total Chlorine	Nil	mg/L	-	Hanna HI97104 - Free & Total Chlorine Photometer
10	Total Coliform	290	MPN/ml	-	FDA-BAM: MPN Method

Remark:

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

Dispose treated waste water according to state and local regulations.

^(a) American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

Tested By

Name : NAW EH THA KU
Position : Laboratory Technician
Signature :*eh*.....



Approved By

Name : KYAWT KYAWT YIN
Position : Technical Consultant Manager
Signature :*ky*.....



Myanmar Innovation Group of Co., Ltd
 Address : No. (9), Sabae Housing, Pyi Htaung Su Road,
 (26) Ward, South Dagon Tsp, Yangon, Myanmar.
 Tel : 09-893 767 424
 E-mail : info@prolabmyanmar.com

LABORATORY ANALYSIS REPORT

- 1 Client Name : Initial Environmental Examination for Rice, Corn and Bean Milling
 Production and Exporting Project
- 2 Location : No. C - 53, Pathein Industrial City, Pathein - Nga Pu Taw Road,
 Pathein Tsp, Ayeyarwady Region
- 3 Type of Sample : Effluent Water - 1
- 4 Sample No. : 01264/2024
- 5 Contact Person : Eguard Environmental Services
- 6 Phone No. : 09-797005212
- 7 Date Received : 08.10.2024
- 8 Date of Test Performed : 08.10.2024
- 9 Date of Issued : 21.10.2024
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Chromium (Total)	< 0.005	mg/L	-	Inductively Coupled Plasma-Optical Emission Spectrometry (IPC-OES) Method
2	Cyanide	0.239	mg/L	-	Hach DR 3900 Spectrophotometer, Pyridine - Pyrazalone Method
3	Iron	0.95	mg/L	-	^(a) 3500-F B, Phenanthroline Method
4	Oil and Grease	19	mg/L	-	^(a) 5520D, Soxhlet Extraction Method
5	Phenols	33.35	mg/L	-	^(a) 5530D, Direct Photometric Method
6	Silver	0.042	mg/L	-	Inductively Coupled Plasma-Optical Emission Spectrometry (IPC-OES) Method
7	Sulfide	209	µg/L	-	Hach DR 3900 Spectrophotometer, USEPA Methylene Blue Method
8	Selenium	0.14	mg/L	-	Microwave Plasma Atomic Emission Spectroscopy Method
9	Total Chlorine	Nil	mg/L	-	Hanna HI97104 - Free & Total Chlorine Photometer
10	Total Coliform	24	MPN/ml	-	FDA-BAM: MPN Method

Remark:

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

Dispose treated waste water according to state and local regulations.

^(a) American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

Tested By

Name : NAW EH THA KU
 Position : Laboratory Technician
 Signature : *Eh*


Approved By

Name : KYAWT KYAWT YIN
 Position : Technical Consultant Manager
 Signature : *Ky*



Myanmar Innovation Group of Co., Ltd
Address : No. (9), Sabae Housing, Pyi Htaung Su Road,
(26) Ward, South Dagon Tsp, Yangon, Myanmar.
Tel : 09-893 767 424
E-mail : info@prolabmyanmar.com

LABORATORY ANALYSIS REPORT

- 1 Client Name : Initial Environmental Examination for Rice, Corn and Bean Milling Production and Exporting Project
- 2 Location : No. C - 53, Pathein Industrial City, Pathein - Nga Pu Taw Road, Pathein Tsp, Ayeyarwady Region
- 3 Type of Sample : Ground Water
- 4 Sample No. : 01263/2024
- 5 Contact Person : Eguard Environmental Services
- 6 Phone No. : 09-797005212
- 7 Date Received : 08.10.2024
- 8 Date of Test Performed : 08.10.2024
- 9 Date of Issued : 21.10.2024
- 10 Result :

No.	Parameter	Result	Unit	WHO STD 2018	Method
1	Iron	0.10	mg/L	0.3 mg/L	^(a) 3500-F B, Phenanthroline Method
2	Manganese	5.1	mg/L	0.4 mg/L	Hach DR 3900 Spectrophotometer, USEPA Periodate Oxidation Method
3	Oil and Grease	10	mg/L	NA	^(a) 5520D, Soxhlet Extraction Method
4	Total Coliform	< 0.3	MPN/ml	ND per 100 mL	FDA-BAM: MPN Method

Remark:

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

^(a) American Public Health Association, Standard Methods for the Examination of Water and Wastewater.

Tested By

Name : NAW EH THA KU
 Position : Laboratory Technician
 Signature :*En*.....



Approved By

Name : KYAWT KYAWT YIN
 Position : Technical Consultant Manager
 Signature :*kyawt*.....

Appendix 12 Public Consultation Invitation



C-53 Pathein Industrial City, Pathein-Nga Pu Taw road, Pathein Township, Ayarwaddy Region, Myanmar 10011

စာအမှတ် || GS / C-53 / ADM/ ၀၂၅ / ၂၀၂၄

ရက်စွဲ || ၂၀၂၄ ခုနှစ် ၊ ဒီဇင်ဘာလ (၁၁)ရက်

သို့

လက်ထောက်ညွှန်ကြားရေးမှူး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ပုသိမ်ခရိုင်၊ ဧရာဝတီတိုင်းဒေသကြီး။

အကြောင်းအရာ။ || လူထုတွေ့ဆုံပွဲ တက်ရောက်ချီးမြှင့်ပေးနိုင်ပါရန် ဖိတ်ကြားခြင်း။

အထက်အကြောင်းအရာပါကိစ္စနှင့်ပတ်သတ်၍ ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းစောက်ကျေးရွာအုပ်စု၊ ပုသိမ်-ပုတောက်လမ်း၊ ပုသိမ်စက်မှု စီမံကိန်း၊ အမှတ် (၅၃-စီ)တွင် GreenShine Co.,Ltd မှ အကောင်အထည်ဖော် ဆောင်ရွက် လျက်ရှိသည့် ဆန်ဖြူချောထုတ်လုပ်ခြင်း လုပ်ငန်းအတွက် ကနဦး ပတ်ဝန်းကျင် ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) လုပ်ငန်းကို E Guard Environmental Services မှ တာဝန်ယူ ဆောင်ရွက်လျက်ရှိပါသည်။ အဆိုပါလုပ်ငန်းစဉ်၏ စီမံကိန်းဆိုင်ရာ အချက်အလက်များ ရှင်းလင်း တင်ပြခြင်း၊ အများပြည်သူ တိုင်ပင်ဆွေးနွေးခြင်းနှင့် သဘောထားရယူခြင်းအခမ်းအနား (Public Consultation) အား ပူးတွဲဖိတ်ကြားလွှာပါ အခမ်းအနား အစီအစဉ်အတိုင်း ကျင်းပပြုလုပ်မည် ဖြစ်ပါသဖြင့် တက်ရောက်ချီးမြှင့်ပေးပါရန် လေးစားစွာ ဖိတ်ကြားတင်ပြအပ်ပါသည်။

(Handwritten signature and date)
၁၁/၁၂/၂၀၂၄






ဦးရဲဝေဖြိုး
အထွေထွေမန်နေဂျာ
Green Shine Company Limited

Appendix 13 Attendance Lists of Public Consultation

ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ပုတောက်လမ်း၊ ပုသိမ်စက်မှုမြို့တော်၊ အမှတ် (၅၃-နီ) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် ဆန်၊ ပြောင်း၊ ပဲအမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်း လုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) ဆိုင်ရာကိစ္စရပ်များအား ရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူ သဘောထားမှတ်ချက် ရယူခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်ကြသူများ စာရင်း။

အစိုးရဌာနဆိုင်ရာအဖွဲ့အစည်းများ

၂၀၂၄ ခုနှစ်၊ ဒီဇင်ဘာလ (၁၉) ရက်

စဉ်	အမည်	ရာထူး	ဌာန/အဖွဲ့အစည်း	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁။	ဦးသက်ပိုင်	အဖွဲ့အစည်း	၀၂၀၂၈	၀၉၅၀၅၄၁၃၃၃	
၂။	ဦးကျော်စွာ	အဖွဲ့အစည်း	၀၂၀၂၈	၀၉-၇၈၀၄၈၄၄၁၇	
၃။	ဦးကျော်စွာ	N/ထုတ်ဖော်ရေး	ECO	၀၉-၆၄၅၆၂၀၄၀၁	
၄။	ဦးကျော်စွာ	အဖွဲ့အစည်း	၀၂၀၂၈	၀၉-၄၄၁၃၅၁၅၆၇	
၅။	ဦးကျော်စွာ	အဖွဲ့အစည်း	၀၂၀၂၈	၀၅-၄၅၇၂၃၄၄၁၃	
၆။					
၇။					
၈။					
၉။					
၁၀။					

ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ချောင်းဆောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ပုတောက်လမ်း၊ ပုသိမ်ခရိုင်မြို့တော်၊ အမှတ် (၅၃-ဇ) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် ဆန်၊ ပြောင်း၊ ပဲအမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်း လုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) ဆိုင်ရာကိစ္စရပ်များအား ရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူ သဘောထားမှတ်ချက် ရယူခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်ကြသူများ စာရင်း။

ပုဂ္ဂလိကကုမ္ပဏီ/လုပ်ငန်းများ



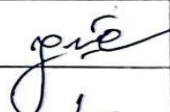



၂၀၂၄ ခုနှစ်၊ ဒီဇင်ဘာလ (၁၉) ရက်

စဉ်	အမည်	ရာထူး	ကုမ္ပဏီ/လုပ်ငန်း	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁။	ဦးခင်မောင်	Manager	MAC	၀၉၂၂၅၂၆၀၇၆	
၂။	ဦး ရဲဝေဖြိုး	GM.	Green Shine	၀၉-၅၀၅၇၇၈၃	
၃။	ဦးစော နဂါး	Dy millmaster.	Arise Myanmar Co Ltd.	၀၉ ၂၅၄၃၃၃၅၈၈	
၄။	ဦး ဆန်းတင်	P.M.	C.S.B.	၀၉၄၂၂၅၀၇၅၅၄	
၅။	ဦးစောစောဝင်း	ဥက္ကဋ္ဌ	ပုသိမ်မြို့နယ်အုပ်စုစာရင်း	၀၉-၅၇၀၀၁၄၄	
၆။	Min Ngein Chan	Admin Executive Ho	Green Shine Co.Ltd.	၀၉-၇၇၅၅၅၅၇၅၅	Chan
၇။					
၈။					
၉။					
၁၀။					

ဧရာဝတီတိုင်းဒေသကြီး၊ ပုသိမ်ခရိုင်၊ ကန်ကြီးထောင့်မြို့နယ်၊ ရောင်းဆောက်ကျေးရွာအုပ်စု၊ ကွင်းအမှတ်-၆၇၊ ပုသိမ်-ပုတောက်လမ်း၊ ပုသိမ်စက်မှုဇုန်တော်၊ အမှတ် (၅၃-ခီ) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် ဆန်၊ ပြောင်း၊ ပဲအမျိုးမျိုး ကြိတ်ခွဲထုတ်လုပ်ခြင်းနှင့် တင်ပို့ရောင်းချခြင်း လုပ်ငန်းအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE) ဆိုင်ရာကိစ္စရပ်များအား ရှင်းလင်းတင်ပြခြင်း နှင့် အများပြည်သူ သဘောထားမှတ်ချက် ရယူခြင်း (Public Consultation) အခမ်းအနားသို့ တက်ရောက်ကြသူများ စာရင်း။

ရပ်မိရပ်ဖဒေသခံပြည်သူများ

၂၀၂၄ ခုနှစ်၊ ဒီဇင်ဘာလ (၁၉) ရက်

စဉ်	အမည်	နေရပ်လိပ်စာ	အလုပ်အကိုင်	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁။	ဦးစိုးစန်း				
၂။	ဦးစောထွန်း	ကံစု	အလုပ်		
၃။	ဦးအောင်ကျော်	၂၅၆၄	အလုပ်		
၄။	ဦးတင်စိန်	"	"		
၅။	ဦးအောင်ကျော်	ကမ္ဘော	"		
၆။	ဘဏ္ဍာရေးဦးစီးဌာန	ကံစု	"		
၇။					
၈။					
၉။					
၁၀။					

Appendix 14 Public Consultation Presentation Slides

- ၀၁ စီမံကိန်းဆိုင်ရာအချက်အလက်များ
- ၀၂ စီမံကိန်းတည်နေရာပြမြေပုံ
- ၀၃ စီမံကိန်းအကြောင်းအရာဖော်ပြချက်
- ၀၄ IEE ဆောင်ရွက်ရန် လိုအပ်ချက်များ
- ၀၅ အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း၏ ရည်ရွယ်ချက်များ
- ၀၆ သက်ရောက်မှုများအား အကဲဖြတ်တိုင်းတာသည့် သတ်မှတ်ချက်ဘောင်များနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး တိုင်းတာမှုရလဒ်များ
- ၀၇ စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများအား ဆန်းစစ်ခြင်း
- ၀၈ သက်ရောက်မှုလျှော့ချရေးနည်းလမ်းများ

စီမံကိန်းအမျိုးအစား	ဆန်၊ ပဲ၊ ပြောင်း ကြိုတင်ခွဲထုတ်လုပ်ခြင်းနှင့် တစ်ပိုရောင်းချခြင်းလုပ်ငန်း။
ရင်းနှီးမြှုပ်နှံမှုပုံစံ	အစုရှယ်ယူခြင်း တာဝန်ကန့်သတ်ထားသည့်အများနှင့် မသက်ဆိုင်သောကုမ္ပဏီ
အဖွဲ့အစည်းအမည်	Green Shine Co., Ltd.
ရင်းနှီးမြှုပ်နှံမှု ပမာဏ	၆,၂၀၀,၀၀၀,၀၀၀/- ကျပ် မြန်မာကျပ်ငွေသန်းပေါင်းခြောက်ထောင်နှစ်ရာကျပ်/-
ရင်းနှီးမြှုပ်နှံမှု ကာလ	၂၀၂၂ ခုနှစ်၊ အောက်တိုဘာလ၊ ၇ ရက်
စီမံကိန်းဧရိယာအကျယ်အဝန်း	၈၄၄၆ စတုရန်းမီတာ
တည်ဆောက်သည့်ကာလ	၂၀၂၃ ခုနှစ်၊ ဒီဇင်ဘာလ၊ ၅ ရက်
လည်ပတ်မည့်ကာလ	၂၀၂၄ ခုနှစ်၊ မေလ၊ ၁ ရက်
ဝန်ထမ်းအရေအတွက်	မြန်မာနိုင်ငံသား - ၂၄ ယောက်
စီမံကိန်းတည်နေရာ	အမှတ်(၆-၅၃)၊ ပုသိမ်စက်မှုမြို့တော်၊ ငပုတောလမ်း၊ ပုသိမ်ခရိုင်၊ ဧရာဝတီတိုင်းဒေသကြီး။

16°43'15"N 94°44'53"E

NO. C-53, PATHEIN INDUSTRIAL CITY, PATHEIN-NGA PU TAW ROAD, PATHEIN TOWNSHIP, AYEYARWADDY REGION, MYANMAR 10011

၀၃ စီမံကိန်းအကြောင်းအရာဖော်ပြချက်

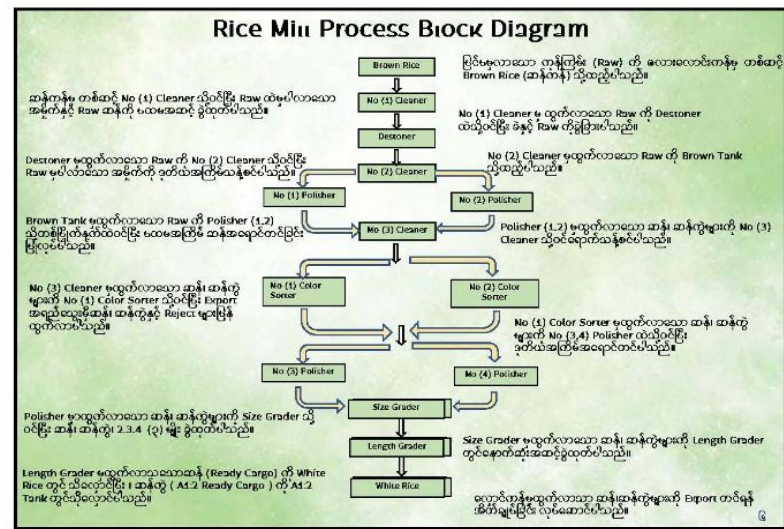
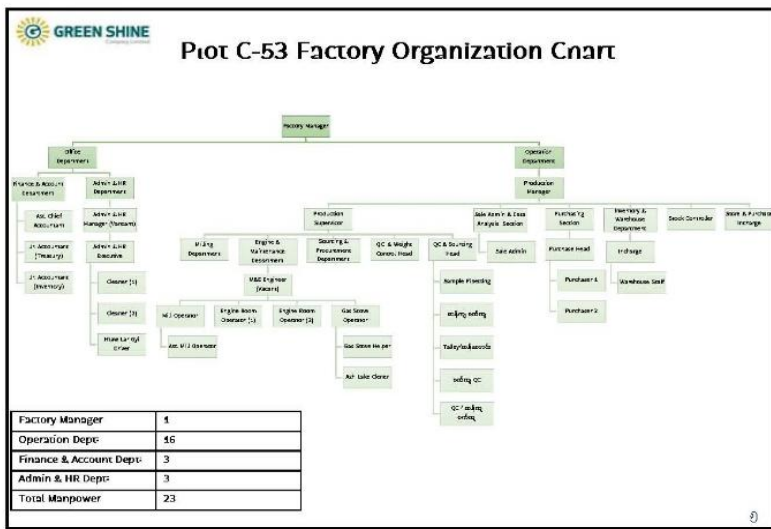
Company Registration No. 134987804
ဆန့်၊ ငါ၊ ပြောင်း ကြိုတင်ခွဲထုတ်လုပ်ခြင်းလုပ်ငန်း

> To manufacture high-quality products from the factory and import and trade quality products to local and international

> စက်ရုံမှ အရည်အသွေးမြင့် ထုတ်ကုန်များ ထုတ်လုပ်ရန်နှင့် အရည်အသွေးပြည့်မီသော ထုတ်ကုန်များကို ပြည်တွင်းနှင့် နိုင်ငံတကာသို့ တင်သွင်း ကုန်သွယ်မှု ပြုလုပ်ရန်

GREEN SHINE COMPANY LIMITED 2024 EXPORT SALES QUANTITY AND EXPORT INCOME

Month	တန်ချိန်		ပို့ကုန်ဝင်ငွေ (USD)
	Rice	Broken	
January	2,000		\$1,187,250.00
February			
March		2,000	\$ 897,000.00
April		520	\$228,800.00
May		260	\$114,400.00
June	2,000	520	\$1,380,100.00
July	500	260	\$398,200.00
August		520	\$231,400.00
September	1,500	520	\$1,074,900.00
October	1,000	1,440	\$1,147,200.00
November	5,000		\$2,520,000.00
December	2,000		\$940,000.00
Total	13,955	9840	\$11,860,657.00



အရင်းအမြစ် သုံးစွဲမှု

စဉ်	အရင်းအမြစ်သုံးစွဲမှု	ခန့်မှန်းပမာဏ
၁	(စွမ်းအင်) -လျှပ်စစ် (၅၀၀) ကေစီအေ ထရစ်စဖော်မာ - (၁)လုံး (အရန်စွမ်းအင်) -(၄၀၀) ကေစီအေ ဒီဇယ်ဂျင်နရေတာ - (၃)လုံး	၃၆၈၀ မီဂါဝပ် (တစ်လလျှင်)
၂	(ဒီဇယ်ဆီသုံးစွဲမှု) -(၄၀၀) ကေစီအေ ဒီဇယ်ဂျင်နရေတာ - (၃)လုံး -ယာဉ်ယန္တရားသုံးစွဲမှု	၄၈၀ ဂါလံ (တစ်လလျှင်)
၃	(ရေသုံးစွဲမှု) - ၂၅၂၅ ဂါလံဆန့် မြေအောက်ရေသိုလှောင်ကန်	လုပ်ငန်းသုံးရေ အတွက် ၃၆၀၀ ဂါလံ (တစ်လလျှင်)

စွန့်ပစ်အပိုင်အခဲ စီမံခန့်ခွဲမှု

> စက်ရုံမှ စွန့်ပစ်အပိုင်များကို တစ်ပတ်တစ်ကြိမ်ထောက်လှမ်းမှုနှင့် နံ့သာကုန်းရပ်ကွက်ရှိ အမှိုက်ပုံတွင်သွားရောက်စွန့်ပစ်ပါသည်။

စွန့်ပစ်အရည် စီမံခန့်ခွဲမှု

- Gasifier မှထွက်လာသော ရေဆိုးများကို ပြာစစ်ကန်တွင် ပထမဆုံးကောနှင့် ပြာနှင့်ရေကိုခွဲထုတ်ပါသည်။
- ပြာစစ်ကန်ထဲစီးဆင်းလာသောရေကို အုတ်ခဲကျိုးနှင့် ကျောက်စလစ်အလွှာတွင် အမှုန်အမွှားများကို စစ်ထုတ်ပါသည်။
- အုတ်ခဲကျိုးအလွှာမှထွက်လာသောရေကို မီးသွေးနှင့် ကျောက်စလစ်အလွှာတွင် ထပ်မံစစ်ထုတ်ပါသည်။
- ထိုသို့စစ်ထုတ်ထားသောရေကို ရေဆိုးမြောင်းအတွင်း ဖေဒါ၊ ဒိုက်တိုခဲပြို၊ ရေဆိုးမြောင်းအတွင်းသို့ စီးဆင်းစေပါသည်။

Waste Water Filter Tank

1. Air Filter
2. Stone Bed
3. Charcoal
4. Fine Gravel
5. Filtered Water

Tank Dimensions:
Length: 40 ft
Width: 10 ft
Depth: 7 ft

စွန့်ပစ်ပစ္စည်းများ ပြန်လည်အသုံးပြုမှု

- > ပြာစစ်ကန်မှ ထွက်လာသောပြာများကို PIP ဝန်းအတွင်းနှင့် အနီးအနားရှိစိုက်ပျိုးရေးမြေများသို့ စက်ရုံပေးပို့ပြီး စိုက်ပျိုးရေးတွင် မြေဆွေးအဖြစ်ပြန်လည် အသုံးပြုခြင်း။
- > ဒေသခံ တောင်သူများ၏ မြေဆီကောင်းမွန်စေရန်လယ်မြေများတွင် ထည့်သွင်း ထွန်ယက်စိုက်ပျိုး ကြခြင်း။

GREEN SHINE မတ်ဝန်းကျင်ထိခိုက်မှုမရှိစေရန် ကာကွယ်ခြင်း



မတ်ဝန်းကျင် အသံဆူညံမှုများ မရှိစေရန် အသံကျယ်လောင်စေသော Engine များတွင် အသံလှိုစနစ် Exhaust Muffler များတင်ဆင် အသုံးပြုခြင်း။



မတ်ဝန်းကျင် အမုန်အမှား လွှင့်စင်မှုများ လျော့ချရန် Milling မှုထွက်သော အမုန်အမှားများအား စင်ယူစုဆောင်းသော Cyclone Dust Collector စက်များ ထားရှိခြင်း။



GREEN SHINE Fire Safety Facilities

စဉ်	ဖီးသတ်ပစ္စည်း	အရေအတွက်
၁	ဖီးသတ်ဆေးဘူး (5 kg)	50
၂	ဖီးသတ်ရေကန်	1
၃	ရေစင်မုန်အိမ်လုပ် နှင့် ဖီးသတ်ငိုက်	1



ဖီးသတ်ဦးစီးဌာန၏ ဖီးဘေးအန္တရာယ် ကြိုတင်ကာကွယ်မှု လမ်းညွှန်ချက်အတိုင်း ဆောင်ရွက်ထားပါသည်။

GREEN SHINE CSR လှူငွေများ

အောက်ပါဇယားတွင် ခန့်မှန်းချက် CSR ရန်ပုံငွေကို ဖော်ပြထားသည်။ စီမံကိန်း၏ CSR လှူငွေများအတွက် တက်ဂျက်ဝန်ဆောင်မှုများကို မဟာမိတ်အသင်းအဖြစ်အဖြစ် 2% ပြန်ပါသည်။

စဉ်	အကြောင်းအရာ	ကြိမ်နှုန်း	ရာခိုင်နှုန်း (%)
၁။	လူမှုရေး	နှစ်စဉ်	15%
၂။	ပညာရေး	နှစ်စဉ်	20%
၃။	လူမှုစီးပွားရေး	နှစ်စဉ်	15%
၄။	ယဉ်ကျေးမှု	နှစ်စဉ်	10%
၅။	အလုပ်အကိုင်ခန့်ခွဲမှုနှင့် လျှစ်လျူမှုခြင်းတို့ဆက်သွယ်ရေး	နှစ်စဉ်	15%
6.	နည်းပညာပို့ချခြင်းတို့ဆက်သွယ်	နှစ်စဉ်	15%
7.	လူမှုရေး ဝန်ဆောင်မှု	နှစ်စဉ်	10%
စုစုပေါင်း			100%

> ၂၀၂၃ ခုနှစ်တွင် Green Shine Co., Ltd မှ ရှေ့ဆောင်ရွက် ပြုလုပ်ငန်းများ၊ သဘာဝဘေးအန္တရာယ်အတွက် ပြန်လည်တည်ထောင်ရေး လှူငွေများတွင် ကာလတန်ဖိုး ပြန်မကုန်ငွေသိန်းပေါင်း ၄,၄၀၀,၀၀၀/- (သိန်းလေးဆယ်လေးသိန်းကျပ်) ခန့်ပိုမိုလှူဒါန်းကူညီ ထောက်ပံ့ခဲ့ပါသည်။

> ၂၀၂၄ ခုနှစ်တွင် သာဓကပေး လမ်းရေး၊ ရန်ပုံငွေဖြည့်တိုးတတ်ရေးတို့တွင် ဆန်နှင့် ငွေသားအပါအဝင် စုစုပေါင်းပြန်မကုန်ငွေ ၇,၃၄၀,၀၀၀/- (သိန်းသုံးဆယ်သိန်းလေးသောင်းရှစ်ထောင်ကျပ်) ခန့် ပိုမိုလှူဒါန်းကူညီ ထောက်ပံ့ခဲ့ပါသည်။



Thank you for your attention!



Presentation by

U Ye' Wai Phyo
Deputy General Manager

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HR & Admin Executive

Prepared By

Khin Nyein Chan
Admin Executive

U Kyaw Htet Han
Production Supervisor



၁၅



ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း
(Initial Environmental Examination)


Guard Environmental Services

တင်ပြသူ - ဦးစိုးမင်း (Principal Consultant)

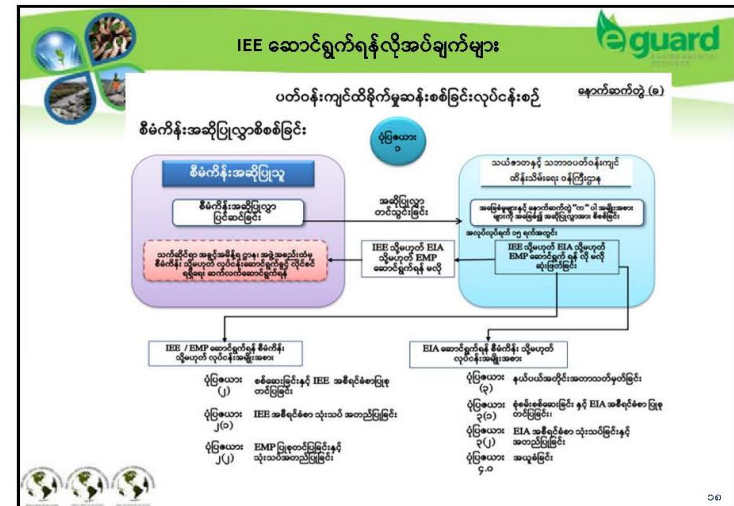
IEE ဆောင်ရွက်ရန်လိုအပ်ချက်များ

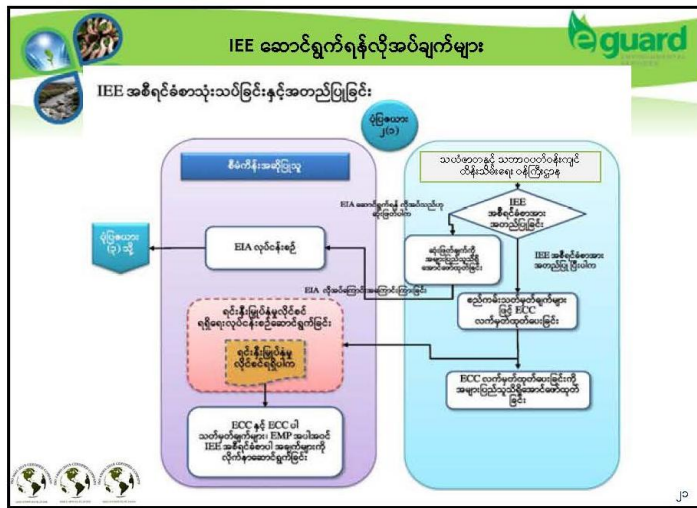
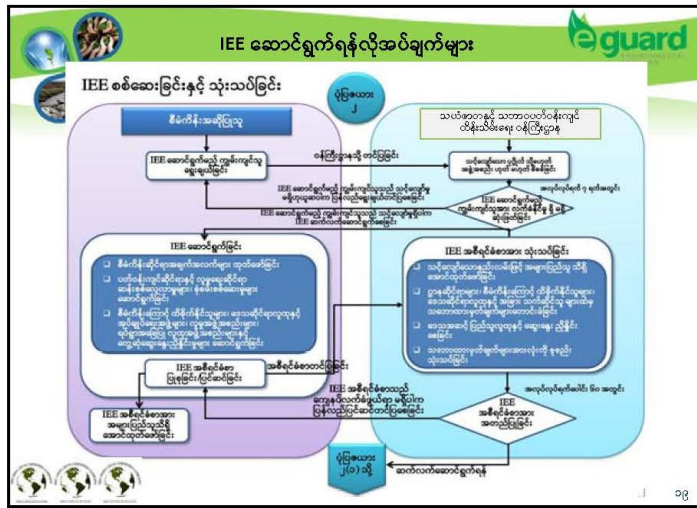
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေနှင့် လုပ်ထုံးလုပ်နည်းများ

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂ ခုနှစ်) နှင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေများ (၂၀၁၄ ခုနှစ်) အရ စီမံကိန်းများကို စီမံရာတွင် စီမံကိန်းကြောင့် ဖြစ်ပေါ်လာနိုင်မည့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ မလိုလားအပ် သည့် ထိခိုက်မှုများရှိ/မရှိနှင့် ထိခိုက်မှုများရှိခဲ့ပါကလည်း သိသာထင်ရှားမှုရှိ/မရှိ (သို့) ပြင်းထန်သောထိခိုက်မှု ရှိ/မရှိ စသည်ဖြင့် စနစ်တကျဆန်းစစ်နိုင်ရန် ရည်ရွယ်၍ ပြုလုပ်ရခြင်းဖြစ်ပါသည်။
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ ၅၅ (က) အရ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် ရေးဆွဲတင်ပြရန် လိုအပ်သည့် စီမံကိန်းအမျိုးအစား (သို့မဟုတ်) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၂၄ အရ ဝန်ကြီးဌာနက ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် ရေးဆွဲတင်ပြရန် လိုအပ်ကြောင်းသတ်မှတ်သည့် စီမံကိန်းအမျိုးအစားအတွက် စီမံကိန်းအဆိုပြုသူသည် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် အစီရင်ခံစာပြုခြင်းကို မိမိကိုယ်တိုင်သော်လည်းကောင်း၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၁၈ နှင့်အညီ လုပ်ငန်းလိုင်စင်ရယူထားသော ပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းကို ခန့်အပ်၍သော်လည်းကောင်း ဆောင်ရွက်နိုင်ပါသည်။



၁၇





အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း နှင့် အများပြည်သူ ပူးပေါင်းပါဝင်ခြင်း ဆိုင်ရာ ဆွေးနွေးပွဲကျင်းပရခြင်း၏ ရည်ရွယ်ချက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) ၊ အပိုဒ် ၃၄ အရ

- ❖ စီမံကိန်းဆိုင်ရာ အချက်အလက်များ၊ စီမံကိန်းကြောင့် လူမှုပတ်ဝန်းကျင်အပေါ် ထိခိုက်သက်ရောက်နိုင်မှု အခြေအနေများ၊ သက်ရောက်မှုများအား လျော့ချနိုင်မည့်နည်းလမ်းများနှင့် ဆောင်ရွက်မည့် လုပ်ငန်းစဉ်၊ အချိန်ဇယား စသည်တို့အား အများပြည်သူထံ အသိပေးခြင်း၊
- ❖ အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းနှင့် အများပြည်သူပူးပေါင်းပါဝင်ခြင်းဆိုင်ရာ ဆွေးနွေးပွဲမှရရှိသော အကြံဉာဏ်များနှင့် ဆွေးနွေးမှုရလဒ်များအား သိရှိနားလည်မှတ်သား၍ သက်ရောက်မှုများအား လျော့ချနိုင်မည့် နည်းလမ်းများ၊ စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များတွင် ထည့်သွင်းစဉ်းစားပေးခြင်း၊
- ❖ စီမံကိန်း၏ ပွင့်လင်းမြင်သာမှုနှင့် တာဝန်ယူနိုင်မှု တိုးတက်စေခြင်း၊

သဘာဝပတ်ဝန်းကျင်အပေါ် ထိခိုက်မှုများ လေ့လာဆန်းစစ်ခြင်း

ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှု

- လေအရည်အသွေး
- ရေအရည်အသွေးနှင့်ရေသုံးစွဲမှု
- ဆူညံသံ၊ တုန်ခါမှု
- ဖီလျှံမှု၊ စိုက်ပျိုးကွဲများ

လူသားများအပေါ် သက်ရောက်မှု

- ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး
- လူမှုစီးပွားရေး အခြေအနေများ

စီမံကိန်းတည်နေရာ အနီး လေ့လာဆန်းစစ်မှု နယ်ပယ် သတ်မှတ်ခြင်း၊ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး တိုင်းတာခြင်း၊ ကွင်းဆင်းလေ့လာခြင်းနှင့် လူမှုစီးပွား အခြေအနေများအပေါ် သက်ရောက်နိုင်မှုများအား စီမံကိန်း အဆိုပြုစာတမ်းများ၊ အစီရင်ခံစာ၊ သုတေသနစာတမ်းများ အား ဖြိုငြမ်းခြင်း။

စီမံကိန်းကြောင့် ထိခိုက်မှုဖြစ်နိုင်သည့် အရာများကို ရှောင်ရှားခြင်း။

စီမံကိန်းအကောင်အထည်ဖော်မှုကြောင့် ဖြစ်ပေါ်လာ နိုင်သည့် သက်ရောက်မှုများကို ဖော်ထုတ်ခြင်း။

သက်ရောက်မှုများကို လျော့ချပေးနိုင်မည့် အစီအစဉ် များကို အကြံပြုတင်ပြခြင်း။

စောင့်ကြပ်ကြည့်ရှုမှု အစီအစဉ်များ ကြိုတင်ပြင်ဆင်ပြီး အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်း။

၂၃

စီမံကိန်းတည်နေရာ၊ အနီးပတ်ဝန်းကျင်အခြေအနေနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးတိုင်းတာမှု ဖော်ပြချက်များ

လက်တွေ့ ကွင်းဆင်းလေ့လာခြင်း

- ၀.၅ ကီလိုမီတာ အတွင်းရှိ မူလအခြေခံ သဘာဝပတ်ဝန်းကျင် အရည်အသွေး (လေထု အရည်အသွေး၊ လေတိုက်နှုန်း၊ ဆူညံသံ၊ တုန်ခါမှု) များအား ၂၄ နာရီ တိုင်းတာခြင်း။
- စီမံကိန်းလည်ပတ်ကာလတွင် အသုံးပြုမည့် ရေအရည်အသွေး၊ စီမံကိန်းလည်ပတ်ခြင်းမှ တွက်ရှိသည့် စွန့်ပစ်ရေဆိုးများ စာနံစစ်ခြင်း။

အစီရင်ခံစာ၊ သုတေသနစာတမ်းများ အား ဖြိုငြမ်းခြင်း

- ကန့်ကြားသောငြိမ်မှုပုံစံ၊ ဒေသဆိုင်ရာ အစီရင်ခံစာ (၂၀၂၃) အား အခြေခံပြီး လူမှုစီးပွား အခြေအနေများ (ကျန်းမာရေး၊ ပညာရေး၊ စီးပွားရေး၊ လမ်းပန်း ဆက်သွယ်ရေး၊ လူမှုရေး) လေ့လာခြင်း။

ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာခဲ့သည့် စီမံကိန်းနယ်မြေမြေရိယာ အကျယ်အဝန်း သတ်မှတ်ချက်

၂၄

ပတ်ဝန်းကျင်ဆိုင်ရာ လေထုအရည်အသွေး၊ ဆူညံသံ၊ တုန်ခါမှု အဆင့်များ တိုင်းတာနေပုံ

စက်ရုံအပြင်ဘက်တိုင်းတာခြင်း

လေအရည်အသွေး တိုင်းတာနေပုံ

ဆူညံသံအဆင့်တိုင်းတာနေပုံ

တုန်ခါမှုအဆင့်တိုင်းတာနေပုံ

Haz-Scanner EPAS

Digital Sound Level Meter, Noise (dB (A))

Vibration Level Meter

၂၅

ပတ်ဝန်းကျင်ဆိုင်ရာ လေထုအရည်အသွေး၊ ဆူညံသံ၊ တုန်ခါမှု အဆင့်များ တိုင်းတာနေပုံ

စက်ရုံအတွင်းတိုင်းတာခြင်း

လေအရည်အသွေး တိုင်းတာနေပုံ

ဆူညံသံအဆင့်တိုင်းတာနေပုံ

တုန်ခါမှုအဆင့်တိုင်းတာနေပုံ

၂၆

ပတ်ဝန်းကျင်ဆိုင်ရာ လေထု ဆူညံသံ၊ တုန်ခါမှု နှင့် ရေအရည်သွေးဆိုင်ရာ အခြေခံအချက်အလက်များ ကောက်ယူနေပုံ

စီမံကိန်းအတွက် အသုံးပြုသည့် မြေအောက်ရေ နမူနာကောက်ယူနေပုံ

Gasifier မှ ထွက်လာသော စွန့်ထုတ်ရေ နမူနာကောက်ယူနေပုံ

စီမံကိန်းအတွက် အသုံးပြုသည့် မြေအောက်ရေ အရည်အသွေး မြေပြင်တိုင်းတာနေပုံ

Horiba U-SO

စီမံကိန်းအတွက် အသုံးပြုသည့် မြေအောက်ရေ နမူနာကောက်ယူနေပုံ

၂၇

လေအရည်အသွေးတိုင်းတာမှုရလဒ်များ

တည်နေရာ	တိုင်းတာသည့် အမျိုးအစား	Point-1 စက်ရုံအပြင်ဘက် တိုင်းတာသည့် ရလဒ်	Point-2 စက်ရုံအတွင်း တိုင်းတာသည့် ရလဒ်	လမ်းညွှန်ချက် တန်ဖိုး	လမ်းညွှန်ချက်	တိုင်းတာသည့် ယူနစ်	ပျမ်းမျှ ကာလ
စီမံကိန်း တည်နေရာ အတွင်း (၅-၉-၂၀၂၄)	PM ₁₀	12.33	14.08	50	NEQEG	µg/m ³	24hrs
	PM _{2.5}	6.38	7.04	25	NEQEG	µg/m ³	24hrs
	NO ₂	5.69	6.42	200	NEQEG	µg/m ³	1hr
	SO ₂	0.41	0.84	20	NEQEG	µg/m ³	24hrs
	O ₃	0.056	0.057	100	NEQEG	µg/m ³	8hrs
၇-၉-၂၀၂၄	CO	0.00002	0.00002	4	WHO	mg/m ³	24hrs
	CO ₂	402.22	402.92	5000	ACGIH	ppm	8hrs

လေအရည်အသွေးတိုင်းတာမှုရလဒ်တန်ဖိုးများသည် လမ်းညွှန်ချက်တန်ဖိုး အတွင်း ရှိပါသည်။

၂၈

ဆူညံသံအဆင့် တိုင်းတာမှုရလဒ်များ

တည်နေရာ	ယူနစ်	တိုင်းတာရရှိသည့် ရလဒ်		အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (Industrial, Commercial)	
		နေ့အချိန်	ညအချိန်	နေ့အချိန်	ညအချိန်
စက်ရုံအပြင်ဘက်	dB(A)	၅၈.၇၆	၅၅	၇၀	၇၀
စက်ရုံအတွင်း	dB(A)	၅၉.၇၅	၅၇.၆၃	၇၀	၇၀

ဆူညံသံအဆင့်တိုင်းတာမှုရလဒ်တန်ဖိုးများသည် လမ်းညွှန်ချက်တန်ဖိုး အတွင်း ရှိပါသည်။

၂၉

တုန်ခါမှုအဆင့် တိုင်းတာမှုရလဒ်များ

တည်နေရာ	X-Lveq		Y-Lveq		Z-Lveq	
	နေ့အချိန် (၇:၀၀ မှ ၂၂:၀၀)	ညအချိန် (၂၂:၀၀ မှ ၇:၀၀)	နေ့အချိန် (၇:၀၀ မှ ၂၂:၀၀)	ညအချိန် (၂၂:၀၀ မှ ၇:၀၀)	နေ့အချိန် (၇:၀၀ မှ ၂၂:၀၀)	ညအချိန် (၂၂:၀၀ မှ ၇:၀၀)
Standard Guideline MOE Japan (dB)	၇၀	၆၅	၇၀	၆၅	၇၀	၆၅
စက်ရုံအပြင်ဘက်	၄၆.၇၉	၄၀.၄၄	၃၂.၄၀	၃၂.၄၆	၄၀.၀၅	၃၇.၃၇
စက်ရုံအတွင်းဘက်	၄၃.၆၄	၃၈.၆၇	၃၄.၀၈	၃၂.၃၉	၄၂.၆၉	၃၅.၂၃

တုန်ခါမှုအဆင့်တိုင်းတာမှုရလဒ်တန်ဖိုးများသည် လမ်းညွှန်ချက်တန်ဖိုး အတွင်း ရှိပါသည်။

၃၀

မြေအောက်ရေအရည်အသွေး တိုင်းတာမှုရလဒ်များ

ရေအရည်အသွေးဆိုင်ရာ အချက်အလက်များ	ယူနစ်	ရလဒ် တန်ဖိုး	WHO Drinking Water standard 2018.
pH	-	7.08	6.5-8.5
EC	(mS/cm)	2.26	2500
TDS	(g/l)	1.45	1
Salinity	(ppt)	1.2	NA
DO	(mg/l)	11.21	6
Turbidity	(NTU)	0.0	5
Iron	mg/l	0.1	0.3
Manganese	mg/l	5.1	0.4
Oil and Grease	mg/l	10	NA
Total Coliform	mg/l	<0.3	-

မြေအောက်ရေအရည်အသွေး တိုင်းတာမှုရလဒ်များ

ရေအရည်အသွေးဆိုင်ရာ အချက်အလက်များ	ယူနစ်	ရလဒ် တန်ဖိုး	WHO Drinking Water standard 2018.
Color	TCU	ND	15
Chloride	mg/l	159.87	250
Arsenic	mg/l	0.00105	0.01
Calcium	mg/l	0.000453	0.003
Chromium	mg/l	0.00324	0.05
Zinc	mg/l	0.00102	5
Total Phosphorus	mg/l	0.00456	NA
Total Nitrogen	mg/l	2.15	NA
BOD	mg/l	0.80	NA
COD	mg/l	5.4	NA

စွန့်ထုတ်ရေအရည်အသွေး တိုင်းတာမှုရလဒ်များ (ပြာစစ်ကန်)

ရေအရည်အသွေးဆိုင်ရာ အချက်အလက်များ	ယူနစ်	ရလဒ် တန်ဖိုး	အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ
Chromium (Total)	mg/l	<0.005	0.5
Cyanide	mg/l	0.239	1
Iron	mg/l	0.95	3.5
Oil and Grease	mg/l	19	10
Phenols	mg/l	33.35	0.5
Silver	mg/l	0.042	0.5
Sulfide	mg/l	0.209	-
Selenium	mg/l	0.14	0.1
Total Chlorine	mg/l	ND	-
Total Coliform	MPN/100ml	24	400
pH	mg/l	6.54	6-9
Temperature	mg/l	26.96	<30
Fluoride	mg/l	1.05	20
Ammonia	mg/l	16.85	10
Nickel	mg/l	0.00252	0.5
Arsenic	mg/l	0.101	0.1
Cadmium	mg/l	0.000731	0.1
Lead	mg/l	0.00764	0.1
Zinc	mg/l	0.00144	2
Copper	mg/l	0.00420	0.5
Mercury	mg/l	0.00307	0.01
Total Suspended Solids	mg/l	27	50
Total Phosphorus	mg/l	0.05025	2
BOD	mg/l	4.02	50
COD	mg/l	31	250

စွန့်ထုတ်ရေအရည်အသွေး တိုင်းတာမှုရလဒ်များ (ရေနုတ်မြောင်း)

ရေအရည်အသွေးဆိုင်ရာ အချက်အလက်များ	ယူနစ်	ရလဒ် တန်ဖိုး	အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ
Chromium (Total)	mg/l	<0.005	0.5
Cyanide	mg/l	0.012	1
Iron	mg/l	1.96	3.5
Oil and Grease	mg/l	17	10
Phenols	mg/l	0.36	0.5
Silver	mg/l	0.043	0.5
Sulfide	mg/l	0.057	-
Selenium	mg/l	0.11	0.1
Total Chlorine	mg/l	ND	-
Total Coliform	MPN/100ml	290	400
pH	mg/l	6.90	6-9
Temperature	mg/l	27	<30
Fluoride	mg/l	0.067	20
Ammonia	mg/l	11.53	10
Nickel	mg/l	0.0039	0.5
Arsenic	mg/l	0.00130	0.1
Cadmium	mg/l	0.000561	0.1
Lead	mg/l	0.00328	0.1
Zinc	mg/l	0.000582	2
Copper	mg/l	ND	0.5
Mercury	mg/l	0.000679	0.01
Total Suspended Solids	mg/l	98	50
Total Phosphorus	mg/l	0.69097	2
BOD	mg/l	5.19	50
COD	mg/l	36	250

သက်ရောက်မှုအဆင့်သတ်မှတ်ချက်များ

ဆန်းစစ်ခြင်း	သတ်မှတ်ချက်				
	၁	၂	၃	၄	၅
ပြင်းအား	မသိသေး	သိသောအနည်းဆုံးပင်ရှိပြီး လုပ်ငန်းခွင်တွင် သက်ရောက်မှု မရှိ။	သိသော အလွန်အလတ်ရှိပြီး လုပ်ငန်းခွင်တွင် သက်ရောက်မှု အနည်းဆုံးပင်ရှိ။	သိသောအနည်းဆုံး လုပ်ငန်းခွင်တွင် သက်ရောက်မှု ထင်ရှား။	သိသောအလွန်အလတ်ရှိပြီး လုပ်ငန်းခွင်တွင် မြင်နိုင်သည့်အထိရှား
ကြာချိန်	၀-၁ နှစ်	၂-၅ နှစ်	၆-၁၅ နှစ်	လုပ်ငန်းလည်ပတ်ချိန် တလလျှောက်။	လုပ်ငန်းရောက်သိမ်းသည် အထိ။
ပျံ့နှံ့နိုင်မှု	လုပ်ငန်းခွင် အတွင်းသာ	အနီးအနား ပတ်ဝန်းကျင်ထိ	ဒေသတွင်း	နိုင်ငံတွင်း	နိုင်ငံတကာထိ
ဖြစ်နိုင်စွမ်း	လုံ့လမဖြစ်နိုင်	မဖြစ်နိုင်	ဖြစ်နိုင်သည်	အလွန်ဖြစ်နိုင်သည်	ဖြစ်နိုင်မှုအလျားသည်။

သက်ရောက်မှုအဆင့်သတ်မှတ်ခြင်း

ထင်ရှားမှု = (ပြင်းအား + ကြာချိန် + ပျံ့နှံ့နိုင်မှု) * ဖြစ်နိုင်စွမ်း

ထင်ရှားမှု	ထိခိုက်မှုများ၏ထင်ရှားမှု
< ၁၅	အလွန်နည်း
၁၅-၂၉	နည်း
၃၀-၄၄	အလယ်အလတ်
၄၅-၅၉	မြင့်
> ၆၀	အလွန်မြင့်

သက်ရောက်မှုအဆင့်များ

သက်ရောက်မှု အဆင့်	သက်ရောက်မှု ဖော်ပြချက်	လုပ်ငန်းလည်ပတ်သည့်ကာလ	လုပ်ငန်းပိတ်သိမ်းသည့်ကာလ
အလွန်နည်း (very low)	လုံးဝသက်ရောက်မှုမရှိသော အနေအထား	-	မြေဓါတ်လွှာညစ်ညမ်းမှု၊ အပင်နှင့် အကောင်များအပေါ်သက်ရောက်မှု
နည်း (low)	သက်ရောက်မှုနည်းပါး	မြေဓါတ်လွှာညစ်ညမ်းမှု၊ အပင်နှင့် အကောင်များအပေါ်သက်ရောက်မှု	လေထုအရည်အသွေး၊ ရေညစ်ညမ်းမှု၊ တုန်ခါမှု၊ ရေအရည်အသွေး၊ စွန့်ပစ်အမှိုက်များ၊ အမှိုက်များ၊ လုပ်ငန်းခွင်ကျွန်းဆေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး
အလယ် အလတ် (moderate)	သက်ရောက်မှုအနည်းငယ်ရှိ၍ လျော့ပါးသက်သာစေရေး ဆောင်ရွက်ရန်လိုအပ်	လေထုအရည်အသွေး၊ ရေညစ်ညမ်းမှု၊ တုန်ခါမှု၊ ရေအရည်အသွေး၊ စွန့်ပစ်အမှိုက်များ၊ စွန့်ပစ်အရည်များ၊ လုပ်ငန်းခွင်ကျွန်းဆေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ မီးဘေးအန္တရာယ်	စွန့်ပစ်အရည်များ
များ (high)	ထင်ရှားသောသက်ရောက်မှုရှိ၍ လျော့ပါးသက်သာစေရေး အမှန် တကယ် ဆောင်ရွက်ရန်လိုအပ်	-	-
အလွန်များ (very high)	ရေရှည်ဆောင်ရွက်ရန် မသင့်တော်သော အနေအထား	-	-

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်

လုပ်ငန်းလည်ပတ်သည့် ကာလ

- ဆန့်စက်လည်ပတ်ခြင်း၊ Gasifier လည်ပတ်ခြင်း တို့မှ ထွက်ရှိလာသော စွန့်ပစ်ပစ္စည်းများ၊ ဖြစ်ပေါ်လာနိုင်သော ဆိုးကျိုးသက်ရောက်မှုများ။

လုပ်ငန်း ပိတ်သိမ်းကာလ

- ဆန့်စက်နှင့် ပတ်သက်သည့် စက်ပစ္စည်း ကိရိယာ များဖြုတ်သိမ်းခြင်း၊ Gasifier ဖြုတ်သိမ်းခြင်း၊ ပြုစစ်ကန် မျက်သိမ်းခြင်း တို့ကြောင့် ဖြစ်ပေါ်လာနိုင်သော ဆိုးကျိုးသက်ရောက်မှုများ။

ဆိုက်ကျိုးသက်ရောက်ခြင်းမှ

- ✓ ကာကွယ်ရန်
- ✓ ရှောင်လွှဲရန်
- ✓ လျော့နည်းစေရန်

နည်းလမ်းများနှင့် အစီအစဉ်များ ဖော်ပြသည့်စီမံချက်

စီမံကိန်းလည်ပတ်ရေးကာလအတွင်း သက်ရောက်နိုင်မှုများ၊ ဆိုးကျိုးများလျော့နည်းစေမည့်အစီအမံများ။

၃၉

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအမံများ

စဉ်	သက်ရောက်မှု	စီမံကိန်းလည်ပတ်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး ဆောင်ရွက်ချက်
၁။	လေထုညစ်ညမ်းမှု	<ul style="list-style-type: none"> ဆန်ကြိတ်ခွံခြင်းလုပ်ငန်းစဉ်များဖြစ်သည့် အခြောက်သန့်စင်ခြင်း၊ ကြိတ်ခွံခြင်း၊ အရောင်တင်ခြင်း စသည့် လုပ်ငန်းစဉ်များ ကြောင့် မုန့်မှုန့်များ ထုတ်လွှတ်ခြင်း၊ စီမံလောင်စာသုံး ကတ်စီမိုင်းယာ လုပ်ငန်းစဉ်မှ စပါးမှုန့်များ သယ်ယူခြင်း၊ စုဆောင်းခြင်းနှင့် ဖွင့်ပြားများမှ အမှုန်အမွှားများ ထွက်ရှိခြင်း၊ ဒီဇယ်ဂျင်နရေတာများနှင့် သယ်ယူပို့ဆောင်ရေး လုပ်ငန်းများမှ အမှုန်နှင့် ဆာတင်မှုများ ထုတ်လွှတ်ခြင်း။ 	<ul style="list-style-type: none"> မုန့်မှုန့်ပျံလွှင့်မှုများ လျော့ချရန် မုန့်ထုသေစရာများတွင် ရေဖြန်းခြင်း၊ လီရောက်သောမုန့်စနစ်များ တပ်ဆင်ခြင်း၊ သန့်ရှင်းရေးလုပ်ငန်းများ ပုံမှန်ဆောင်ရွက်ခြင်း။ ကတ်စီမိုင်းယာမှ ထွက်ရှိသော ဆာတင်မှုများကို ဖယ်ရှားရန် အတွက် scrubber and filter များအသုံးပြုခြင်း။ ကတ်စီမိုင်းယာမှ ဆာတင်မှုများအနည်းဆုံးဖြစ်စေရန် ပုံမှန်စစ်ဆေးပြီး ပြုပြင်ထိန်းသိမ်းမှုများဆောင်ရွက်ခြင်း။ ကတ်စီမိုင်းယာအနီးအလျားရှိ လေအဝင်အထွက်နှင့် အငွေ့ထွက် စနစ်များကို ကောင်းမွန်ဆောင်ရွက်ခြင်း။
၂။	ဆူညံသံနှင့်တူနံ့မိမှု	<ul style="list-style-type: none"> ဆန်စက်နှင့် ၊ ကတ်စီမိုင်းယာလည်ပတ်ခြင်း၊ ဒိုင်နို၊ ဒီဇယ်ဂျင်နရေတာများ အသုံးပြုခြင်း။ ဆန်ကုန်ကြမ်းများ၊ စပါးမှုန့်များ၊ ဆန်ဖြူချောများမှ ဖွင့်ပြားသယ်ယူပို့ဆောင်ရေးအတွက် ကုန်တင်ကားများအဝင်အထွက်ရှိခြင်း။ 	<ul style="list-style-type: none"> စက်ရုံအတွင်း ဆူညံသံပမာဏကို လျော့ချရန် အတွက် အသံစုပ်ယူနိုင်သော ဆူညံသံ အကာအရံများ အသုံးပြုခြင်း။ စက်ယန္တရားများ ချောမွေ့စွာ လည်ပတ်နိုင်စေရန်အတွက် ပုံမှန်ပြုပြင် ထိန်းသိမ်းမှုများ ပြုလုပ်ခြင်း။ တူနံ့မိမှုကို စုပ်ယူရန်နှင့် ကြမ်းပြင်များမှတစ်ဆင့် ဆူညံသံများ ပျံ့နှံ့မှုကို လျော့ချရန်အတွက် စက်ကိရိယာများအောက်တွင် ရာဘာအောက်ခံပြားများကို အသုံးပြုခြင်း။

၄၀

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအမံများ

စဉ်	သက်ရောက်မှု	စီမံကိန်းလည်ပတ်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၃။	ရေအရည်အသွေး	<ul style="list-style-type: none"> သန့်စင်ခန်းများမှ ထွက်သောရေခဲများ၊ ကတ်စီမိုင်းယာ နှင့် ပြာစစ်ကန်မှ စွန့်ထုတ်သော ရေခဲများ။ ထွက်လာသောရေခဲများ။ စက်ကိရိယာများ သန့်ရှင်းခြင်း၊ ပြုပြင်ထိန်းသိမ်းခြင်း လုပ်ငန်းများနှင့် စက်ဆီ၊ အမဲဆီ၊ ချောဆီနှင့် လောင်စာဆီများ မတင်တာစာ ဖိတ်စင်ခြင်း။ 	<ul style="list-style-type: none"> ကတ်စီမိုင်းယာမှ ထွက်ရှိသော စွန့်ထုတ်ရေခဲများအား အနည်စစ်ကန်မှ တစ်ဆင့် စနစ်တကျ စွန့်ထုတ်ခြင်း။ ကတ်စီမိုင်းယာမှ ထွက်ရှိသော ပြားများကို အနည်စစ်ကန် အတွင်းသို့ တိုက်ရိုက်ဝင်ရောက်မှု မရှိစေရန် အနည်စစ် စကားများကို စနစ်တကျ အသုံးပြုခြင်း။ အနည်စစ်ကန်တွင် အသုံးပြုထားသော အုတ်ခဲကျိများ၊ မီးသွေးများ၊ သံများအား မကြာခဏ လဲလှယ်ပေးခြင်း။ မလုံလောက်ပါက အနည်စစ်သည့် အဆင့်များအား ထပ်တိုးဆောက်ရွက်ခြင်း။ ရေနုတ်ပြောင်းအတွင်း ဝေဒါများစိုက်၍ အနည်ကျစေခြင်း။ စက်ဆီ၊ အမဲဆီ၊ ချောဆီနှင့် လောင်စာဆီများ မတင်တာစာ ဖိတ်စင်ခြင်းမှ ကာကွယ်ရန်အတွက် သိုလှောင်ရာ နေရာများအောက်တွင် အောက်ခံရွက်များ ထားရှိခြင်း။ စက်ရုံဝင်အတွင်း ရေစီးရေလာ ကောင်းမွန်စေရန် ထိန်းသိမ်းစောင့်ရှောက်မှု အလှေအကွင့်ကောင်းများကို လုပ်ဆောင်ခြင်း။

၄၁

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအမံများ

စဉ်	သက်ရောက်မှု	စီမံကိန်းလည်ပတ်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၄။	အန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> တန်တင်အိပ်ဆောင်၊ စီမံခန့်ခွဲခြင်းနှင့် ရုံးလုပ်ငန်းများမှ စွန့်ပစ်ပစ္စည်းများ။ ဆန်ကုန်ကြမ်းများ၊ စပါးမှုန့်များ၊ ဖွင့်ပြားများ ထုတ်ပို့ခြင်းမှ ထွက်ရှိသော စွန့်ပစ်အိတ်စွန့်များ။ 	<ul style="list-style-type: none"> အစိုက်စို၊ အစိုက်မြောက်၊ ပြန်လည်အသုံးပြုနိုင်သော ပစ္စည်းများနှင့် အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ အပါအဝင် အမျိုးမျိုးသော စွန့်ပစ်ပစ္စည်း အမျိုးအစားများအတွက် အစိုက်ပုံးများ စနစ်တကျ ထားရှိခြင်း။ အိတ်စွန့်များအား ဖွင့်ပြားတင်ခြင်း၊ ဖွင့်ပြားထည့်ခြင်း တို့တွင် ပြန်လည်အသုံးပြုခြင်း။
၅။	အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> ကတ်စီမိုင်းယာမှ ထွက်ရှိသော စွန့်ပစ် ဖွင့်ပြားများ၊ စွန့်ပစ် စပါးမှုန့်များ စုပုံထားခြင်း။ လောင်စာဆီများအား သိုလှောင်ခြင်း၊ ချောဆီများ ကိုင်တွယ်ခြင်းနှင့် စွန့်ပစ်ခြင်း။ 	<ul style="list-style-type: none"> ဖွင့်ပြားများစုပုံထားသောနေရာတွင် မြေဆီလွှာ ညစ်ညမ်းမှု မရှိစေရန် မစ်မိုင်နိုင်သော အခင်းများ အသုံးပြုခြင်း။ လောင်စာဆီခြင်းကြောင့် ဖွင့်ပြားများ လွင့်ပါခြင်း မရှိစေရန် အနီးအကားများဖြင့် ထားရှိစေခြင်း။ အန္တရာယ်ရှိသောစွန့်ပစ်ပစ္စည်းများကို ကန့်ကြီးအထက်ရှိ နယ် စည်းပင်ယာသားရေအဖွဲ့ လမ်းညွှန်ချက်များနှင့်အညီ စနစ်တကျစွန့်ပစ်ခြင်း။ သင့်လျော်သောကွန်ကရစ်နံရံများကို အသုံးပြု၍ လျင်လျင်များနှင့် စွန့်ပစ်ဆီများအား စုဆောင်းခြင်း။

၄၂

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအစဉ်များ			
စဉ်	သက်ရောက်မှု	စီမံကိန်းပိတ်သိမ်းသည့်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၅။	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် အေးကင်းလုံခြုံရေး	<ul style="list-style-type: none"> ဖုန်မှုန့်၊ ပြွန်မှုန့်များ၊ ဆူညံသံ၊ VOC ထုတ်လွှတ်ခြင်း။ ဆန်စက်လည်ပတ်နေသည့် လုပ်ငန်းခွင်၊ ကက်စီမိုင်းယာလည်ပတ်နေသည့် လုပ်ငန်းခွင် အတွင်း မတော်တဆထိခိုက်မှုအန္တရာယ်၊ ပြာစစ်ကန်အတွင်းမော်လံ ပြုတ်ကျခြင်း နှင့် အရေးပေါ် အခြေအနေဖြစ်နိုင်ခြေများ။ 	<ul style="list-style-type: none"> သင့်လျော်သော PPE (mask, ear protection, heat protection) များ ဝတ်ဆင်အသုံးပြုစေခြင်း။ အလုပ်သမားများအား ကျန်းမာရေး ပုံမှန် စစ်ဆေးပေးခြင်း။ ဆူညံသံနှင့် ဖုန်မှုန့်ထွက်နှုန်း ပြုပြင်ဆင်သောနေရာများသို့ ခက်ခဲထိခိုက်သိက္ခာမရှိ ပြုပြင်ဆင်သောနေရာများအတွက် အလှည့်ကျ အချိန်စယားများဖြင့် ဆောင်ရွက်ခြင်း။ မတော်တဆပြုတ်ကျမှုများမရှိစေရန် ပြာစစ်ကန်အား အကာအကွယ်များဖြင့် ဖုံးအုပ်ထားခြင်း။ လုပ်ငန်းခွင်အတွင်း မော်လံပြုတ်မရှိစေရန် ပုံမှန်သန့်ရှင်းရေး ပြုလုပ်ခြင်း။ မတော်တဆ ထိခိုက်မှုများ မရှိစေရန် စက်ယန္တရားများ စနစ်တကျ ကိုင်တွယ်စေခြင်း။
၆။	မီးဘေးအန္တရာယ်နှင့် လျှပ်စစ်အန္တရာယ်	<ul style="list-style-type: none"> ဆန်စက်မှ ဖုန်မှုန့်များ၊ ပြွန်မှုန့်များ စုပ်စေခြင်း။ ကက်စီမိုင်းယာအတွက် စပါးမှုန့်များ သိုလှောင် ထားခြင်း။ ဒီဇယ်များသိုလှောင်ထားခြင်း။ 	<ul style="list-style-type: none"> လုပ်ငန်းခွင်အတွင်း ဖုန်မှုန့်များ၊ ပြွန်မှုန့်များ ပုံမှန်သန့်ရှင်းရေး ပြုလုပ်ပေးခြင်း။ စပါးမှုန့်များ၊ ဒီဇယ်များကို စနစ်တကျ သိုလှောင်ထားရှိခြင်း။ မီးလောင်လွယ်သော ဖွဲ့စည်းမှုများ သိုလှောင်သည့်နေရာအနီး တံတိုက်တွင်စားသုံးသောကိရိယာများ ပြုလုပ်ခြင်း။ မီးသတ်ဆေးဘူးများ လုံလောက်စွာထားရှိခြင်း။ မီးဘေးအန္တရာယ် ကြိုတင်ကာကွယ်ရေး၊ လျော့ကျင့်ရေး အစီအမံများ ရေးဆွဲခြင်း။

စီမံကိန်းပိတ်သိမ်းသည့်ကာလအတွင်း သက်ရောက်နိုင်မှုများ၊ ဆိုးကျိုးများလျော့နည်းစေမည့်အစီအမံများ။

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအစဉ်များ			
စဉ်	သက်ရောက်မှု	စီမံကိန်းပိတ်သိမ်းသည့်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၁။	လေထုညစ်ညမ်းမှု	<ul style="list-style-type: none"> စက်ယန္တရားကြီးများ၊ စက်ပစ္စည်းများ ပြုတ်သိမ်းခြင်းကြောင့် စက်ပစ္စည်း အစိတ်အပိုင်းများပေါ်တွင် ကြွင်းကျန်ရစ်သော ဖုန်မှုန့်များ ထုတ်လွှတ်မှု ဖြစ်ပေါ်ခြင်း။ ကက်စီမိုင်းယာအတွင်းရှိ အကြွင်းအကျန် အမှုန့်များနှင့် မီးလောင်ကျွမ်းပြီးသော အကြွင်းအကျန် ပစ္စည်းများကြောင့် အဆိပ်အတောက် ဖြစ်စေသော ထုတ်လွှတ်မှုများ ရှိခြင်း။ စက်ပစ္စည်းများ ပြုတ်သိမ်းမှုလုပ်ငန်းများတွင် သံမဏိအစိတ်အပိုင်းများကို ပြုတ်တောက်ခြင်း မှ ခတ်ငွေများထွက်ခြင်း။ 	<ul style="list-style-type: none"> စက်ပစ္စည်းများ ပြုတ်သိမ်းခြင်း မပြုလုပ်မီ ဖုန်မှုန့် အကြွင်းအကျန်များ ရှိသောနေရာ၊ စက်ပစ္စည်းများကို ရေချိုးခြင်း။ ကက်စီမိုင်းယာအတွင်းရှိ ပြုပြင်အကြွင်းအကျန်များနှင့် ကတ္တရာစေးအကြွင်းအကျန်များကို စနစ်တကျ ဖယ်ရှားခြင်း။ ကက်စီမိုင်းယာနှင့် အခြားသတ္တုအစိတ်အပိုင်းများကို ပြုတ်သိမ်းရာတွင် သတ္တုမှုန့်များလွှဲလွင့်မှုမရှိစေရန် အမှုန့်အများစုများ ရှုထောင်းသည့် စနစ်ပုံစံဖြင့် ပြုတ်တောက်ကိရိယာများကို အသုံးပြုခြင်း။ လေထုအရည်အသွေးကို စာတိစွာထွက်မှုစီမံခန့်ခွဲမှုများနှင့် ကိုက်ညီမှုရှိစေရန် ပုံမှန်စစ်ဆေးခြင်း။
၂။	ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> စက်ပစ္စည်းများပြုတ်တောက်ခြင်း၊ တုန်ခါခြင်း စသည့် လုပ်ငန်းစဉ်များနှင့် စက်ယန္တရားကြီးများ အသုံးပြုခြင်းကြောင့် ဆူညံသံနှင့် တုန်ခါမှု ဖြစ်ပေါ်နိုင်ပြီး အနီးအနားရှိ အထောက်အပံ့များကို ထိခိုက်နိုင်ခြင်း။ 	<ul style="list-style-type: none"> အနီးဝတ်စုံကျင့်ကို ပြုတ်သိမ်းခြင်းလုပ်ငန်းစဉ်များတွင် ဖြစ်လာနိုင်သော ဆူညံသံအဆင့်များအကြောင်းကြိုတင် အကြောင်းကြားခြင်း။ အနီးဝတ်စုံကျင့်ရှိ လူသူအပေါ် အစောကတိအပျက်နည်းစေရန် နေ့ခင်းအချိန်များတွင်သာ ကန့်သတ်ဆောင်ရွက်ခြင်း။ အလုပ်သမားများအတွက် အကြားအာရုံစူးစိုက်မှု မရှိစေရန် နားအကာအကွယ်များ ထောက်ပံ့ပေးခြင်း။ စက်ယန္တရားကြီးများအသုံးပြုခြင်းကြောင့် တုန်ခါမှု လျော့နည်းစေရန် ရာတာအောက်ခံပြားများ အသုံးပြုခြင်း။

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအစဉ်များ			
စဉ်	သက်ရောက်မှု	စီမံကိန်းပိတ်သိမ်းသည့်ကာလအတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၃။	ရေအရည်အသွေး	<ul style="list-style-type: none"> ကက်စီမိုင်းယာပြုတ်သိမ်းခြင်း၊ ပြာစစ်ကန် မျက်သိမ်းခြင်းမှ ထွက်ရှိမည့် စွန့်ထုတ်ရေဆိုးများကို စနစ်တကျ ကိုင်တွယ်စွန့်ပစ်မှု မရှိခြင်း။ 	<ul style="list-style-type: none"> ကက်စီမိုင်းယာပြုတ်သိမ်းခြင်း၊ ပြာစစ်ကန် ကြိုတင်သန့်ရှင်းရေး ပြုလုပ်ခြင်း။ အနီးကပ်များနှင့် ကတ္တရာစေးများပျံ့နှံ့သော ရေများကို မပြုကြီးထဲသို့ မိမိမိမိမိမိသော အကာအကွယ်များဖြင့် ပြုလုပ်ထားသော ကန်များ တွင် သိုလှောင်ထားခြင်း။ Activated carbon filter များပါဝင်သော ယာယီ ရေသန့်စနစ် စနစ်တစ်ခု တည်ဆောက်ပြီး ရေဆိုး စွန့်ထုတ်ခြင်းကို စီမံခန့်ခွဲခြင်း။ ရေဆိုးစွန့်ထုတ်ခြင်းအတွက် လိုအပ်သော နှင်ပြုမိန့်များရယူပြီး ဒေသပတ်ဝန်းကျင်ဆိုင်ရာ စည်းမျဉ်းများကို လိုက်နာ ဆောင်ရွက်ခြင်း။
၄။	အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> စက်ကိရိယာများ ပြုတ်သိမ်းခြင်းမှ သတ္တုအမှုန့် အများစု၊ ကက်စီမိုင်းယာမှ လောင်ကျွမ်းပြီး အကြွင်းအကျန်များကို စနစ်တကျ စွန့်ပစ်မှု မရှိခြင်း။ 	<ul style="list-style-type: none"> သတ္တုအမှုန့် အများစု ကက်စီမိုင်းယာမှ လောင်ကျွမ်းပြီး အကြွင်းအကျန်များကို မြေဆီလွှာ ညစ်ညမ်းမှု မရှိစေရန် မိမိမိမိမိမိသော အစိတ်အပိုင်း အသုံးပြုမှု ဖျတ်တားခြင်း။ လေထုကိုကြိုတင်ကြောင့် ပြုပြင်မှုများ လုပ်ပါခြင်း မရှိစေရန် အနီးအကာများဖြင့် ထားရှိခြင်း၊ စွန့်ပစ်စေခြင်း။ အန္တရာယ်ရှိသော လျှပ်စစ်ကြိုးအမှိုက်များ ခွဲထုတ်သော သတ္တု အစိတ်အပိုင်းများကို ကန့်သတ်ထားရှိပြီးမှသာ စုဆောင်းသွင်းရမည်။ သင့်လျော်သော ကန့်သတ်မှုများကို အသုံးပြုပြီး ပျော်ရည်များနှင့် စွန့်ပစ်စေခြင်း၊ အား စုဆောင်းခြင်း။

ဆိုးကျိုးများလျော့ပါးသက်သာစေရေးအစီအစဉ်များ

စဉ်	သက်ရောက်မှု	စီမံကိန်းပုံစံအညွှန်းစာအုပ်အတွင်း လုပ်ငန်းဆောင်တာများ	လျော့ပါးသက်သာစေရေး နည်းလမ်းများ
၅၂	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် သေးကင်းလျှို့ဝှက်ရေး	<ul style="list-style-type: none"> စက်ပစ္စည်းများဖြတ်တောက်ခြင်း၊ တုရိုက်ခြင်း စသည့် လုပ်ငန်းစဉ်များနှင့် စက်ယန္တရားကြီးများ အသုံးပြုခြင်းကြောင့် ရာသီဥတု အခန်းများ ပြီး အကြာအာရုံ ထိခိုက်နိုင်ခြင်း။ မြှုပ်နှံခြင်း၊ ဖြိုကျခြင်း၊ စသည့် မတော်တဆ ထိခိုက်မှုအန္တရာယ်များနှင့် အရေးပေါ် အခြေအနေဖြစ်နိုင်ခြေများ။ 	<ul style="list-style-type: none"> သင့်လျော်သော PPE (mask, ear protection) များ ဝတ်ဆင်အသုံးပြုခြင်း။ လုပ်ငန်းခွင်အတွင်း ချော်လဲခြင်းမရှိစေရန် ပုံမှန်သန့်ရှင်းရေး ပြုလုပ်ခြင်း။ မတော်တဆ ထိခိုက်မှုများ မရှိစေရန် စက်ယန္တရားများ စနစ်တကျ ကိုင်တွယ်စေခြင်း။ အရေးပေါ်အခြေအနေများအတွက် first aid kit များ ဘေးရှိခြင်း။ အရေးပေါ်အခြေအနေဖြစ်ပွားမှုများ ဖွဲ့စည်းထားရှိခြင်း။
၅၃	မီးဘေးအန္တရာယ်နှင့် လျှပ်စစ်အန္တရာယ်	<ul style="list-style-type: none"> စက်ပစ္စည်းများဖြတ်တောက်ခြင်း၊ လျှပ်စစ်စီးများ အသုံးပြုသောကြောင့် ရှေးဖြစ်ခြင်း၊ ဆက်လျက်ဖြစ်ခြင်းများ ဖြစ်ပေါ်နိုင်ခြင်း။ ဒီဇယ်များသို့လှောင်ထားခြင်း။ 	<ul style="list-style-type: none"> မီးလောင်လွယ်သော ပစ္စည်းများ သိုလှောင်သည့်နေရာအနီး တိုက်တွင်ဆေးယိပ်သောက်ခြင်းမရှိခြင်းများအပြုလုပ်ခြင်း။ မီးသတ်ဆေးဘူးများ လုံလောက်စွာထားရှိခြင်း။ လျှပ်စစ်စီးကို စနစ်တကျ ကိုင်တွယ်အသုံးပြုခြင်း။ မီးဘေးအန္တရာယ် ကြိုတင်ကာကွယ်ရေး၊ လေ့ကျင့်ရေး အစီအစဉ်များ ရေးဆွဲခြင်း။

စောင့်ကြပ်ကြည့်ရှုမည့်နည်းလမ်းများ

- ကျန်းမာရေးနှင့်သေးကင်းရေးတာဝန်ခံမှ တိုက်ရိုက်စောင့်ကြပ်ကြည့်ရှုခြင်း
- ပတ်ဝန်းကျင်ထိခိုက်မှုရှိမရှိကို ပုံမှန်စစ်ဆေးခြင်းနှင့်တားမြစ်ထိန်းချုပ်ခြင်း
- ပြည်သူလူထု၏ အကြံပြုချက်များ၊ ဆွေးနွေးချက်များနှင့် ကန့်ကွက်မှုများအတွက် သတင်းများရယူပြီး ဖြေရှင်းဆောင်ရွက်ခြင်း
- တတိယအဖွဲ့အစည်းများမှ စောင့်ကြပ်ကြည့်ရှုခြင်း

ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ်

စီမံကိန်း လည်ပတ်သည့်ကာလ			
စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်	ကြိမ်နှုန်း	တိုင်းတာမည့်နေရာ
၀၁	လေအရည်အသွေး	တစ်နှစ် နှစ်ကြိမ်	စီမံကိန်းအရိယာအတွင်း Lat: 16°43'13.37"N Long: 94°44'52.54"E
၀၂	ရေညစ်မှု နှင့် တုန်ခါမှု	တစ်နှစ် နှစ်ကြိမ်	စီမံကိန်းအရိယာအတွင်း Lat: 16°43'13.37"N Long: 94°44'52.54"E
၀၃	လုပ်ငန်းခွင်မှ ရွှံ့ထုတ်စေရေး	တစ်နှစ် နှစ်ကြိမ်	စက်ရုံတစ်ခုလုံးမှ ထွက်လာသော ရေအုတ်မြှုပ်ခြင်း။ EF-1 Lat: 16°43'11.00"N Long: 94°44'53.00"E EF-2 Lat: 16°43'16.00"N Long: 94°44'54.00"E
၀၄	စီမံကိန်းမှ ထွက်ရှိလာသော အန္တရာယ်ရှိသော၊ အန္တရာယ်မရှိသော ရွှံ့ပစ်ပစ္စည်းများ	နေ့စဉ်	လုပ်ငန်းခွင်နေရာ။
၀၅	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် သေးကင်းလျှို့ဝှက်ရေး	နေ့စဉ်	လုပ်ငန်းခွင် အတွင်း။

အရေးပေါ်တုံ့ပြန်ရေး ကြိုတင်ပြင်ဆင်မှု အစီအစဉ်များ

အရေးပေါ်အခြေအနေများ

- မီးလောင်မှု
- ငလျင်
- ရေကြီးရေလွှမ်းမိုးမှု
- ဂက်စီမိုင်းယာနှင့်စပ်လျဉ်းသောအခြေအနေများ

ကြိုတင်ပြင်ဆင်မှုများ

- အရေးပေါ်တုံ့ပြန်ရေးအဖွဲ့ (Emergency Response Team - ERT) ဖွဲ့စည်းခြင်း။
- အရေးပေါ်ထိန်းချုပ်မှုအခန်းများ (Emergency Control Room) ထားရှိခြင်း။
- အရေးပေါ်လေ့ကျင့်မှုများ ပုံမှန်ပြုလုပ်ခြင်း (Fire Drill, First Aid Practice)
- အရေးပေါ် ဆက်သွယ်ရေးမဏ္ဍိုင် ဖန်ဆင်းထားခြင်း။ (Local Fire Department)

ဖြစ်ပွားချိန်တွင်ဆောင်ရွက်မည့် နည်းလမ်း

- ထိရောက်သောကယ်ဆယ်မှုနှင့် ဆေးဝါးကုသမှုပေးခြင်း။ ရှေးဦးသူနာပြုရန်နှင့်ဖြင့် ကယ်ဆယ်ခြင်း။
- နီးစပ်ရာဆေးရုံ၊ ဆေးခန်းသို့ ပို့ဆောင်ခြင်း။ သားကောင်ရာသို့ပို့ဆောင်ပေးခြင်း။
- သက်ဆိုင်ရာ မြို့နယ် မီးသတ်ဦးစီးဌာန၊ မြို့နယ် ကြက်ခြေနီအဖွဲ့တို့နှင့် ဆက်သွယ်ပူးပေါင်းဆောင်ရွက်ခြင်း။

ကျန်းမာရေးနှင့်ဘေးအန္တရာယ် ကင်းရှင်းရေး အစီအစဉ်

ကျန်းမာရေးနှင့်ဘေးအန္တရာယ် ကင်းရှင်းရေး တာဝန်ခံမှ

- ဝန်ထမ်းများကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးအတွက် လုပ်ငန်းနှင့် သက်ဆိုင်သည့် လေ့ကျင့်ရေး သင်တန်းများ စီစဉ်ဆောင်ရွက်ပေးခြင်း၊
- လုပ်ငန်းခွင်ကျွမ်းကျင်ရေး သင်တန်းများ ပို့ချပေးခြင်း၊
- စီမံကိန်းဧရိယာအတွင်း အရေးပေါ်အခြေအနေ တုံ့ပြန်မှု၊ အရေးပေါ် အသက်ကယ်နည်းလမ်းများ၊ အခြေခံကြိုက်ခြေနီသင်တန်းများ၊ မီးဘေးအန္တရာယ် ကာကွယ်ရေး၊ တုံ့ပြန်မှု သင်တန်းများ၊ အစီအစဉ်များ ရေးဆွဲခြင်း နှင့် သင်တန်းများ သင်ကြားပို့ချပေးခြင်း။

ကျေးဇူးတင်ပါသည်။

ယခုရှင်းလင်းတင်ပြခဲ့သည့် တင်ပြချက်ပိုင်အား အောက်ပါ QR Code မှတစ်ဆင့် Scan ဖတ်၍သော်လည်းကောင်း ရယူ လေ့လာနိုင်ပါသည်။

Scan Me!

တက်ရောက်လာကြသော
ဌာနဆိုင်ရာမှတာဝန်ရှိသူများ၊
သက်ဆိုင်ရာဒေသခံများ/ ပုဂ္ဂိုလ်များမှ
လုပ်ငန်းနှင့်ပတ်သက်၍ သိရှိလိုသည်များအား
မေးမြန်းခြင်း