

ENVIRONMENTAL IMPACT ASSESSMENT-EIA REPORT

FOR

“MANUFACTURING AND DISTRIBUTION OF BEER”

Emerald Brewery Myanmar Limited

PLOT NO.498, YAY TA LA PAUNG VILLAGE, HLEGU TOWNSHIP, YANGON REGION.



PROPONENT

EMERALD BREWERY MYANMAR LIMITED.

Plot No. (498), Yay Ta La Baund Village Tract, Withholding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region, Myanmar.

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August 2023

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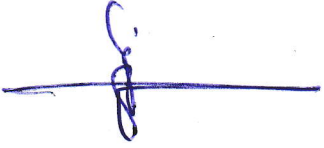


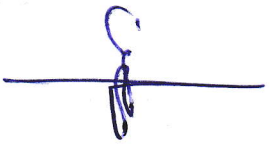

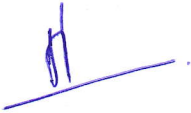


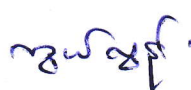
PLOT NO.498, YAY TA LA PAUNG VILLAGE, HLEGU TOWNSHIP, YANGON REGION.

Report Review Form

Report Title: Environmental Impact Assessment-EIA Report (Final) for “EMERALD BREWERY MYANMAR LIMITED.”	
Report Version: 00 Version	
Proponent: EMERALD BREWERY MYANMAR LIMITED. Plot No. (498), Yay Ta La Baund Village Tract, Withholding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region, Myanmar. Telephone: 09 431 91852 Email: chantha.aung@emeraldbrewery.com	Prepared by: GREEN MYANMAR ENVIRONMENTAL SERVICES CO., LTD. No.(115), Kanaung Min Thar Gyi Road, Industrial Zone(1), Hlaing Thar Yar Industrial City, Hlaing Thar Yar Township, Yangon Region, Myanmar. Telephone: 09 897 978 296 Email: info@gmes-mm.com gmescompany@gmail.com

Prepared by: U Kyaw Soe Win	Position: Managing Director (Certificate for transitional Consultant Registration No. 0019)
Date: June, 2023	Signature: 
Checked by: U Myo Myint	Position: Consultant (Certificate for transitional Consultant Registration No. 0026)
Checked Date: June, 2023	Signature: 
Approved by: U Kyaw Soe Win	Position: Managing Director (Certificate for transitional Consultant Registration No. 0019)
Approved Date: June, 2023	Signature: 
Summary: EIA Report This document presents the environmental impact assessment (EIA) – ESIA report as required for Emerald Brewery Myanmar Limited.	





EIA Report Preparation and Consultation Team

Name and TCR No.	Area of Expertise	Experience in EIA process	Signature and Date
U Kyaw Soe Win No.0019	Team Leader of the EIA Study Team	11 years	
U Sein Thaug Oo	EIA Consultant	11 years	
U Myo Myint No.0026	EIA Consultant	11 years	
U Kyaw Soe Win No.0019	SIA Consultant	11 years	
U Thein Soe No.0029	SIA Consultant	11 years	
U Khin Aung No.0025	Assistant SIA Consultant	11 years	
U Sai Soe Thant	Hydrology Consultant	5 years	
Dr.Ko Myint No.0037	Biodiversity Consultant (Fauna Specialist)	11 years	
Dr.Kyaw Zay Moe	Biodiversity Consultant (Flora Specialist)	11 years	



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Dr.Pyae Phyo Kyaw No.00114	Culture and Heritage Consultant	11 years	
Dr. Myint Thein	Health & Safety Consultant	5 years	
Daw Tin Ye Win	Legal Consultant	5 years	
U Kyi Han Bo No.00275	Monitoring Team Leader	8 years	



ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ညွှန်ကြားရေးမှူးချုပ်ရုံး၏ ၂၀၂၂ ခုနှစ်၊ နိုဝင်ဘာလ ၂၄ ရက်စွဲပါ စာအမှတ် အီးအိုင်အေ ၁/၁ အတည်ပြု (SR/၃၂၈၇ (စ) ၂၀၂၂ ဖြင့် Emerald Brewery Myanmar Limited ၏ တင်ပြခဲ့သော နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း၊ အစီရင်ခံစာအတည်ပြုကြောင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာရေးဆွဲတင်ပြရာတွင် လိုက်နာရန်ညွှန်ကြားချက်များကို လိုက်နာဆောင်ရွက်မှုများတင်ပြခြင်း

စဉ်	ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ ညွှန်ကြားချက်	လိုက်နာဆောင်ရွက်ချက်များ
(က)	သက်ရောက်မှုရှိစေမည့်နယ်ပယ်ဧရိယာ AOI ကို ဆန်းစစ်သတ်မှတ်ရန်နှင့် အဆိုပါသတ်မှတ်ထားသည့် AOI ကို လုံလောက်မှုရှိ/မရှိပြန်လည်ဆန်းစစ်ရန်နှင့် မလုံလောက်ပါက AOI ကို တိုးမြှင့်သတ်မှတ်ရန်၊ သတ်မှတ်ထားသော AOI သည် လုံလောက်မှုရှိကြောင်းကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ကျိုးကြောင်းဆိုင်လုံစွာ ထည့်သွင်းဖော်ပြရန်	သက်ရောက်မှုရှိစေမည့်နယ်ပယ်ဧရိယာ AOI သည် လေ့လာသည့်နယ်ပယ်အသီးသီးအတွက် လုံလောက်ပါကြောင်း အကြောင်းအကျိုးဖြင့် အပိုဒ် ၄-၉ တွင် တင်ပြထားပါသည်။
(ခ)	စီမံကိန်းပတ်ဝန်းကျင်ရှိသဘာဝသွင်ပြင်လက္ခဏာများ၊ ထိခိုက်လွယ်သောပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များ(Environmental Components) အားရှင်းလင်းစွာဖော်ထုတ်ထားရှိမှုကို ပတ်ဝန်းကျင်ဆိုင်ရာထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ထည့်သွင်းဖော်ပြသွားရန်	စီမံကိန်းပတ်ဝန်းကျင်ရှိသဘာဝသွင်ပြင်လက္ခဏာများကို အပိုဒ် ၄-၃ ရုပ်ပုံသေသများ၊ အပိုဒ် ၄-၄-၅ စီမံကိန်းပတ်ဝန်းကျင်လေ့လာသည့် ဧရိယာဖော်ပြချက်၊ အပိုဒ် ၄-၅-၁ မှ ၄-၅-၂-၇ အထိ စီမံကိန်းပတ်ဝန်းကျင်လူမှုပတ်ဝန်းကျင်ထိခိုက်လွယ်သည့် ဧရိယာများ၊ အပိုဒ် ၄-၆-၃ ယဉ်ကျေးမှုအမွေအနှစ်များဆန်းစစ်ခြင်းအတွက် အဓိကနေရာများ၊ အပိုဒ် ၄-၆-၄ စီမံကိန်းပတ်ဝန်းကျင်ရွာများ၊ အပိုဒ် ၄-၇ ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်းမှ အပိုဒ်ခွဲ ၅-၁-၂ အမူအကျင့်များ၊ အပိုဒ်ခွဲ ၆-၁ အနီးဆုံးကျန်းမာရေးစောင့်ရှောက်ရာနေရာများ ကို တင်ပြထားပါသည်။ အပိုဒ်ခွဲ ၆-၁-၃ အဖြစ်များသောရောဂါများ၊ အပိုဒ် ၄-၇-၃-က ကျန်းမာရေးအချက်အလက်များ (မင်္ဂလာဒုံမြို့နယ်) လူဦးရေနှင့် ဆရာဝန်အချိုး၊ လူဦးရေနှင့်သူနာပြုအချိုး၊ လူဦးရေနှင့်ကျေးလက်ကျန်းမာရေးအချိုး၊ အဖြစ်များသောရောဂါများ၊ HIV/AIDS ခံစား/သေဆုံးစာရင်း၊ ကျန်းမာရေးညွှန်းကိန်းများ (မွေးနှုန်း၊ မိခင်သေဆုံးနှုန်း၊ မွေးကင်းစလေးသေဆုံးနှုန်း၊ သားလျောနှုန်း၊ အပိုဒ် ၄-၇-၃-ခ လှည်းကူးမြို့နယ်၏ ကျန်းမာရေးအချက်အလက်များ တို့ကို တင်ပြထားပါသည်။
(ဂ)	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းအပိုဒ် (၂) (၄) ပါ အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းများနှင့် အညီဆန်းစစ်ဖော်ပြရန်	အခြားဆောင်ရွက်နိုင်သောနည်းလမ်းများအဖြစ် စီမံကိန်းဖော်ဆောင်ခြင်း၊ မဖော်ဆောင်ခြင်း၊ နေရာဒေသရွေးချယ်ခြင်း၊ ကုန်ကြမ်းရွေးချယ်ခြင်းအဖြစ် အမိုးနီးယားနှင့် ဆန်ရွေးချယ်ခြင်း နှင့်

		နေရောင်စွမ်းအင်ရွေးချယ်ခြင်းကို အပိုဒ် ၃-၂၆ တွင် တင်ပြထားပါသည်။
(ဃ)	ရွေးချယ်ထားသောအခြားဆောင်ရွက်နိုင်သည့် နည်းလမ်းများကို နှိုင်းယှဉ်ဖော်ပြရန်နှင့် အဆိုပါ နည်းလမ်းများနှင့်ပတ်သက်၍ ရွေးချယ်ရသည့် အကြောင်းအရင်းတို့အားထည့်သွင်းဖော်ပြရန်	ရွေးချယ်ထားသောအခြားဆောင်ရွက်နိုင်သည့် နည်းလမ်းများကို နှိုင်းယှဉ်ဖော်ပြရန် Summary of Pros and Cons of chosen Alternatives Table တွင် Pros နှင့် Cons စာတိုင်အောက်တွင် တင်ပြထားပါသည်။
(င)	လုပ်ငန်းအဆင့်အလိုက်အသေးစိတ်အချက်များ အတွက် သီးခြားဆောင်ရွက်နိုင်သောနည်းများ ရွေးချယ်ရာတွင် ထည့်သွင်းစဉ်းစားသည့် နည်းလမ်းများ၊ အဆိုပါနည်းလမ်းများအနက် စီမံကိန်းပိုင်ရှင်မှလိုက်နာဆောင်ရွက်နိုင်မည့် အခြေအနေရှိ/မရှိထည့်သွင်းဖော်ပြရန်	အခြားဆောင်ရွက်နိုင်သောနည်းလမ်းများရွေးချယ်ရာ တွင် လုပ်ငန်းလုပ်ကိုင်သူမှ လိုက်နာဆောင်ရွက် နိုင်မည့်အခြေအနေကို Summary of Pros and Cons of chosen Alternatives Table တွင် Mitigation Measure စာတိုင်အောက်တွင် တင်ပြထားပါသည်။
(စ)	ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များ (physical environment, biological environment, socio-econoric environmental) နှင့် ပတ်သက်၍ အချက်အလက်များကောက်ယူမည့် survey method & methodology ကိုဖော်ပြရန်	ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များ (physical environment ဖြစ်သော လေ၊ ရေ၊ မြေ၊ အသံ၊ အနံ့၊ တုန်ခါမှု၊ ဘို့လ်လာခေါင်းတိုင်ထုတ်လွှတ်မှု၊ လျှပ်စစ် ခေါင်းတိုင်ထုတ်လွှတ်မှုများတို့ကို ကောက်ယူခဲ့သည့် method & methodology ကို အပိုဒ် ၆-၄-၁၊ ၆-၄-၂၊ ၆-၄-၃၊ ၆-၄-၄၊ ၆-၄-၅၊ ၆-၄-၆၊ ၆-၄-၇၊ ၆-၄-၈ တို့တွင် တင်ပြထားပါသည်။ Biological environment အတွက် အပိုဒ် ၆-၄-၁၀ တွင်လည်ကောင်း၊ Socio-economic အတွက် ၆-၄-၉၊ ၆-၄-၁၁၊ ၆-၄-၁၂၊ ၆-၄-၁၃ တို့တွင် လည်းကောင်းတင်ပြထားပါသည်။
(ဆ)	စီမံကိန်းမြေဧရိယာ ၃၂.၈၄ ဧက တစ်လျှောက်ရှိ ပတ်ဝန်းကျင်ကျေးရွာ/ရပ်ကွက် စိုက်ပျိုးမြေနှင့်လူမှု စီးပွားအခြေအနေများကိုပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ပြည့်စုံစွာဖော်ပြရန်	စီမံကိန်းမြေဧရိယာ ၃၂.၈၄ ဧက တစ်လျှောက်ရှိ ပတ်ဝန်းကျင်ကျေးရွာ/ရပ်ကွက် စိုက်ပျိုးမြေနှင့်လူမှု စီးပွားအခြေအနေများကို အပိုဒ် ၄-၅ တွင် Primary Data များ၊ Secondary data များဖြင့် တင်ပြထားပါ သည်။
(ဇ)	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံး လုပ်နည်း အပိုဒ် ၄၉ (ဂ)အရ ပတ်ဝန်းကျင်ထိခိုက် မှုဆန်းစစ်ခြင်းဆောင်ရွက်ရာတွင် ဆက်လက် အထူးပြုလေ့လာရန်လိုအပ်မည့် ပတ်ဝန်းကျင်လူမှု ရေးနှင့်ကျန်းမာရေးဆိုင်ရာပြဿရပ်များကိုချိန်ထိုး ၍ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာထိခိုက်မှုများ ကျန်းမာရေးဆိုင်ရာထိခိုက်မှုများကိုဖော်ထုတ်သတ် မှတ်ရန်	ပတ်ဝန်းကျင်နှင့်လူမှုရေးထိခိုက်မှုများကို အပိုဒ် ၄-၅ နှင့် ၄-၇ တို့တွင် ဆန်းစစ်ဖော်ပြထားပြီး၊ မကျေနပ်ချက် နှင့်လိုလားချက်များ အပိုဒ် ၈ နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲ မှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ် အပိုဒ် ၆ တို့တွင် ဆက်လက်အထူးပြုသွားမည်ဖြစ်ကြောင်းတင် ပြထားပါသည်။ ဆက်လက်အထူးပြုဆောင်ရွက်ရမည့် လုပ်ငန်းကို အပိုဒ် ၄-၅-၄ တွင် တင်ပြထားပါသည်။
(ဈ)	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံး လုပ်နည်းအပိုဒ် ၄၉ (င) အရ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းမစတင်မီ အတိုင်ပင်ခံများ သက်ဆိုင်ရာအုပ်ချုပ်ရေးအဖွဲ့	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၊ မစတင်မီ စီမံကိန်း ပတ်ဝန်းကျင်ဒေသခံများ၊ အဖွဲ့အစည်းများတို့နှင့် သုံးကြိမ်တွေ့ဆုံဆန္ဒသဘောထားအမြင်များရယူပြီး အနံ့ဆိုး၊ ဘားလားချောင်းတွင် ဗေဒါပင်များ

	<p>အစည်းများ၊ စီမံကိန်းဖော်ဆောင်သူများအကျိုး သက်ဆိုင်မှုနှင့်စီမံကိန်းကြောင့်ထိခိုက်ခံစားရသူများ အားအဆိုပြုစီမံကိန်းနှင့် စပ်လျဉ်းသည့် ယင်းတို့၏ အမြင်နှင့်သက်ဆိုင်မှုများကိုဖော်ထုတ်တင်ပြရန်</p>	<p>တိုးသွားခြင်းကိစ္စ၊ အလုပ်အကိုင်လူနေမှုပြောင်းလဲခြင်း တို့ကို အဓိကတင်ပြကြပြီး CSR လုပ်ငန်းဖြစ်သော ဆေးပေးခန်း၊ တံတား၊ ဘုရားမီးပူဇော်ပေးရေး တို့ကို သိရှိပြီး ဆောင်ရွက်ပေးခြင်းနှင့် ဆက်လက်ဆောင်ရွက် မည့်အစီအစဉ်ကို အပိုဒ် ၄-၅ နှင့် ၄-၇ တို့တွင် တင်ပြ ထားပါသည်။</p>
(ည)	<p>စီမံကိန်းအတွက်ရေအရင်းအမြစ်ဘားလားချောင်း ရေအားအသုံးပြုသွားမည်ဖြစ်ကြောင်းနှင့် Alternative အဖြစ်မြေအောက်ရေအားအသုံးပြု သွားမည်ဖြစ်ကြောင်းဖော်ပြထားသဖြင့် ရေရှည် တွင်လုံလောက်နိုင်မှုရှိ/မရှိနှင့် စီမံကိန်းကြောင့် ထိခိုက်မှုရှိ/မရှိဆန်းစစ်ဖော်ပြရန်</p>	<p>မိုးလေဝသနှင့်မြေအောက်ရေ၊ မြေပေါ်ရေ ပညာရှင်၏ water shed နှင့် ground water အခြေအနေ၊ ဘားလားချောင်းရေအခြေအနေ၊ တည်ဆောက်ရေး ကာလတွင် တူးခဲ့သော အစီစီတွင်း (၆)တွင်း၏ Step draw down test နှင့် constant - recovery pumping test အရများရလည်းကောင်း၊ စီမံကိန်းမှ သုံးစွဲမည့်ရေ၊ Abstraction နှင့် hydro ecological zone တွက်ချက်မှုများအရ လုံလောက်ကြောင်း အပိုဒ် ၄-၃-၁၊ ၄-၃-၂၊ ၄-၃-၃၊ ၄-၃-၄၊ ၄-၃-၅ တို့တွင် တင်ပြထားပါသည်။</p>
(ဋ)	<p>စီမံကိန်းမှထွက်ရှိလာမည့်ဘေးအန္တရာယ်ရှိစွန့်ပစ် ပစ္စည်းများ (Hazardous Waste) ဘေးအန္တရာယ် မရှိသောစွန့်ပစ်ပစ္စည်းများ (Non Hazardous Waste) ဟူ၍ ခွဲခြားမည့်စနစ်၊ စီမံခန့်ခွဲမှုစနစ်၊ စွန့်ပစ်ပစ္စည်းများအားမည်ကဲ့သို့သိမ်းဆည်းမည်၊ မည်သူမှတာဝန်ယူဆောင်ရွက်မည်၊ final disposal site သို့ မရောက်ရှိမီ သိုလှောင်မည့် Temporary Storage Faculation စသည်) တို့ကို ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင်ထည့်သွင်း ဖော်ပြရန်</p>	<p>စီမံကိန်းမှထွက်ရှိသောဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းများ ကို အပိုဒ် ၃-၂၁နှင့် အပိုဒ် ၃-၂၂ တွင် တင်ပြထား ပြီးနေစဉ်ထွက်ရှိမှုမဟာ၊ ပါဝင်ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီ အစဉ်တို့ပါဝင်ပါသည်။ စွန့်ပစ်ပစ္စည်းများကို အကန့် (၇) ကန့် ခွဲခြားသိမ်းဆည်းပြီးအားလုံးကိုအခြားနေရာများ တွင် ပြန်လည်အသုံးပြု ရန်အတွက် တပတ်တစ်ကြိမ် ထုတ်ပေးပါသည်။ ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းကို အပိုဒ် ၃-၂၂ တွင် တင်ပြထားပါသည်။</p>
(ဌ)	<p>ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အားအကောင် အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်း၊ ၎င်းတို့ ၏ တာဝန်ဝတ္တရားများနှင့်ရန်ပုံငွေများကို ဖော်ပြရန်</p>	<p>ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် အကောင် အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အဖြစ် အပိုဒ် ၆-၃ ပတ်ဝန်းကျင်လူမှုစီးပွားစီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စောင့်ကြည့်ကြည့်ရှုခြင်းအဖွဲ့အဖြစ် Table ၆-၁ တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့ကိုလည်းကောင်း၊ Table ၆- ၂ တွင် ပတ်ဝန်းကျင်စောင့်ကြည့်ရှုခြင်းအဖွဲ့ကို လည်းကောင်း၊ အပိုဒ် ၆-၃-၁ တွင် တာဝန်နှင့်ဝတ္တရား များကို လည်းကောင်း၊ ငွေကြေးလျာထားချက်ကို သက်ဆိုင်ရာ scope အသီးသီးတွင် ဖော်ပြထားပါသည်။</p>
(ဍ)	<p>နစ်နာသူမှ တိုင်းကြားလာသည့်အပေါ်တာဝန်ယူ ဆောင်ရွက်ပေးသည့်အစီအစဉ် Grievance Redress Mechanism-GRM နှင့် ပတ်သက်၍ Pre-Consturction, Consturction, Operation အဆင့် (၃) ဆင့်လုံးအတွက် လွှမ်းခြုံသည့်</p>	<p>နစ်နာသူမှတိုင်ကြားလာသည့်အပေါ်တာဝန်ယူဆောင် ရွက်ပေးသည့်အစီအစဉ်အတွက် Grievance Handing Committee ကို ဖွဲ့စည်းခြင်း၊ တိုင်ကြားခြင်း ပုံစံ အင်္ဂလိပ် မြန်မာ နှစ်ဘာသာ၊ ဆောင်ရွက်ပေးမည့် အစီအစဉ်တို့ကို အပိုဒ် ၈-၃ တွင် ပြင်ဆင်တင်ပြထား</p>

	<p>နစ်နာသူမှ တိုင်ကြားလာသည့်အပေါ် ဆောင်ရွက်မည့်အစီအစဉ် (ရည်ရွယ်ချက်၊ Grievance Committee ၏ အဖွဲ့ဝင်များ၊ တာဝန်ယူဆောင်ရွက် မည့်လုပ်ငန်းတာဝန်များ၊ နစ်နာသူတိုင်ကြားနိုင် မည့် အင်္ဂလိပ်၊ မြန်မာ ဘာသာဖြင့် ဖော်ပြ ထားသည့် တိုင်ကြားစာနမူနာများ၊ နစ်နာသူမှ တိုင်ကြားလာသည့် မကျေနပ်ချက်များအပေါ် ဆောင်ရွက်ပေးမည့်အစီအစဉ်) အားပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ထည့်သွင်း ဖော်ပြရန်</p>	<p>ပါသည်။</p>
(ပ)	<p>အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်းပတ်သက်၍ ဒေသခံပြည်သူတို့၏ စီမံကိန်းအပေါ်သဘောထား အမြင်များကို သိရှိစေရန်၊ ဒေသခံများနှင့်တွေ့ဆုံ ဆွေးနွေးပွဲများတွင် ဆွေးနွေးသည့်အကြောင်းအရာ များ၊ ဆွေးနွေးမှုရလဒ်များ၊ မှတ်တမ်းဓာတ်ပုံများ စသည်တို့ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတွင် ပြည့်စုံစွာထည့်သွင်းဖော်ပြရန်</p>	<p>အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းအစီအစဉ်ကို ပထမအကြိမ်တိုင်ပင်ဆွေးနွေးခြင်း၊ ဒုတိယအကြိမ် တိုင်ပင်ဆွေးနွေးခြင်း၊ တတိယအကြိမ်တိုင်ပင်ဆွေးနွေး ခြင်းတို့ကို အပိုဒ် ၈-၁ တွင် ညွှန်ကြားချက်များနှင့်အ အညီ တင်ပြထားပါသည်။</p>
(ဏ)	<p>သက်ရောက်မှုများကိုဆန်းစစ်ခြင်းလျော့ပါးစေရေး နည်းလမ်းများ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် များရေးဆွဲရာတွင်ဒေသခံများနှင့်တွေ့ဆုံဆွေးနွေး ပွဲများမှရရှိသည့် ရလဒ်များ သဘောထား အမြင်များကို ထည့်သွင်းစဉ်းစားရန်</p>	<p>ဒေသခံပြည်သူများနှင့်တွေ့ဆုံဆွေးနွေးခြင်းများမှ ရရှိသော အနံ့ဆိုးများ၊ ချောင်းအတွင်း ဗေဒါပင်များ တိုးပွားလာခြင်းနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများ ရရှိရေးကိစ္စရပ်များကို ဒုတိယတွေ့ဆုံဆွေးနွေးပွဲတွင် စက်ရုံတာဝန်ရှိသူများနှင့် တွေ့ဆုံပြီးဆောင်ရွက်ပေးရန် ကတိကဝတ်များရရှိခဲ့ပါသည်။</p>
(တ)	<p>ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံး လုပ်နည်းအပိုဒ် (၅၀) ပါ ပြဌာန်းချက်နှင့် အညီ စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက်များကို အများပြည်သူနှင့်လူမှုအဖွဲ့အစည်းများက သိရှိနိုင် ရန် စီမံကိန်းသို့မဟုတ် စီမံကိန်းအဆိုပြုသူ၏ ဝတ်လ်ဆိုဒ်တွင် လွှတ်တင်ခြင်းနှင့် စီမံကိန်းနေရာ များတွင် အများပြည်သူမြင်တွေ့နိုင်သည့်ဆိုင်းဘုတ် များနှင့်ကြော်ငြာသင်ပုန်းများထင်ရှားစွာစိုက်ယူခြင်း ၊ သတင်းနှင့် မီဒီယာများတွင် ထုတ်ဖော်ကြေငြာခြင်း များဆောင်ရွက်သွားရန်</p>	<p>စီမံကိန်း website တွင် တင်ပြသွားပါမည်။</p>
(ထ)	<p>နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း (Scoping Report) နှင့် Terms of reference (TOR) တွင် ထည့်သွင်းဖော်ပြထားသော်လည်းပတ်ဝန်းကျင်ထိ ခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို စိစစ်ပြီးနောက် အကယ်၍ ထပ်မံဆန်းစစ်ခြင်းဆောင်ရွက်ရန်လို အပ်သော အချက်များရှိပါက ထပ်မံ၍ လေ့လာ</p>	<p>ဆောင်ရွက်ရန်လိုအပ်သောအချက်များအဖြစ် အနံ့ဆိုးများအတွက် လေကာပင်များစိုက်ပျိုးခြင်း၊ ဘာလားချောင်းအတွင်း ဗေဒါပင်များဖယ်ရှားရေး အစီအစဉ်တွင် ပါဝင်ကူညီခြင်းနှင့်ဖြစ်နိုင်ပါက ဒေသခံ ပြည်သူများကို အလုပ်အကိုင်အခွင့်အလမ်းများဦးစား ပေးရန်တို့ကို ဆက်လက်လုပ်ဆောင်သွားရန်</p>

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

	ဆန်းစစ်ခြင်းဆောင်ရွက်ရန်	ဖြစ်ပါသည်။
(ဒ)	နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာနှင့် အထက်ဖော်ပြပါအချက်များအပါအဝင်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာစုံစမ်းစစ်ဆေးခြင်း အတွက် ဆောင်ရွက်ရမည့် လုပ်ငန်း တာဝန်များ (TOR) အရ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းအပိုဒ် (၆၃) နှင့်အညီ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၊ အစီရင်ခံစာအား သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့တင်ပြရန်	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ထုံးလုပ်နည်းအပိုဒ် (၆၃) နှင့် အညီ အစီရင်ခံစာအား သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြပါမည်။



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Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၃-၅။ ထောက်ပံ့ကူညီမှု/ကန်ထရိုက်တာများစာရင်း.....က-10

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 က-၃-၉-၂။ အမိုးနီးယား (Refrigerant) စီမံခန့်ခွဲမှုအစီအစဉ်က-12

က-၃-၁၀။ အထောက်အကူပြုပစ္စည်းများလိုအပ်ချက်.....က-13

 က-၃-၁၀-၁။ လျှပ်စစ်ဓာတ်က-13

 က-၃-၁၀-၂။ လောင်စာလိုအပ်ချက်က-13

 က-၃-၁၀-၃။ ရေလိုအပ်ချက်က-13

 က-၃-၁၀-၄။ ကာဗွန်ဒိုင်အောက်ဆိုဒ်ပြန်လည်စုယူသည့်နေရာက-13

 က-၃-၁၀-၄-၁။ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ပလန့်.....က-13

 က-၃-၁၀-၅။ ဘျိုင်လာခန်းက-14

က-၃-၁၁။ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများက-14

က-၃-၁၂။ မိလ္လာနှင့် စွန့်ပစ်ရေမြောင်းက-14

က-၃-၁၃။ ရေနှင့်စွန့်ပစ်ရေသန့်စင်ခြင်းစနစ်က-14

 က-၃-၁၃-၁။ ရေသန့်စင်သည့်စနစ်.....က-14

 က-၃-၁၃-၂။ စွန့်ပစ်ရေသန့်စင်သည့်စနစ်က-15

က-၃-၁၄။ စွန့်ပစ်ပစ္စည်းများနှင့်ကိရိယာများက-16

က-၃-၁၅။ အဆောက်အဦစာရင်းနှင့်နေရာချထားပုံက-16

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က-၃-၁၆။ အလုပ်ချိန်၊ လူအင်အားနှင့် စက်ရုံဖွဲ့စည်းပုံ.....က-16

က-၃-၁၇။ ထုတ်လုပ်မှုနည်းစဉ်က-16

က-၃-၁၈။ နေရောင်ခြည်စွမ်းအင်အသုံးပြုခြင်းက-16

က-၃-၁၉။ စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်.....က-16

က-၃-၂၀။ စွန့်ထုတ်ရည်နှင့်စွန့်ပစ်ရေပမာဏ၊ ပါဝင်ပစ္စည်းများနှင့် စီမံခန့်ခွဲမှုအစီအစဉ်.....က-17

က-၃-၂၁။ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းပါဝင်သော ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်.....က-17

က-၃-၂၂။ ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းပါဝင်သော ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်.....က-17

က-၃-၂၃။ Storm water နှင့် ရေမြောင်းစနစ်.....က-17

က-၃-၂၄။ ရေဖြန့်ဝေပုံစနစ်.....က-17

က-၃-၂၅။ လမ်းပန်းဆက်သွယ်ရေး.....က-17

က-၃-၂၆။ အခြားရွေးချယ်နိုင်မှုများ.....က-17

က-၄။ ပတ်ဝန်းကျင်အကြောင်းအရာဖော်ပြချက်က-19

က-၄-၁။ နိဒါန်း.....က-19

က-၄-၂။ လေ့လာသည့်ကန့်သတ်ချက်သတ်မှတ်ခြင်းက-19

က-၄-၂-၁။ စီမံကိန်းမစတင်မီ မင်္ဂလာဒုံမြို့နယ်အတွင်း အခြေခံအချက်အလက်များ ပြောင်းလဲခြင်းက-19

က-၄-၂-၂။ အကျိုးသက်ရောက်မှု (မင်္ဂလာဒုံမြို့နယ်နှင့်လှည်းကူးမြို့နယ်)က-20

က-၄-၂-၂-၁။ လွှမ်းမိုးနိုင်သည့် ဧရိယာက-20

က-၄-၂-၂-၂။ လွှမ်းမိုးနိုင်သည့် ဧရိယာအပေါ် လေ့လာသည့်အချိန်အစီအစဉ်.....က-20

က-၄-၂-၂-၃။ အဆိုပြုစီမံကိန်းအဆင့်သုံးဆင့်အတွက် အဓိကသက်ရောက်မှုများက-20

က-၄-၂-၂-၄။ Spatial နှင့် Temporal သက်ရောက်မှုများ.....က-21

က-၄-၃။ ရူပဝိသေသများ.....က-21

က-၄-၃-၆။ ပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး မူလအချက်အလက်များက-21

က-၄-၃-၆-၁။ လေထုအရည်အသွေး.....က-21

က-၄-၃-၆-၂။ ဆူညံသံပတ်ဝန်းကျင်.....က-24

က-၄-၃-၆-၃။ လုပ်ငန်းခွင်လေထုအရည်အသွေးနှင့်ဆူညံသံအဆင့်တိုင်းတာခြင်း.....က-26

က-၄-၃-၆-၃-၁။ လုပ်ငန်းခွင်လေထုအရည်အသွေးနှင့်ဆူညံသံအဆင့် တိုင်းတာ ခြင်းက-26

က-၄-၃-၆-၃-၂။ လုပ်ငန်းခွင်ဆူညံသံတိုင်းတာခြင်း.....က-27

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က-၄-၃-၆-၃-၃။ ခေါင်းတိုင်ထုတ်လွှတ်မှုအရည်အသွေးတိုင်းတာခြင်းက-28

က-၄-၃-၆-၄။ ရေအရည်အသွေးက-29

က-၄-၃-၆-၅။ စွန့်ပစ်ရေ အရည်အသွေးများက-31

က-၄-၃-၆-၆။ မြေထုအရည်အသွေးက-32

က-၄-၃-၆-၇။ တုန်ခါမှုတိုင်းတာခြင်းက-33

က-၄-၄။ ဇီဝဝိသေသများက-34

က-၄-၅။ လူမှုစီးပွားရေးဆိုင်ရာဝိသေသများက-35

 က-၄-၅-၅။ လှည်းကူးမြို့နယ်၏ အချက်အလက်များက-37

 က-၄-၅-၅-၁။ မင်္ဂလာဒုံမြို့နယ်က-37

က-၄-၆။ ယဉ်ကျေးမှုအမွေအနှစ်များထိခိုက်မှုဆန်းစစ်ခြင်းက-37

 က-၄-၆-၁။ ဆန်းစစ်ခြင်းပျူဟာက-37

 က-၄-၆-၂။ စည်းကမ်းချက်ကိုးကားမှုက-37

 က-၄-၆-၃။ ယဉ်ကျေးမှုအမွေအနှစ်များဆန်းစစ်ရန်အဓိကကျသည့်နေရာဒေသများက-38

 က-၄-၆-၄။ စီမံကိန်းဧရိယာဝန်းကျင်ရှိကျေးရွာများက-39

 က-၄-၆-၅။ ယဉ်ကျေးမှုအမွေအနှစ်များထိခိုက်မှုဆန်းစစ်ခြင်းကောက်နုတ်ချက်က-39

က-၄-၇။ ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်းက-39

က-၄-၈။ ယာဉ်သွားလာမှုဆန်းစစ်ခြင်းက-40

က-၄-၉။ သတ်မှတ်ထားသော AOI လုံလောက်မှုရှိမရှိဖော်ပြခြင်းက-40

က-၅။ အဓိက ပတ်ဝန်းကျင်ထိခိုက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများက-41

 က-၅-၁။ နည်းစနစ်နှင့် ချဉ်းကပ်ပုံက-41

 က-၅-၁-၁။ နည်းစနစ်က-41

 က-၅-၁-၂။ ချဉ်းကပ်ပုံစနစ်က-41

 က-၅-၂။ ထုတ်လုပ်ပုံနည်းစဉ်အကျဉ်းက-42

 က-၅-၃။ ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများနှင့် ကြွင်းကျန်သက်ရောက်မှုများဖော်ပြခြင်းက-44

 က-၅-၃-၁။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းက-45

 က-၅-၃-၁-၁။ စီမံကိန်းတည်ဆောက်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များက-45

 က-၅-၃-၁-၂။ စီမံကိန်းလည်ပတ်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များက-45



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က-၅-၃-၁-၃။ စီမံကိန်းပိတ်သိမ်းချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များ.....က-45

က-၅-၃-၂။ ပတ်ဝန်းကျင်သက်ရောက်မှု အရေးပါမှုအဆင့်က-45

က-၅-၃-၃။ သက်ရောက်မှုများနှင့် ယင်းတို့ကို လျော့နည်းစေရန် ဆောင်ရွက် ချက်များ.....က-45

က-၅-၃-၄။ ကြွင်းကျန်သက်ရောက်မှုများ၏ အရေးပါမှု တွက်ချက်ခြင်းက-46

က-၅-၃-၅။ သက်ရောက်မှုများလျော့နည်းစေရန် မဆောင်ရွက်မီနှင့် ဆောင်ရွက်ပြီးသက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း.....က-46

က-၅-၃-၅-၁။ စီမံကိန်းတည်ဆောက်ချိန် သက်ရောက်မှုများကိုလျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းက-46

က-၅-၃-၅-၂။ စီမံကိန်းလည်ပတ်ချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းက-46

က-၅-၃-၅-၃။ စီမံကိန်းပိတ်သိမ်းချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းက-47

က-၅-၄။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပါဝင်မည့်အချက်အလက်များနှင့် လျော့နည်းစေရန်ဆောင်ရွက်သည့် နည်းလမ်းများဖော်ပြခြင်း.....က-47

က-၅-၅။ တိုးပွားလာသော သက်ရောက်မှုများက-48

က-၆။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (အီးအမ်ပီ)က-48

က-၆-၁။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ရည်ရွယ်ချက်များ.....က-48

က-၆-၂။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့အစည်းဆိုင်ရာအစီအစဉ်.....က-48

က-၆-၃။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့် စောင့်ကြပ်ကြည့်ရှုမှုအဖွဲ့များ ဖွဲ့စည်းခြင်း.....က-48

က-၆-၃-၁။ တာဝန်နှင့်ဝတ္တရားများက-48

က-၆-၄။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်.....က-48

က-၆-၄-၁။ ပတ်ဝန်းကျင်လေထုအရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့် ရှုခြင်းအစီအစဉ်က-48

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ABBREVIATION

ADB	Asia Development Bank
Abs	Abstraction
AOI	Area of Influence
CHIA	Cultural Heritage Impact Assessment
CSPro	Census and Survey Processing System
CSR	Corporate Social Responsibility
DICA	Directorate of Investment and Company Administration
DISI	Directorate of Industrial Supervision and Inspection
ECC	Environment Compliance Certificate
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization



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FGD	Focal Group Discussion
GMES	Green Myanmar Environmental Services
GIS	Geographic Information System
GPS	Global Positioning System
HCM	Highway Capacity Manual
HEZ	Hydro Ecological Zone
IFC	International Finance Organization
ILO	International Labour Organization
IUCN	International Union for Conservation of Nature
KII	Key Important Interview
MNREC	Ministry of Natural Resources and Environmental Conservation
MOECAF	Ministry of Environmental Conservation and Forestry
MSDS	Material Safety Data Sheet
NEQ(E)G	National Environmental Quality (Emission) GuideLines
NIS	Non-Indigenous Species
NDIR	Non Dispersive Infraied
OHS	Occupational Health and Safety
PCM	Public Consulation Meeting
PCHS	Potential Cultural Heritage Site
PCE	Passenger Car Equivalent
PCU	Passenger Car Unit
ToR	Terms of References
UTM	Universal Transverse Mercator
VEC	Valued Environmental Component
WGS	World Geodetic System



WHO	World Health Organization
YCDC	Yangon City Development Committee

Units

Al	Aluminum
As	Arsenic
CN	Cyanide
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
°C	Degree Celsius
dB, dB (A)	Decibel (measured with A-weighted)
°F	Degree Fahrenheit
gal	Gallons
gpm	Gallons Per Minute
hr	Hour
kg	Kilogram
kVA	Kilo Volt Ampere
lit	Liter
l/s	Liter Per Second
MMK	Myanmar kyats
Mg	Magnesium
m	Meter
m ³ /hr	Cubic Meter per hour
NO	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
O ₂	Oxygen



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pH	Potential of Hydrogen Ion Concentration
PM	Particulate Matter
PM ₁₀	Particulate Matter 10 Micrometer or Less in Diameter
PM _{2.5}	Particulate Matter 2.5 Micrometer or Less in Diameter
ppb	Part Per Billion
ppm	Part Per Million
QC	Quality Control
Qty	Quantity
SO ₂	Sulfur Dioxide
Sr. No.	Serial Number
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TVOC	Total Volatile Organic Compound
USD	United States Dollar
W	Watt



DOCUMENT CERTIFICATION AND DECLARATION

This project report on Environmental Impact Assessment (EIA) has been prepared by Green Myanmar Environmental Services Co., Ltd.

I, (**Authorized Person of Emerald Brewery Myanmar Limited**) as proponent of this project, do hereby solemnly affirm and declare that I fully understand and undertake to operate the project strictly in accordance with the following fact.

- comply with all Myanmar laws, rules and regulations, and Clauses 14 and 15 of the Environmental Conservation Law (2012),
- Ensure that legal and other obligations are incorporated in the designs, procedures and project controls,
- Communicate legal and other requirements to personnel and contractors accountable for compliance,
- Ensure all relevant legal and other requirements and associated documentation (e.g., licenses, permits, approval applications) are readily available on site to company personnel, contractors, subcontractors and consultants,
- Conduct a compliance audit at least annually and ensure there is a process in place to monitor on-going compliance with all legal and other requirements.
- Follow according to the Environmental Management Plan and Monitoring Plan,
- Submitting the environmental monitoring report regularly according to Environmental Impact Assessment Procedure

I, the undersigned, certify that the particulars in this report are correct and true to the best of my knowledge.

Signature : -----

Name : -----

Designation : -----

Emerald Brewery Myanmar Limited

Date: -----



COMMITMENT AND ACKNOWLEDGE

Environmental Impact Assessment (EIA) describes the environmental condition of a project, including potential impact, formulation of mitigation measures, and preparation of institutional requirements and environmental monitoring. This EIA report was prepared using information from the following sources:

- Review of selected literature, reports, and advisories;
- Meetings with several interested parties;
- The experience of the EIA Team; and
- Other information solicited from baseLine data and stakeholders.

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

The EIA team is grateful to the project proponent – **Emerald Brewery Myanmar Limited** - for commissioning us to conduct this Initial Environmental Examination Report in respect of the proposed project. We would like to further acknowledge with great appreciation all those neighbours who participated in the public disclosure process for their cooperation throughout the exercise.

We further acknowledge the support, either direct or indirect, from the various parties who assisted the EIA team towards the successful completion of this report.



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Date: -----



အကျဉ်းချုပ်အစီရင်ခံစာ

က-၁။ နိဒါန်း

က-၁-၁။ ခြုံငုံသုံးသပ်တင်ပြခြင်း

ဤအစီရင်ခံစာသည် Emerald Brewery Myanmar Limited ၏ ဘီယာထုတ်လုပ် ဖြန့်ဖြူးခြင်း စီမံကိန်းအတွက် ပတ်ဝန်းကျင် (လူမှုဝန်းကျင်) ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ ဖြစ်ပါသည်။ အဆိုပါစီမံကိန်းသည် အမှတ် ၄၉၈၊ ရေတလပေါင်ကျေးရွာ၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး (အမှတ် ၃ လမ်းမကြီးဘေး၊ ထောက်ကြံ့မင်္ဂလာဒုံလမ်းပိုင်း) တွင် တည်ရှိပါသည်။ စီမံကိန်း၏ နှစ်စဉ်ထုတ်လုပ်နိုင်မှု စွမ်းအားမှ ဘီယာလီတာ သန်း ၄၀၀ ခန့်ဖြစ်ပါသည်။ ၂၀၁၉ ခုနှစ်မှ ၂၀၂၂ ခုနှစ်အတွင်း ထုတ်လုပ်ခဲ့သည့် ကုန်ချောပစ္စည်းများကို အပိုဒ် ၁-၁ တွင် တင်ပြထားပါသည်။

က-၁-၂။ ပတ်ဝန်းကျင်(လူမှုဝန်းကျင်)ထိခိုက်မှုဆန်းစစ်ခြင်းနည်းစနစ်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းနည်းစဉ်တွင် ခွင့်ပြုမိန့်လျှောက်ထားခြင်း၊ နယ်ပယ် တိုင်းတာသတ်မှတ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဟူသည့်အပိုင်းသုံးပိုင်းရှိပါသည်။ ခွင့်ပြုမိန့်လျှောက်ထားခြင်းနှင့် နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အပိုင်းများကို ပြီးပြည့်စုံစွာ ဆောင်ရွက်ခဲ့ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းကို ဆက်လက်ဆောင်ရွက်ရန်ဖြစ်ပါသည်။ နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းတွင် ဒေသခံပြည်သူလူထု၊ စီမံကိန်းဝန်ထမ်းများ၊ ဌာနဆိုင်ရာများ၊ အဖွဲ့အစည်းများ၊ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်ဝန်ထမ်းများ၊ လူမှုပတ်ဝန်းကျင်ပညာရှင်အဖွဲ့၊ ရှေးဟောင်းယဉ်ကျေးမှုပညာရှင်အဖွဲ့၊ မိုးလေဝသနှင့် ရေအသုံးချနှင့် စပ်လျဉ်းသည့်ပညာရှင်အဖွဲ့တို့ တက်ရောက်သည့် လူထုတွေ့ဆုံပွဲတစ်ကြိမ်နှင့် နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာ သုံးကြိမ်ပြုစု တင်ပြခဲ့ပါသည်။

လူထုတွေ့ဆုံပွဲ၊ နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာ အချက်အလက်အချို့နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းစီမံကိန်း၏ နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းနှင့် စပ်လျဉ်းသည့် ညွှန်ကြားချက်များတို့ကို နောက်ဆက်တွဲ ၁၊ ၂၊ ၃ နှင့် ၄ တို့တွင် အသီးသီးတင်ပြထားပါသည်။

က-၁-၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်သည့်အဖွဲ့

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ ရေးသားပြုစုသည့်အဖွဲ့ကို နောက်ဆက်တွဲ (၅) တွင် တင်ပြထားပါသည်။

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၁-၄။ စီမံကိန်းနှင့်စပ်လျဉ်းသည့် (အချက်အလက်များ)

Emerald Brewery Myanmar Limited သည် ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ ဦးပိုင် (၂/၁+၂/၂+၂/၄+N-၂)၊ ရေတလပေါင် အရှေ့တွင်းအမှတ်(၄၉၈) တွင် ဘီယာထုတ်လုပ် ဖြန့်ဖြူးခြင်း လုပ်ငန်းစက်ရုံကို တည်ဆောက်ရန်အဆိုပြုခဲ့ပါသည်။

စီမံကိန်း၏ရည်ရွယ်ချက်မှာ -

- အပြည်ပြည်ဆိုင်ရာစံညွှန်းဝင် ဘီယာများထုတ်လုပ်ဖြန့်ဖြူးရန်
- ပြည်တွင်းဈေးကွက်သို့ ပြည်ပမှ တင်သွင်းသည့် ဘီယာများကို လျော့ချရန်
- အရည်အသွေး အမြင့်ဆုံးပါဝင်ပစ္စည်းများဖြင့် ထုတ်လုပ်ထားသော အရည်အသွေးမြင့် ဘီယာများကို သင့်တင့်သည့်ဈေးနှုန်းဖြင့် ဖြန့်ဖြူးရန်

Emerald Vision and Mission

အနာဂတ်မျှော်မှန်းချက်များ

ကုမ္ပဏီကို ခိုင်မာသောအခြေခံအုတ်မြစ်ကို အောက်ပါ အထောက်အပံ့များဖြင့် တည်ဆောက်ရန်

- ပြည်စုံမှန်ကန်သောဘီယာဘီယာချက်လုပ်ခြင်းနည်းစဉ်
- ရောင်းဝယ်ဖောက်ကားမှုကောင်းမွန်စေခြင်း
- ဝန်ထမ်းများနှင့်အဖွဲ့အစည်းဆိုင်ရာ လူမှုအဆင့်အတန်းဖွံ့ဖြိုးတိုးတက်မှု
- မြန်မာနိုင်ငံ၏ ဘီယာဈေးကွက်တွင် အမြတ်အစွန်းရရှိမှု နံပါတ် ၂ ဖြစ်စေ၍စဉ်ဆက်မပြတ် တိုးတက်ရန်

ရည်မှန်းချက်များ

- ၂၀၂၃ ခုနှစ်တွင် အရင်းကြေအခြေအနေရရှိရန်
- ၂၀၂၅ ခုနှစ်တွင် စွမ်းအင်အပြည့်ဖြစ်သော ဟက်တိုလီတာ သန်းတဝက် ထုတ်လုပ်ရန်
- လူ့စွမ်းအားအပေါ်အခြေခံသည့် အဖွဲ့အစည်းနှင့် ဖွံ့ဖြိုးတိုးတက်သည့် လူသားဝန်းကျင် တစ်ခုတည်ဆောက်ရန်

က-၁-၅။ စီမံကိန်းအကောက်အထည်ဖော်သူ၏ အချက်အလက်များ

Details of the Project Proponent

Project Proponent	Emerald Brewery Myanmar Limited
Office Address	No.151, Block A#01-L1, Yaw Gi Kyaung Road, Hlaing Township, Yangon, Myanmar.
Project Address	Plot No. (498), East Field of Kone Ta La Baund, Yay Ta La Baund Village Tract with holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.

Contact Person	Ma May Khin Zaw
Designation	Human Capital Director
Contact number	09-449607879
Email	maykhin.zaw@emeraldbrewery.com

က-၁-၆။ စီမံကိန်း၏အချက်အလက်များ

စီမံကိန်း၏ အဓိက လက္ခဏာရပ်များ

၁။	စီမံကိန်းအမည်	"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်း"
၂။	စက်ရုံအမည်	Emerald Brewery Myanmar Limited
၃။	ကုမ္ပဏီရုံးခန်းတည်နေရာ	နံပါတ် ၁၅၁၊ Block A#1-L1၊ ယောဂီကျောင်းလမ်း၊ လှိုင်မြို့နယ်၊ ရန်ကုန်မြို့။
၄။	ကုမ္ပဏီမှတ်ပုံတင်နံပါတ်	၁၀၄၇၈၃၀၀၇
၅။	ပို့ကုန်/သွင်းကုန်မှတ်ပုံတင်အမှတ်	၅၃၈၀၁ (၀၆-၁၁-၂၀၁၈)
၆။	စီးပွားရေးလုပ်ငန်းအမျိုးအစား	ထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်း
၇။	ပထဝီဆိုင်ရာမြေပုံညွှန်းအမှတ်	၉၆ ဒီဂရီ ၉ မိနစ် ၁၈.၄၁ စက္ကန့် (အရှေ့လောင်ဂျီကျု) ၁၇ ဒီဂရီ ၁ မိနစ် ၇.၇၈ စက္ကန့် (မြောက်လတ္တီကျု)
၈။	စီမံကိန်းတည်နေရာ	ကုန်းတလပေါင်း အရှေ့တွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁+၂/၂ +၂/၄ + ၂-၂) ရေတလပေါင်း ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်း။
၉။	မြေအမျိုးအစား	စက်မှုစီးပွားမြေငှားဂရန်
၁၀။	မြေပိုင်ရှင်	ဦးအောင်သူ
၁၁။	အသုံးပြုသည့်မြေဧရိယာ	၃၂.၈၄ ဧက
၁၂။	စုစုပေါင်းအဆောက်အအုံဧရိယာ	၁၈ ဧက
၁၃။	စက်ရုံအတွင်းအဆိုပြုထားသော အဆောက်အအုံများ	သံကူကွန်ကရစ် ၂ ထပ် ရုံးဆောင် သံကူကွန်ကရစ် ၁ ထပ် ကန်တင်း (၁) သံကူကွန်ကရစ် ၁ ထပ် ကန်တင်း (၂) ဘီယာထုတ်လုပ်သည့်အဆောက်အအုံ အထွေထွေအဆောက်အအုံ ရေဆိုးသန့်စင်သည့်အဆောက်အအုံ
၁၄။	ဆောက်လုပ်ခြင်း/ ပြင်ဆင်ခြင်းကာလ	(၂) နှစ်
၁၅။	ဆောက်လုပ်ရေးစသည့်ကာလ	၂၀၁၈ ဇွန်လ
၁၆။	ခန့်မှန်းထားသော စီးပွားဖြစ် စတင် ထုတ်လုပ်မည့်ကာလ	၂၀၁၉ ဩဂုတ်
၁၇။	ရင်းနှီးမြုပ်နှံမှုခွင့်ပြုမိန့်၏တရားဝင်မှု	နှစ် (၅၀+၁၀+၁၀)
၁၈။	နိုင်ငံခြားမတည်ငွေရင်း၏ပမာဏ	အမေရိကန်ဒေါ်လာ (၄၉.၄၈) သန်း
၁၉။	စုစုပေါင်းမတည်ငွေရင်းပမာဏ (ကျပ်)	အမေရိကန်ဒေါ်လာ (၆၁.၈၅)သန်း နှင့်ညီမျှသော မြန်မာ ကျပ်ငွေ (အမေရိကန် ဒေါ်လာ (၄၉.၄၈) သန်းအပါအဝင်)
၂၀။	ရင်းနှီးမြုပ်နှံမှုအမျိုးအစား	ဖက်စပ်ရင်းနှီးမြုပ်နှံမှု အမျိုးအစား



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

၂၁။	စီမံကိန်းဘေးပတ်ဝန်းကျင်အနေအထား	အရှေ့ - လယ်ကွက် အနောက် - ဘားလားချောင်း ဘယ် - လယ်ကွက် ညာ - လယ်ကွက်
၂၂။	အနီးဆုံးလူနေထိုင်ရာနေရာများ	ရေတလပေါင်းကျေးရွာ နှင့် ကုန်းတလပေါင်းကျေးရွာ
၂၃။	အနီးဆုံးရေအရင်းအမြစ်	ဘားလားချောင်း၊ လှော်ကားကန်
၂၄။	မြေမျက်နှာသွင်ပြင်	ပြန့်ပြူးသောလယ်ကွက်
၂၅။	အသုံးပြုသည့်စက်ပစ္စည်းကိရိယာများ	လုပ်ငန်းလည်ပတ်ခြင်း နှင့် ထုပ်ပိုးခြင်းဆိုင်ရာ စက်ပစ္စည်း ကိရိယာများ သုတေသနပစ္စည်းများ လေဖိအားစက် ဘွိုင်လာ အအေးခံစက် ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက် ရေသန့်စင်စက် ရေဆိုးသန့်စင်စက်
၂၆။	ရေအရင်းအမြစ်များ	အဝီစိတွင်း ၆ လက်မ အဝီစိတွင်း ၈ ခု (အနက် ၁၁၀ မီတာ ၁၀၁.၆ မီတာ ၉၉.၆ မီတာ ၉၇.၆ မီတာ ၁၀၁.၆ မီတာ ၉၃.၆ မီတာ ၁၂၀ မီတာ ၁၂၀ မီတာ)
၂၇။	စုစုပေါင်းရေသုံးစွဲမှု	ခန့်မှန်းခြေ တစ်ရက်လျှင် ၁၇၀ - ၈၅၀ ကုဗမီတာ
၂၈။	လျှပ်စစ်ဓါတ်အားအရင်းအမြစ်	ပင်မဓါတ်အားလှိုင်း နေရောင်ခြည်စွမ်းအင် (၂၄ ဧကလှိုင်း ၂၀၂၃)
၂၉။	စွမ်းအင်သုံးစွဲမှု	ထရန်စဖော်မာ တစ်လုံး (3,760 KVA) ဂျန်နရေတာ ၄ လုံး (1,250 KVA (၄) လုံး)
၃၀။	ဘွိုင်လာ	အသုံးပြုလောင်စာ - ဒီဇယ်ဆီ လောင်စာအသုံးပြုမှု - ခန့်မှန်းခြေ တစ်နှစ်လျှင် ၇၀၀,၀၀၀~၈၀၀,၀၀၀ ဂါလံ
၃၁။	အသုံးပြုသည့်ကုန်ကြမ်းပစ္စည်းများ	<ul style="list-style-type: none"> <li style="width: 33%;">• ဆန် <li style="width: 33%;">• သတ္တုဘူး <li style="width: 33%;">• ဖန်ပုလင်းများ <li style="width: 33%;">• မေ့ <li style="width: 33%;">• သတ္တုဘူးအဖုံး <li style="width: 33%;">• စည် <li style="width: 33%;">(အညောင့် <li style="width: 33%;">• ပုလင်းအဖုံး <li style="width: 33%;">• စည်အဖုံး <li style="width: 33%;">ထုတ်ထား <li style="width: 33%;">• ပုလင်းတံဆိပ် <li style="width: 33%;">• စတ္တုဘူး <li style="width: 33%;">သော <li style="width: 33%;">• ပုလင်းလည်ပင်း <li style="width: 33%;">• လောင်စာဆီ <li style="width: 33%;">မုယောစပါး <li style="width: 33%;">တံဆိပ် <li style="width: 33%;">• ဘီယာအဆီ <li style="width: 33%;">အခြောက်) <li style="width: 33%;">• Cold glue



		<ul style="list-style-type: none"> • ဖြစ်ပွင့် • တဆေး • ရေ • Hop bitter pellet in alpha acid • Hop aroma pellet in alpha acid • Hop extract in alpha acid • Hot melt • Empty crate • Pa let
၃၂။	ထုတ်ကုန်ပစ္စည်းများ	ပုလင်းဘီယာ၊ သံဘူးဘီယာ၊ စည်ဘီယာ
၃၃။	ဘေးထွက်ပစ္စည်း	တဆေးခြောက်များ၊ Brewery Dry Grain
၃၄။	ဝန်ထမ်းခန့်ထားမှု	ပြည်တွင်းအလုပ်သမား (၁၆၅) ယောက် နှင့် နိုင်ငံခြား ပညာရှင် (၅) ယောက် စုစုပေါင်း (၁၇၀) ယောက်
၃၅။	စက်ရုံလည်ပတ်မှုအချိန်	တစ်ရက် (၈) နာရီ (၃) ဆိုင်း တစ်ပတ် (၆) ရက်
၃၆။	စီမံခန့်ခွဲရေးရုံးပိုင်းဆိုင်ရာအလုပ်ချိန်	တနင်္လာ မှ ဘောကြာ (၅) ရက် တစ်ရက်လျှင် အလုပ်ချိန် (၉) နာရီ ခွဲ မနက် (၈) နာရီ မှ ညနေ (၅) နာရီ ခွဲ
၃၇။	လူမှုတာဝန်သိအစီအစဉ်အတွက် အသုံးပြုငွေရာခိုင်နှုန်း	အသားတင်အမြတ်၏ (၂)ရာခိုင်နှုန်း
၃၈။	ဆက်သွယ်ရန်ပုဂ္ဂိုလ်	အမည် - မမေခင်ဇော် ရာထူး - Human Capital Director ဖုန်း - 09449607879 အီးမေးလ် - maykhin.zaw@emeraldbrewery.com

က-၂။ မူဝါဒနှင့်ဥပဒေဆိုင်ရာဖွဲ့စည်းမှုမူဘောင်များ

က-၂-၁။ ပတ်ဝန်းကျင်လူမှုဝန်းကျင်နှင့်သက်ဆိုင်သောဥပဒေချိတ်ဖော်ပြချက်

အဆိုပြုဖွံ့ဖြိုးတိုးတက်မှုလုပ်ငန်းအားလုံးသည် EIA လုပ်ငန်းစဉ်လိုအပ်ကြောင်းနှင့် လုပ်ငန်း၏ သဘာဝနှင့် အရွယ်အစားပေါ်မူတည်၍ ပတ်ဝန်းကျင်အပေါ်အရေးပါမှုရှိပါသည်။ EIA လေ့လာရာတွင် ဘီယာထုတ်လုပ်ဖြန့်ဖြူးခြင်းနှင့် သက်ဆိုင်သောဥပဒေများကို တည်ဆောက်ခြင်း အဆင့်နှင့် လည်ပတ်ခြင်းအဆင့်များအတွက် လိုက်နာရမည်ဖြစ်သည်။

က-၂-၂။ ပတ်ဝန်းကျင်လူမှုဝန်းကျင်နှင့်သက်ဆိုင်သောဥပဒေချိတ်ဖော်ပြချက်

မြန်မာနိုင်ငံအနေဖြင့် ၁၉၉၄ ခုနှစ် ပတ်ဝန်းကျင်ဆိုင်ရာပေါ်လစီ၊ မြန်မာအာရှတာ ၂၁/၁၉၉၇ နှင့် အမျိုးသားစဉ်ဆက်မပြတ် ဖွံ့ဖြိုးတိုးတက်ရေး မဟာဗျူဟာ ၂၀၀၉၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ(၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်မှုလုပ်ထုံးလုပ်နည်းနှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ ၂၀၁၅ တို့ကို ဖြည့်ခဲ့ပါသည်။



က-၂-၃။ ဥပဒေဆိုင်ရာလိုက်နာဆောင်ရွက်မှုများ

- ပြစ်မှုဆိုင်ရာကျင့်ထုံးဥပဒေ
- မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ (၂၀၁၅)
- ရပ်ကွက်သို့မဟုတ်ကျေးရွာအုပ်စု အုပ်ချုပ်ရေးဥပဒေ (၂၀၁၂)
- ရေစွမ်းအားအက်ဥပဒေ(၁၉၂၇)
- မြေအောက်ရေအက်ဥပဒေ (၁၉၉၀)
- ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ (၂၀၁၈)
- မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ (၁၉၉၃)
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄)
- ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၀၅)
- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅)
- ဝင်ငွေခွန်ဥပဒေ (၁၉၇၄)
- ငွေကြေးခဝါချမှုတိုက်ဖျက်ရေးဥပဒေ (၂၀၁၄)
- ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)
- ထိခိုက်ဒဏ်ရာရရှိထားသောအရေးပေါ်လူနာကို ကူညီစောင့်ရှောက်ခြင်းနှင့် ကုသခြင်းဆိုင်ရာဥပဒေ (၂၀၁၄)
- လျှပ်စစ်ဥပဒေ (၂၀၁၄)
- ဘွိုင်လာဥပဒေ (၂၀၁၅)
- ရေနံနှင့်ရေနံထွက်ပစ္စည်းဆိုင်ရာဥပဒေ (၂၀၁၇)
- ဓာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီးကာကွယ်ရေး ဥပဒေ ၂၀၁၃
- ၁၉၅၁ခုနှစ် အလုပ်ရုံများအက်ဥပဒေ
- ယစ်မျိုးဥပဒေ နှင့် ယစ်မျိုးဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ (၂၀၁၀၊ ၂၀၁၇)
- အမျိုးသားအစားအသောက်ဥပဒေ (၁၉၉၇)
- စားသုံးသူအကာအကွယ်ပေးရေးဥပဒေ (၂၀၁၄)
- စံချိန်စံညွှန်းဥပဒေ (၂၀၁၄)
- မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုဥပဒေ
- မော်တော်ယာဉ်ဥပဒေ (၂၀၁၅)
- အမြန်လမ်းမကြီးများဥပဒေ
- အလုပ်သမားလျော်ကြေးငွေအက်ဥပဒေ (၁၉၂၇)
- ခွင့်ရက်နှင့်အလုပ်ပိတ်ရက်အက်ဥပဒေ (၁၉၅၁)
- အနည်းဆုံးအခကြေးငွေဥပဒေ၊ အနည်းဆုံးအခကြေးငွေနည်းဥပဒေများ
- အလုပ်သမားအဖွဲ့အစည်းဥပဒေ၊ အလုပ်သမားအဖွဲ့အစည်းနည်းဥပဒေများ



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

- အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ
- လူမှုဖူလုံရေးဥပဒေ၊ နည်းဥပဒေများ
- မြန်မာနိုင်ငံအင်ဂျင်နီယာကောင်စီဥပဒေ
- တိုင်းရင်းသားလူမျိုးများ၏အခွင့်အရေးကာကွယ်စောင့်ရှောက်သည့်ဥပဒေ
- ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများကာကွယ်ထိန်းသိမ်းရေးဥပဒေ
- ရှေးဟောင်းဝတ္ထုပစ္စည်းကာကွယ်ထိန်းသိမ်းရေးဥပဒေ
- ပြည်ထောင်စုမြန်မာနိုင်ငံပြည်သူ့ကျန်းမာရေးဆိုင်ရာဥပဒေ (၁၉၇၂)
- ကူးစက်ရောဂါကာကွယ်နှိမ်နင်းရေးဥပဒေ
- ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းများထိန်းသိမ်းရေးဥပဒေ (၂၀၀၆)
- ဆေးလိပ်နှင့်ဆေးရွက်ကြီးထွက်ပစ္စည်းသောက်သုံးမှုထိန်းချုပ်ရေးဥပဒေ (၂၀၀၈)
- လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်သက်ဆိုင်သောဥပဒေ (၂၀၁၉)
- ဘီယာထုတ်လုပ်မှုလုပ်ငန်းအတွက် လိုက်နာရမည့်စံချိန်စံညွှန်းများ
 - အထွေထွေလမ်းညွှမ်းချက်များ
 - ထုတ်လွှတ်အခိုးအငွေများ
 - အလေးထားလောင်ကျွမ်းမှုဆိုင်ရာထုတ်လွှတ်မှုများ
 - စွန့်ပစ်ရေ
 - စွန့်ပစ်ရေ၊ စီးဆင်းရေ၊ ထုတ်လွှတ်အရည်နှင့်မိလ္လာရေစွန့်ထုတ်မှု
 - ဘီယာနှင့်အရက်ချက်လုပ်ငန်းစွန့်ထုတ်ရေ
 - ဆူညံမှု
 - အနံ့
 - ကျန်းမာရေးဝန်ကြီးဌာနသောက်သုံးရေစံနှုန်း
 - မြေထုအရည်အသွေး
 - အစားအသောက်နှင့်ယမကာလုပ်ငန်းအတွက် ပတ်ဝန်းကျင်ကျန်းမာရေးနှင့်လုံခြုံရေးလမ်းညွှန်ချက်များ

က-၃။ စီမံကိန်းအကြောင်းအရာနှင့်အခြားရွေးချယ်နိုင်မှုများ

က-၃-၁။ စီမံကိန်းရည်ရွယ်ချက်များ

ခြံငုံရည်ရွယ်ချက်များမှာ လူမှုစီးပွားဖွံ့ဖြိုးတိုးတက်ရန်၊ စဉ်ဆက်မပြတ် ပတ်ဝန်းကျင် တည်တံ့ခိုင်မြဲခြင်းကို ဆန်းစစ်ပြီးအရည်အသွေးမြင့်မားသည့် ဘီယာထုတ်ကုန်များကို ခေတ်မီနည်းပညာများအသုံးပြု၍ ပြည်တွင်းပြည်ပဖြန့်ဖြူးရန်တို့ဖြစ်ပါသည်။

က-၃-၂။ ငွေကြေးရင်းနှီးမြှုပ်နှံမှုအစီအစဉ်

ငွေကြေးရင်းနှီးမြှုပ်နှံမှုအစီအစဉ်မှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။



Particulars of Paid-up Capital of The Investment

	Kyats	USD
Amount / percentage of local capital to be contributed (51%)	44,752,500,000	33,150,000
Amount/ percentage of foreign capital to be brought in (49 %)	42,997,500,000	31,850,000
Total	87,750,000,000	65,000,000

က-၃-၂-၁။ ရင်းနှီးမြှုပ်နှံမှုအစီအစဉ်

ဘီယာထုတ်လုပ်ဖြန့်ဖြူးခြင်းစီမံကိန်း၏ အဆိုပြုရင်းနှီးမြှုပ်နှံမှုမှာ USD 65,000,000 / MMK 87,750,000,000 ဖြစ်ပါသည်။ ၂၀၁၈ ခုနှစ်တွင် မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်ထံ တင်ပြခဲ့ပြီးဖြစ်ပါသည်။ ရင်းနှီးမြှုပ်နှံမှုအမျိုးအစားမှာ Joint Venture ဖြစ်ပါသည်။

Annually or period of proposed capital to be brought in	Within 2 years of the permission granted by MIC
Value/ amount of investment	USD 65 millions
Investment period	(50+10+10) years
Construction/ preparation period	2 years
Commercial Operation Date	September 2019

က-၃-၂-၂။ အစုရှယ်ယာရှင်များစာရင်း

List of Shareholders

No.	Name of Shareholder	Citizenship	Share Percentage
1.	Than Lwin Aye Yar Industrial Production & Construction Co., Ltd. (Represented by : Myint Myint Win)	469/1999-2000 12/La Tha Na (N) 006833	20%
2.	F & N Investments Pte. Ltd. (Represented by Mr. Hui Choon Kit)	198502513G E 5805768 N	80%



က-၃-၃။ စီမံကိန်းတည်နေရာနှင့်လမ်းကြောင်း

က-၃-၃-၁။ စီမံကိန်းတည်နေရာ

ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှု အဆိုပြုစီမံကိန်းကို Emerald Brewery Myanmar Ltd. က အကွက်အမှတ် ၄၉၈၊ ရေတလပေါင်ကျေးရွာ၊ ဦးပိုင်အမှတ် (၂/၁+၂/၂+၂/၄+N-2) လှည်းကူးမြို့နယ်၊ ရန်ကုန်မြောက်ပိုင်းခရိုင်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် အဆိုပြုတည်ဆောက်ထားပါသည်။

စီမံကိန်းနယ်ပယ်သတ်မှတ်သည့် စီမံကိန်းကို ဗဟိုပြု၍ ၁.၅ ကီလိုမီတာ အချင်းဝင်အတွင်း မင်္ဂလာဒုံမြို့နယ်လည်းပါဝင်လျက်ရှိပါသည်။ စီမံကိန်းအကျယ်အဝန်းမှာ ၃၂.၈၄ ဧကဖြစ်ပြီး အမှတ်(၃)လမ်းမကြီးဘေးဖြစ်ပါသည်။ မြေရှင်ဦးအောင်သူထံမှ ငှားရမ်းလုပ်ကိုင်မြေဖြစ်ပါသည်။

စီမံကိန်းဧရိယာသည် မြောက်လတ္တီတွဒ် 17° 01' 7.78" နှင့် အရှေ့လောင်ဂျီတွဒ် 96° 9' 18.41" ခန့်တွင် ရှိပါသည်။

စီမံကိန်းပတ်ဝန်းကျင်အခြေအနေကို အောက်ပါအတိုင်းတင်ပြအပ်ပါသည်။

စီမံကိန်းတည်နေရာ	အကွက်အမှတ် ၄၉၈၊ ရေတလပေါင်ကျေးရွာ၊ ဦးပိုင်အမှတ်(၂/၁+၂/၂+၂/၄+N-2) လှည်းကူးမြို့နယ်၊ ရန်ကုန်မြောက်ပိုင်းခရိုင်၊ ရန်ကုန်တိုင်းဒေသကြီး၊ ပြည်ထောင်စုမြန်မာနိုင်ငံ
မြေမျက်နှာ	လွင်ပြင်
ရေထု/မြစ်များ	စီမံကိန်းဘေးတဖက်တွင် ဘားလားချောင်းရှိပါသည်။
စီမံကိန်းနယ်ပယ်ဧရိယာအတွင်း ရှေးဟောင်းယဉ်ကျေးမှု/အရေးကြီး/ကန့်သတ်/သစ်တော	မရှိပါ
အသုံးပြုနိုင်သည့်လမ်းမကြီး	အမှတ်(၃)လမ်းမကြီးနှင့်အတွင်းလမ်း

က-၃-၃-၂။ လက်ရှိလမ်းကြောင်းဆက်သွယ်မှုများ

စီမံကိန်း၏အရှေ့တွင် အမှတ်(၃)လမ်းမကြီး (ရန်ကုန်လှည်းကူးအမြန်လမ်း) ရှိပြီး ယင်းမှတစ်ဆင့် စက်ရုံအတွင်းလမ်းမှ ဝင်ရောက်နိုင်ပါသည်။ စက်ရုံအတွင်းလမ်းသည် ၈ မီတာကျယ်ပြီး အမှတ်(၃)လမ်းမကြီးမှ ၁.၂ ကီလိုမီတာခန့်အကွာအဝေးရှိပါသည်။

က-၃-၃-၃။ ပတ်ဝန်းကျင်ကျေးရွာများ

စီမံကိန်းနယ်ပယ် ၁.၅ ကီလိုမီတာ အချင်းဝက်ဧရိယာအတွင်း



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

- အနောက်မြောက်ဘက်တွင် တခွန်တိုင်နှင့်နွယ်ခွေစံပြကျေးရွာ
- တောင်ဘက်တွင်ရေတလပေါင်ကျေးရွာ
- အနောက်ဘက်တွင် ကုန်းတလပေါင်ကျေးရွာများ ရှိပါသည်။

က-၃-၄။ စီမံကိန်းနယ်ပယ်သတ်မှတ်မှု

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်ရန် လိုအပ်သော စီမံကိန်းနှင့် ပတ်ဝန်းကျင်ပိသေသများကို သိရှိနားလည်စေရန်အတွက် စီမံကိန်းကို ဗဟိုပြု၍ အချင်းဝက် ၁.၅ ကီလိုမီတာ အဝန်းအဝိုင်းကို နယ်ပယ်သတ်မှတ်ပါသည်။

က-၃-၅။ ထောက်ပံ့ကူညီမှု/ကန်ထရိုက်တာများစာရင်း

စီမံကိန်းအတွက်ထောက်ပံ့ကူညီသူများနှင့် လုပ်ငန်းကန်ထရိုက်တာများစာရင်းကို အပိုဒ် ၃-၅ တွင် တင်ပြထားပါသည်။

က-၃-၆။ စီမံကိန်းအကောင်အထည်ဖော်သည့်အစီအစဉ်

စီမံကိန်းတည်ဆောက်ရန် ဖက်စပ်ပြုလုပ်ရန်သဘောတူမှုများ၊ မြေရယူမှုများ၊ မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု၏ အတည်ပြုချက်ရယူမှုများ၊ မြေယာပြုပြင်မှုများတို့ကို တင်ပြထားပြီး နောက်ဆက်တွဲ (၆) တွင် တည်ဆောက်ရေးလုပ်ငန်းစာတံပုံအချို့ကို တင်ပြထားကြောင်းနှင့် မြေစမ်းသပ်ခြင်းကို ၂၀၁၇ ခုနှစ်တွင် ပြုလုပ်ခြင်း စက်ရုံတည်ဆောက်ခြင်း၊ ၂၀၁၉ ဩဂုတ်လတွင် စီးပွားဖြစ်စတင်ထုတ်လုပ်ခဲ့ပါသည်။

က-၃-၇။ ကုန်ကြမ်းပစ္စည်းများ

ဘီယာချက်လုပ်ရန် အဓိကကုန်ကြမ်းပစ္စည်းများမှာ အညှောင့်ဖောက်ထားသော မုယောစပါး၊ ဆန်၊ ငြစ်ပွင့် (အခါးအရသာနှင့်အနံ့)ရေနှင့် တဆေးတို့ဖြစ်ပြီး ကုန်ချောအတွက် စက္ကူကဒ်ပုံး၊ သံပူး၊ ပုလင်းခွံ၊ စည်ခွံများလိုအပ်ကြောင်းတင်ပြထားပါသည်။

က-၃-၇-၁။ ကုန်ကြမ်းများအရင်းအမြစ်

ထိုင်း၊ စင်္ကာပူ၊ တရုတ်၊ ဥရောပ၊ ဂျပန်၊ ဗီယက်နမ်၊ စပိန်၊ ဂျာမနီ တို့မှ အချို့ကုန်ကြမ်းများကို ရယူပြီး ဆန်နှင့် အခြားကုန်ကြမ်းများကို ပြည်တွင်းမှစုယူမည်ဖြစ်ကြောင်း ပြည်ပကုန်ကြမ်းစာရင်းကို အပိုဒ် ၃-၇-၁ တွင် တင်ပြထားပါသည်။

က-၃-၇-၂။ သယ်ယူပို့ဆောင်ရေးစနစ်

ပင်လယ်ရေကြောင်း၊ လေကြောင်းများဖြင့် ဆိပ်ကမ်း၊ လေဆိပ်များမှ စက်ရုံသို့လှောင်ရုံများသို့ သယ်ယူပို့ဆောင်ပါသည်။ သယ်ယူပို့ဆောင်ရေးယာဉ်များကို လော့ဂျစ်စတစ်ကုမ္ပဏီများမှ ယာဉ်များကို ငှားရမ်းအသုံးပြုပြီး၊ စက်ရုံပိုင်ယာဉ်များမသုံးပါ။

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က-၃-၇-၃။ ကုန်ကြမ်းလိုအပ်ချက်၊ အသုံးပြုမှု၊ ရယူမှုနှင့်သိုလှောင်ထားမှုများ

နေ့စဉ်လစဉ် ကုန်ကြမ်းလိုအပ်ချက်၊ အသုံးပြုမှု၊ ရယူသည့်နေရာ နှင့် ထားသိုပုံတို့ကို ပြည်တွင်းပြည်ပ ကုန်ကြမ်းခွဲခြား၍ ဇယားများဖြင့် အပိုဒ် ၃-၇-၃ တွင် တင်ပြထားပါသည်။

က-၃-၇-၃-၁။ ဘေးအန္တရာယ်ရှိကုန်ကြမ်းပစ္စည်း (ကော့စတစ်ဆိုဒါ) စီမံခန့်ခွဲမှုအစီအစဉ်

အတော်အသင့်ဘေးအန္တရာယ်ရှိသော ကုန်ကြမ်းပစ္စည်း ကော့စတစ်ဆိုဒါကို စီမံခန့်ခွဲမှုအစီအစဉ်ကို အပိုဒ် ၃-၇-၃-၁ တွင် ရေးသားတင်ပြထားပါသည်။

က-၃-၈။ ထုတ်လုပ်နိုင်မှု၊ ထုတ်လုပ်မှုနှင့် ရောင်းချမှုအစီအစဉ်

အဓိကကုန်ထုတ်ပစ္စည်းများမှာ ၅% အရက်ပါဝင်သောဘီယာကို ပုလင်း၊ သံဘူးနှင့် စည်သွင်းထုတ်လုပ်ခြင်းနှင့် တိရိစ္ဆာန်အစာအဖြစ်ရောင်းချသော Spent Grain တို့ ဖြစ်ပါသည်။ ၅ နှစ်စီမံကိန်းထုတ်လုပ်မှုအစီအစဉ်ကို အောက်ပါအတိုင်းဖော်ပြထားပါသည်။

Production Capacity (five year)

Product	Annual Production	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022	2022 ~ 2023	2023 ~ 2024
Beer	,000 Hundred liters /Year	500	1,400	2,000	2,800	4,000

က-၃-၈-၁။ နေ့အလိုက်၊ လအလိုက်၊ နှစ်အလိုက်ထုတ်လုပ်မှုများ

နေ့အလိုက်၊ လအလိုက်၊ နှစ်အလိုက်ထုတ်လုပ်မှုများကို အောက်ပါအတိုင်းတင်ပြထားပါသည်။

Production Capacity

Product Name	A/U	Daily Production	Monthly Production	Yearly Production
Beer	Liters	174,216	4,166,666	50,000,000
Spent Grain	tons	8	192	4608

က-၃-၈-၂။ ၂၀၁၉-၂၀၂၀ မှ ၂၀၂၁-၂၀၂၂ ခုနှစ်အတွင်းအမှန်ထုတ်လုပ်မှု

The actual productions of beer from year 2019-2020 to 2021-2022

Sr.No	Product	A/U	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022
1	Chang 330ml can	HL	99680	131080	206370
2	Chang 500ml can	HL	63510	182830	302660
3	Chang 620ml Bot carton	HL	15260	39490	113860



4	Chang 320ml Bot carton	HL	1270	640	130
5	Chang 30l keg	HL	920	4330	20860
6	Spent grain	Ton	3800	6500	11400

က-၃-၉။ အထောက်အကူပြုစက်ကိရိယာများ

အထောက်အကူပြုစက်ကိရိယာများကို အောက်ပါဇယားဖြင့် တင်ပြထားပါသည်။

Auxiliary Items

No.	Item	Size / Capacity	No. of units	Technology
1	Water Treatment Section	1,400 m ³ /day		
2	Boiler Section	2 tons /hr 10 tons /hr	8 Units 1 Unit	
3	Boiler Stack	diameter-1.5 m, Stack height-15 m		
4	CO ₂ Recovery Section	250 kg/hr 1000 kg/hr		
5	CO ₂ Storage	40 tons 60 tons	2 foam catcher	
6	Compressed Air Section			
7	Air Compressors	5 m ³ /min 3 Units 8.8 m ³ /min 1 Unit 6.3 m ³ /min 2 Units		
8	Refrigeration Section			
9	Industrial Refrigeration System	375 kW 4 Units 875 kW 4 Units		
10	Wastewater Treatment Section			
11	Wastewater Treatment Plant	2500 m ³ /day		

က-၃-၉-၁။ ဘျိုင်လာခေါင်းတိုင်အမြင့်တွက်ချက်ခြင်း

ဤအခန်းတွင် ဘျိုင်လာခေါင်းတိုင်အမြင့်ကို တွက်ချက်ပြီး လုံလောက်မှုရှိကြောင်း တင်ပြထားပါသည်။

က-၃-၉-၂။ အမိုးနီးယား (Refrigerant) စီမံခန့်ခွဲမှုအစီအစဉ်

အတော်အသင့်ဘေးအန္တရာယ်ရှိသော အမိုးနီးယား(Refrigerant) ကို စီမံခန့်ခွဲမှုအစီအစဉ်ကို အပိုဒ် ၃-၉-၂ တွင် တင်ပြထားပါသည်။

က-၃-၁၀။ အထောက်အကူပြုပစ္စည်းများလိုအပ်ချက်

က-၃-၁၀-၁။ လျှပ်စစ်ဓာတ်

စက်ရုံအတွက်လိုအပ်သော လျှပ်စစ်ဓာတ်ကို အမျိုးသားမဟာဓာတ်အားလိုင်းမှ ရယူပြီး ၃၇၆၀ kVA ထရန်စဖော်မာဖြင့် 33/11kV လိုင်းမှ ရယူပါသည်။

အရေးပေါ်အသုံးပြုရန် ၁၂၅၀ kVA လျှပ်စစ်ထုတ်စက် (၄) လုံး အသုံးပြုပါသည်။ နေရောင်ခြည်စွမ်းအင်သုံးလျှပ်စစ် ၂ မဂ္ဂဝပ်ကို ၂၀၂၃ ဇူလိုင် ၂၄-ရက်မှ စတင်အသုံးပြုပါသည်။

က-၃-၁၀-၂။ လောင်စာလိုအပ်ချက်

နှစ်အလိုက်လျှပ်စစ်ဓာတ်၊ လောင်စာနှင့် ရေလိုအပ်ချက်များကို အောက်ပါဇယားဖြင့်တင်ပြထားပါသည်။

Annual Utilities Requirement

Consumption Year	Electricity	Fuel	Water
	,000 kW/hr.	Liter/yr.	0000 m3/yr.
2019 ~ 2020	500	293,760	45
2020 ~ 2021	1,400	806,400	126
2021~ 2022	2,000	1,152,000	180
2022~ 2023	2,800	1,635,840	252
2023~ 2024	4,000	2,322,893	360

က-၃-၁၀-၃။ ရေလိုအပ်ချက်

(၆)လက်မ အဝိစိတွင်း ၈ တွင်းမှ ထုတ်ယူသုံးစွဲပါသည်။ လုံလောက်မှုရှိပါသည်။

က-၃-၁၀-၄။ ကာဗွန်ဒိုင်အောက်ဆိုဒ်ပြန်လည်စုယူသည့်နေရာ

က-၃-၁၀-၄-၁။ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ပလန့်

ဤအခန်းတွင် ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ထုတ်လုပ်သည့် လုပ်ငန်းစဉ်အဆင့် ငါးဆင့်ကို

- ဘီယာဖောက်တိုင်ကီမှဓာတ်ငွေ့စုစောင်းခြင်း
- ဆေးကြောခြင်း
- ဖိသိပ်ခြင်း
- ခြောက်သွေ့စေခြင်း



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- အရည်ပြုလုပ်ခြင်းနှင့် သိုလှောင်ခြင်း တို့ဖြင့် ဖော်ပြထားပါသည်။ စက်ရုံ၏ စုစုပေါင်းထုတ်လုပ်နိုင်မှုမှာ ၁၂၅၀ ကီလိုဂရမ်/နာရီဖြစ်ပါသည်။

က-၃-၁၀-၅။ ဘွိုင်လာခန်း

ဘွိုင်လာ (၉)လုံးရှိပြီး (၈)လုံးမှာ ရေဓွေးငွေ့တစ်နာရီ ၂ တန် ထုတ်လုပ်နိုင်ပြီး တစ်လုံးမှာ ၁၀ တန် ထုတ်လုပ်နိုင်ပါသည်။

က-၃-၁၁။ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ

ဤအခန်းတွင်

- ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများ
- ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများ
- နေ့အလိုက်၊ လအလိုက်၊ နှစ်အလိုက် ထွက်ရှိသည့် စွန့်ပစ်ပစ္စည်းပမာဏခန့်မှန်းနှင့်
- စည်ပင်သာယာရေးကော်မတီ၏ လမ်းညွှန်ချက်

အတိုင်း စွန့်ပစ်ကြောင်းတို့ကို အခန်း ၃-၁၁ တွင် တင်ပြထားပါသည်။

က-၃-၁၂။ မိလ္လာနှင့် စွန့်ပစ်ရေမြောင်း

ဤအခန်းတွင်

- အစီစီတွင်း (၈)တွင်းမှ ရေကိုသန့်စင်ပြီးမှ အသုံးပြုခြင်း
- ရေမြောင်းနှင့်လုပ်ငန်းစဉ်သုံးစွန့်ပစ်ရေများကို စွန့်ပစ်ရေသန့်စင်စနစ်သို့ပေးပို့ခြင်း
- သန့်စင်ခန်း ၃၈ ခုရှိပြီး၊ အမျိုးသားအတွက် ၂၀ ခုနှစ် အမျိုးသမီးအတွက် ၁၈ ခု စီစဉ်ထားပြီး Bio Septic Tank (အချင်း ၁၃၀၀ mm နှင့် အလျား ၁၄၀၀ mm) ရှိကြောင်းတို့ကို အပိုဒ် ၃-၁၂ တွင် တင်ပြထားပါသည်။

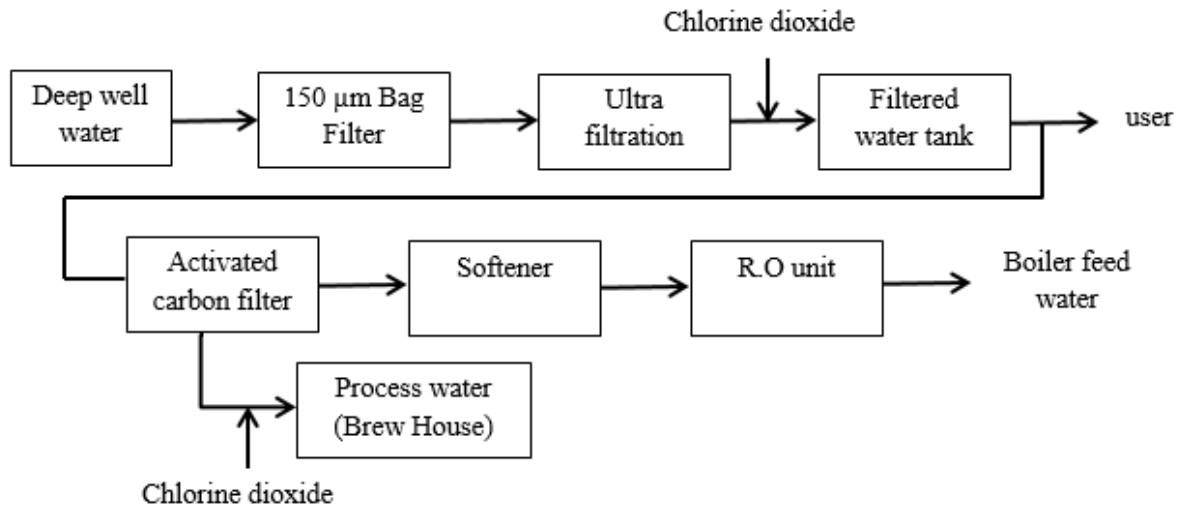
က-၃-၁၃။ ရေနှင့်စွန့်ပစ်ရေသန့်စင်ခြင်းစနစ်

က-၃-၁၃-၁။ ရေသန့်စင်သည့်စနစ်

ရေသန့်စင်စနစ်၏ လုပ်ငန်းစဉ် Flow Diagram ကို အောက်ပါအတိုင်း တင်ပြထားပါသည်။

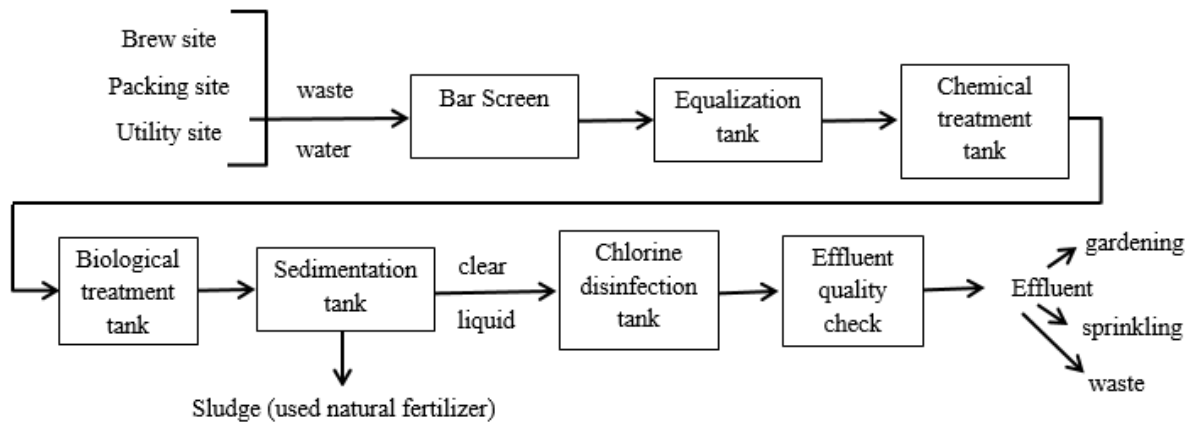


Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited



က-၃-၁၃-၂။ စွန့်ပစ်ရေသန့်စင်သည့်စနစ်

စွန့်ပစ်ရေသန့်စင်စနစ်၏ နည်းစဉ် Flow Diagram ကို အောက်ပါအတိုင်း တင်ပြထားပါသည်။



စွန့်ပစ်ရေသန့်စင်ကိရိယာ၏စွမ်းအား = 2500 m³/day
 = 550,000 gal/day
 နေ့စဉ်ထွက်ရှိသည့်စွန့်ပစ်ရေခန့်မှန်း = 15000 gal/day

စွန့်ပစ်ရေသန့်စင်ကိရိယာတွင် ၃၆.၆ ရက် စက်ပစ္စည်းကိရိယာများနှင့် လုပ်ငန်းတာဝန်များကို အခန်း ၃-၁၃ တွင် ဖော်ပြထားပါသည်။ ဤအခန်းတွင် online monitoring system မှ စွန့်ပစ်ရေ ဓာတ်ခွဲရလဒ်များ၊ ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလ ဓာတ်ခွဲရလဒ်များနှင့် ၂၀၂၃ ခုနှစ် ဩဂုတ်လ ဓာတ်ခွဲရလဒ်များတို့ကို တင်ပြပါသည်။

၂၀၂၃ ခုနှစ် ဩဂုတ်လ effluent နှင့် final discharge ဓာတ်ခွဲရလဒ်များတို့သည် စံနှုန်းအတွင်းရှိနေကြောင်းတင်ပြထား ပါသည်။

က-၃-၁၄။ စွန့်ပစ်ပစ္စည်းများနှင့်ကိရိယာများ

ဤအခန်းတွင် ဘီယာစက်ရုံအတွက် အသုံးပြုသည့် စက်ပစ္စည်းများနှင့် ကိရိယာများကို ဇယား ၂ ခုဖြင့် အခန်း ၃-၁၄ တွင် တင်ပြထားပါသည်။

က-၃-၁၅။ အဆောက်အဦစာရင်းနှင့်နေရာချထားပုံ

ဤအခန်းတွင် အဆောက်အဦစာရင်း (၁၁) လုံးနှင့် နေရာချထားပုံကို တင်ပြထားပြီး အဆောက်အဦးပြီးစီးကြောင်းလက်မှတ်ကို အခန်း ၃-၂၇ တွင် တင်ပြထားပါသည်။

က-၃-၁၆။ အလုပ်ချိန်၊ လူအင်အားနှင့် စက်ရုံဖွဲ့စည်းပုံ

ဤအခန်းတွင် စက်ရုံဝန်ထမ်းများ၏ အလုပ်ချိန်၊ အုပ်ချုပ်မှုရုံး၊ ဝန်ထမ်းများ၏ အလုပ်ချိန် လူအင်အားနှင့် စက်ရုံဖွဲ့စည်းပုံတို့ကို တင်ပြထားပါသည်။

က-၃-၁၇။ ထုတ်လုပ်မှုနည်းစဉ်

က-၃-၁၇-၁။ ဘီယာထုတ်လုပ်မှုနည်းစဉ်

က-၃-၁၇-၂။ ပုလင်းဘီယာထုတ်လုပ်မှုနည်းစဉ်

က-၃-၁၇-၃။ သံဘူးဘီယာထုတ်လုပ်မှုနည်းစဉ်

က-၃-၁၇-၄။ စည်ဘီယာထုတ်လုပ်မှုနည်းစဉ်

ဤအခန်းတွင် ဘီယာထုတ်လုပ်ခြင်းနည်းစဉ်၊ ပုလင်းဘီယာထုတ်လုပ်ခြင်း၊ သံဘူးဘီယာ ထုတ်လုပ်ခြင်း၊ စည်ဘီယာထုတ်လုပ်ခြင်းများကို တင်ပြထားပါသည်။

က-၃-၁၈။ နေရောင်ခြည်စွမ်းအင်အသုံးပြုခြင်း

Emerald Brewery Myanmar Ltd. သည် ၂၀၁၉ ခုနှစ်ကပင် ရုံးခေါင်မိုးပေါ်တွင် နေရောင်ခြည်စွမ်းအင်ပင်နယ်ပြားများတပ်ဆင်ပြီး ရုံးလုပ်ငန်း၏ ၅၀% ကို သုံးစွဲနိုင်ခဲ့ပါသည်။ ၂၀၂၃ ဇူလိုင်လ ၂၄ ရက်နေ့တွင် စတုရန်းပေအင်စတီကျုတွင် နေရောင်ခြည်ပင်နယ်ပြားများ တပ်ဆင်ပြီး ၂ မဂ္ဂါဝပ် လျှပ်စစ်ဓာတ်အားရယူခဲ့ပါသည်။ ယင်းပမာဏသည် စက်ရုံသုံးစွဲမှုနှင့် ညီမျှပါ သည်။

က-၃-၁၉။ စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်

ဤအခန်းတွင်

- လေထုအတွင်းသို့ ထုတ်လွှတ်မှုများ သို့မဟုတ် အစိုးအငွေ့နှင့် သေးငယ်သောအမှုန်အမွှား များ စီမံခန့်ခွဲမှုအစီအစဉ်ကို ခေါင်းစဉ်ခွဲများဖြစ်သော အရင်းအမြစ်၊ ဘေးအန္တရာယ်ရှိမှု၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှု ပမာဏနှင့် ကြာမြင့်ချိန်၊ စီမံခန့်ခွဲမှုအစီအစဉ် တို့ဖြင့်လည်းကောင်း



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

- အရေစွန့်ပစ်ပစ္စည်း များ စီမံခန့်ခွဲမှုအစီအစဉ်ကို ခေါင်းစဉ်ခွဲများဖြစ်သော အရင်းအမြစ်၊ ဘေးအန္တရာယ်ရှိမှု၊ သက်ရောက်မှုစရိယာ၊ သက်ရောက်မှု ပမာဏနှင့် ကြာမြင့်ချိန်၊ စီမံခန့်ခွဲမှုအစီအစဉ် တို့ဖြင့်လည်းကောင်း
- အစိုင်အခဲစွန့်ပစ်ပစ္စည်း များ စီမံခန့်ခွဲမှုအစီအစဉ်ကို ခေါင်းစဉ်ခွဲများဖြစ်သော အရင်းအမြစ်၊ ဘေးအန္တရာယ်ရှိမှု၊ သက်ရောက်မှုစရိယာ၊ သက်ရောက်မှု ပမာဏနှင့် ကြာမြင့်ချိန်၊ စီမံခန့်ခွဲမှုအစီအစဉ် တို့ဖြင့်လည်းကောင်း အခန်း ၃-၁၉ တွင် တင်ပြထားပါသည်။

က-၃-၂၀။ စွန့်ထုတ်ရည်နှင့်စွန့်ပစ်ရေပမာဏ၊ ပါဝင်ပစ္စည်းများနှင့် စီမံခန့်ခွဲမှုအစီအစဉ်

ဤအခန်းတွင် စီမံကိန်း၏နေရာအမျိုးမျိုးမှ ထွက်ရှိနိုင်သော စွန့်ထုတ်ရည်နှင့် စွန့်ပစ်ရေ များ၏ ပမာဏ၊ ယင်းတို့တွင် ပါဝင်နိုင်သောပစ္စည်းများနှင့် စီမံခန့်ခွဲမှုအစီအစဉ်ကို အခန်း ၃-၂၀တွင် ဖော်ပြထားပါသည်။

က-၃-၂၁။ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းပါဝင်သော ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်

ဤအခန်းတွင် စီမံကိန်း၏ နေရာအမျိုးမျိုးမှ ထွက်ရှိနိုင်သော စွန့်ပစ်အစိုင်အခဲများ၏ ပမာဏ၊ ပါဝင်သည့်ပစ္စည်းများနှင့် စီမံခန့်ခွဲမှုအစီအစဉ်ကို အခန်း ၃-၂၁တွင် တင်ပြထားပါသည်။

က-၃-၂၂။ ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းပါဝင်သော ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်

ဤအခန်းတွင် စီမံကိန်း၏ နေရာအမျိုးမျိုးမှ ထွက်ရှိနိုင်သော ဘေးအန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ၏ ပမာဏနှင့်စွန့်ပစ်ချက်၊ ပါဝင်သည့်ပစ္စည်းများနှင့် စီမံခန့်ခွဲမှုအစီအစဉ်ကို အခန်း ၃-၂၂တွင် တင်ပြ ထားပါသည်။

က-၃-၂၃။ Storm water နှင့် ရေမြောင်းစနစ်

စီမံကိန်း၏ storm water နှင့် ရေမြောင်းစနစ်ကို အပိုဒ် ၃-၂၃ တွင် တင်ပြထားပါသည်။

က-၃-၂၄။ ရေဖြန့်ဝေပုံစနစ်

စီမံကိန်းတွင် အသုံးပြုသည့် ရေဖြန့်ဝေမှုစနစ်ကို အပိုဒ် ၃-၂၄ တွင် တင်ပြထားပါသည်။

က-၃-၂၅။ လမ်းပန်းဆက်သွယ်ရေး

စီမံကိန်းတွင် အသုံးပြုသည့် ကုန်ကြမ်းများ၊ ထွက်ရှိသည့်ကုန်ချောများ၊ ဖယ်ရီစနစ်ကို အပိုဒ် ၃-၂၅ တွင် တင်ပြထားပါသည်။ အသုံးပြုသည့်မော်တော်ယာဉ်များကို လော့ဂျစ်စတစ် ကုမ္ပဏီများမှ ငှားရမ်းအသုံးပြုပါသည်။

က-၃-၂၆။ အခြားရွေးချယ်နိုင်မှုများ

ဤအခန်းတွင်



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

- စီမံကိန်းဆောက်ခြင်း၊ မဆောက်ခြင်းရွေးချယ်မှု
- နေရာရွေးချယ်မှု
- ကုန်ကြမ်းရွေးချယ်မှု
(အအေးခန်းသုံး Refrigerant နှင့် သီးနှံအစားထိုး)
- စွမ်းအင်ရွေးချယ်မှုတို့ကို တင်ပြထားပါသည်။

အစားထိုးရွေးချယ်မှုဆိုင်ရာ ကောင်းကျိုးဆိုးကျိုးများကို အောက်ပါအတိုင်း စုစည်းတင်ပြထားပါသည်။

စဉ်	အကြောင်းအရာ	ညှင်းဆန်/ အခြားအစားထိုး	ကောင်းကျိုး	ဆိုးကျိုး	လျော့နည်းရန် ဆောင်ရွက်မှုများ
၁	စီမံကိန်း	စီမံကိန်းမလုပ် ဆောင်ခြင်း	ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင် မထိခိုက်	-အခွန်အခလျော့နည်း -မြေအသုံးချမှုမရှိ -မြေတန်ဖိုးကျခြင်း	စီမံကိန်းကို EMP, EmoP နည်းဖြင့် တည်ဆောက်လည် ပတ်ခြင်း
၂	စီမံကိန်းနေရာ	လက်ရှိနေရာ	-သွားလာရေး လယ်ကူ -နယ်မြေဖွံ့ဖြိုး -လုံလောက် သောရေကောင်း ရေသန့်ရရှိ -လုပ်သားအင် အားလွယ်ကူစွာ ရရှိ	-အနံ့ဆိုး -ဘားလားချောင်းတွင် ပေဒါပင်များတိုးပွားခြင်း -အလုပ်အကိုင် အပြောင်းအလဲဖြစ်	-လေကာပင်များ စိုက်ပျိုးခြင်း -ဘားလားချောင်း တွင် ပေဒါပင်များ ရှင်းလင်းရာတွင် ပါဝင်ကူညီခြင်း -ဖြစ်နိုင်ပါက စက်ရုံ တွင်အလုပ်ခန့်ထား ခြင်း
၃	အအေးချ Refrigerant	အမိုးနီးယား	-အိုဇုန်းလွှာ မပျက်စီး -တားမြစ်သည့် ဓာတုပစ္စည်း မဟုတ်ခြင်း	အတော်အသင့်ဘေး အန္တရာယ်ရှိ	SOP အတိုင်း လည်ပတ်ခြင်း -စီမံခန့်ခွဲမှုအစီ အစဉ်ကို လိုက်နာခြင်း -ကျွမ်းကျင်သတိရှိ သူများကိုသာ တာဝန်ပေးခြင်း
၄	ကုန်ကြမ်း ရောနှောပစ္စည်း	ဆန်	-ပြည်တွင်းကုန် ကြမ်းဖြစ်ခြင်း -ဆန်ဖြင့်ရော နှောချက်သည့်	လူမျိုး၏အဓိက စားစရာဖြစ်ခြင်း	-ပြင်းထန်သော ပြိုင်ဆိုင်သုံးစွဲမှုကို ရှောင်ရှားခြင်း(ဆန် ဈေးကြီးသည့်အချိန်)



			ဘီယာသည် သောက်သုံးသူ များ၏အကြိုက် အနံ့အရသာ ဖြစ်ခြင်း		-အခြားကုန်ကြမ်း များအစားထိုးရန် သုတေသနပြုလုပ် ခြင်း
၅	စွမ်းအင်	နေရောင်ခြည် စွမ်းအင်	-နှစ်စဉ်ကုန်ကျ စရိတ်လျော့နည်း ခြင်း -ပတ်ဝန်းကျင် နှင့် သဟဇာတ ဖြစ်စေခြင်း	-နေရောင်ခြည်ပြားများ မီးလောင်နိုင်ခြင်း -စဦးရင်းနှီးမြှုပ်နှံမှုများ ခြင်း	-ပြုပြင်ထိန်းသိမ်းမှု ကောင်းစေခြင်း -စစ်ဆေးပြုပြင်ခြင်း -ထိန်းချုပ်မှုစနစ် ကောင်းမွန်စေခြင်း

က-၄။ ပတ်ဝန်းကျင်အကြောင်းအရာဖော်ပြချက်

က-၄-၁။ နိဒါန်း

ဤအခန်းတွင်

- မြို့နယ်၏ဆင့်ပွားအချက်အလက်များ
- စီမံကိန်းတည်ရှိသောလှည်းကူးမြို့နယ်
- လှည်းကူးမြို့နယ်နှင့်ထိစပ်သောဒေသများ
- လှည်းကူးမြို့နယ်၏ ရာသီဥတုအခြေအနေတို့ကို ဖော်ပြထားပါသည်။

လှည်းကူးမြို့နယ်၏ ဆင့်ပွားအချက်အလက်များကို လှည်းကူးမြို့နယ် အထွေထွေ အုပ်ချုပ်ရေးအုပ်ချုပ်ရေးဦးစီးဌာန၏ ဒေသဆိုင်ရာအချက်အလက်များမှ ရယူပြီး ရယူသည့် ဝက်ဘ်ဆိုက်မှာ www.gad.gov.mm ဖြစ်ပါသည်။

က-၄-၂။ လေ့လာသည့်ကန့်သတ်ချက်သတ်မှတ်ခြင်း

လေ့လာသည့်စီမံကိန်း၏ ကန့်သတ်နယ်မြေသည် စီမံကိန်းကို ဗဟိုပြု၍ အချင်းဝက် ၁.၅ ကီလိုမီတာကို သတ်မှတ်ပြီး လေ၊ အသံနှင့်တုန်ခါမှု၊ ရေထု၊ မြေထု၊ ဇီဝဝန်းကျင်၊ ယဉ်ကျေးမှုအမွေအနှစ်များနှင့် လူမှုစီးပွားဝန်းကျင်ကို လေ့လာသွားမည်ဖြစ်ကြောင်းတင်ပြထားပါသည်။ ၁.၅ ကီလိုမီတာ အချင်းဝက် အဝိုင်းအဝန်းအတွင်း မင်္ဂလာဒုံမြို့နယ် ပါရှိသဖြင့် ယင်းကိုလည်း ထည့်သွင်းစဉ်းစားကြောင်း တင်ပြထားပါသည်။

က-၄-၂-၁။ စီမံကိန်းမစတင်မီ မင်္ဂလာဒုံမြို့နယ်အတွင်း အခြေခံအချက်အလက်များ ပြောင်းလဲခြင်း

ဒုတိယအကြိမ် နယ်ပယ်တိုင်းတာခြင်းအစီရင်ခံစာတွင် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာနက ပြင်ဆင်ထည့်သွင်းဖော်ပြရန် ညွှန်ကြားချက်ကို လိုက်နာ

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

ဆောင်ရွက်ခြင်း ဖြစ်ပါသည်။ မင်္ဂလာဒုံမြို့နယ်အတွင်း ၁၉၈၁ ခုနှစ်မှ ၂၀၁၀ ခုနှစ်အတွင်း စိုစွတ်ရာသီနှင့် ခြောက်သွေ့ရာသီများတွင် နှစ်စဉ်မိုးရွာသွန်းမှုအခြေအနေများပြောင်းလဲပုံ နှင့် နှစ်စဉ်ပျမ်းမျှ အမြင့်ဆုံးအပူချိန်များ ပြောင်းလဲပုံကို တင်ပြထားပါသည်။

က-၄-၂-၂။ အကျိုးသက်ရောက်မှု (မင်္ဂလာဒုံမြို့နယ်နှင့်လှည်းကူးမြို့နယ်)

ဤစာပိုဒ်တွင် -

အကျိုးသက်ရောက်မှုအဖြစ် မင်္ဂလာဒုံနှင့် လှည်းကူးမြို့နယ်များကို သတ်မှတ်ကြောင်း၊ မင်္ဂလာဒုံမြို့နယ်၏ ဒေသဆိုင်ရာအချက်အလက်အချို့ ဖော်ပြခြင်းနှင့် လှည်းကူးမြို့နယ်၏ အချက်အလက်အချို့ကို အပိုဒ် (၄-၁) တွင် တင်ပြထားပြီးဖြစ်ကြောင်း ဖော်ပြထားပါသည်။

က-၄-၂-၂-၁။ လွှမ်းမိုးနိုင်သည့် ဧရိယာ

စီမံကိန်းကို ဗဟိုပြု၍ ၁.၅ ကီလိုမီတာအချင်းဝက်ကို လွှမ်းမိုးနိုင်သည့် ဧရိယာ အဖြစ်သတ်မှတ်ပြီး ယာဉ်သွားလာမှု၊ လေထုညစ်ညမ်းမှု၊ ဆူညံသံ၊ တုန်ခါမှု၊ ဇီဝမျိုးစုံမျိုးကွဲနယ်ပယ်၊ ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်၊ မြေပေါ်ရေ၊ မြေဆီလွှာ အောက်ရေကြောနယ်ပယ်၊ လူမှုစီးပွားနယ်ပယ်နှင့် ကျန်းမာရေးသက်ရောက်မှုများအပေါ် တွင် လေ့လာသည့်နေရာ/ဒေသ/အရင်းအမြစ်တို့ကို အပိုဒ် ၄-၂-၂-၁ တွင် တင်ပြထား ပါသည်။

က-၄-၂-၂-၂။ လွှမ်းမိုးနိုင်သည့် ဧရိယာအပေါ် လေ့လာသည့်အချိန်အစီအစဉ်

စီမံကိန်းကို ဗဟိုပြု၍ ၁.၅ ကီလိုမီတာအချင်းဝက်ကို လွှမ်းမိုးနိုင်သည့် ဧရိယာ အဖြစ်သတ်မှတ်ပြီး ယာဉ်သွားလာမှု၊ လေထုညစ်ညမ်းမှု၊ ဆူညံသံ၊ တုန်ခါမှု၊ ဇီဝမျိုးစုံမျိုးကွဲနယ်ပယ်၊ ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်၊ မြေပေါ်ရေ၊ မြေဆီလွှာ အောက်ရေကြောနယ်ပယ်၊ လူမှုစီးပွားနယ်ပယ်နှင့် ကျန်းမာရေးသက်ရောက်မှုများအပေါ် တွင် လေ့လာသည့်အချိန်ဇယား အစီအစဉ်ကို အပိုဒ် ၄-၂-၂-၂ တွင် တင်ပြထားပါသည်။

က-၄-၂-၂-၃။ အဆိုပြုစီမံကိန်းအဆင့်သုံးဆင့်အတွက် အဓိကသက်ရောက်မှုများ

Emerald Brewery Myanmar Limited အဆင့်သုံးဆင့်အတွက် အဓိက သက်ရောက်မှုများကို အပိုဒ် ၄-၂-၂-၃ တွင် အကျဉ်းချုပ်တင်ပြခဲ့ပြီး အသေးစိတ်ကို အပိုဒ် ၆-၅ တွင် တင်ပြထားပါသည်။



က-၄-၂-၂-၄။ Spatial နှင့် Temporal သက်ရောက်မှုများ

အပိုဒ် ၄-၂-၂-၄ တွင် Spatial နှင့် Temporal တို့၏ အဓိပ္ပါယ်သက်ရောက်ချက်များနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာလေ့လာသည့် အပိုင်းများကို အတန်းအစားခွဲခြား တင်ပြထားပါသည်။

က-၄-၃။ ရူပဝိသေသများ

အပိုဒ် ၄-၃ အောက်တွင် စီမံကိန်းနေရာ၏ မြေမျက်နှာသွင်ပြင်၊ ပထဝီဆိုင်ရာမြေထု၊ ငလျှင်လှုပ်ခတ်နိုင်ခြင်း၊ နှင့် မြေအောက်ရေအခြေအနေ ခေါင်းစဉ်ခွဲများဖြင့် အပိုဒ် ၄-၃-၁၊ ၄-၃-၂၊ ၄-၃-၃ နှင့် ၄-၃-၄ တို့တွင် တင်ပြထားပါသည်။ အထက်ပါသတင်းအချက်အလက်များမှ အောက်ပါအတိုင်းကောက်ချက်ချနိုင်ပါသည်။

‘မြေအောက်ရေအရင်းအမြစ်သည် ဘီယာစက်ရုံနှင့်ပတ်ဝန်းကျင်အတွက် လုံလောက်ကြောင်းသိရပါသည်’

ထို့ပြင်အပိုဒ် ၄-၃-၅ တွင် လေ့လာသည့် ဧရိယာ၏ ရာသီဥတုကို အပူချိန် (အမြင့်ဆုံး၊ အနိမ့်ဆုံးပျမ်းမျှ) မိုးရွာသွန်းမှု (mm) မိုးရွာရက်များကို ၂၀၀၉ မှ ၂၀၁၉ ခုနှစ်အထိ တင်ပြထားပါသည်။

က-၄-၃-၆။ ပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး မူလအချက်အလက်များ

က-၄-၃-၆-၁။ လေထုအရည်အသွေး

အခန်း ၄-၃-၆-၁ လေထုအရည်အသွေးတွင်

- ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များတိုင်းတာသည့် စက်ပစ္စည်းကိရိယာများ
- အသုံးပြုသည့် စက်ပစ္စည်းနှင့် နည်းစနစ်
- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာစံနှုန်းများ
- စီမံကိန်းတည်ဆောက်ချိန်တိုင်းတာသည့်လေထုအရည်အသွေးများ
- တိုင်းတာရရှိသည့်ရလဒ်များကို စံနှုန်းများနှင့် နှိုင်းယှဉ်ဖော်ပြသည့် ဇယားများကို တင်ပြထားပါသည်။

လေထုအရည်အသွေးနှိုင်းယှဉ်ဖော်ပြသည့် ဇယားနှစ်ခုကို အောက်ပါအတိုင်း တင်ပြအပ်ပါသည်။

Compare Table of ambient air quality at site on 8~9th October 2018 with that of NEQ(E)G guideLine

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Variation from standard
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Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Variation from standard
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	- 200 (1hr)	-178.04
2.	Particulate Matter PM ₁₀	µg/m ³	84.84	50	+34.84
3.	Particulate Matter PM _{2.5}	µg/m ³	49.73	25	+22.93
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	100	-76.72

အထက်ဖော်ပြပါနိုင်းယုဉ်ဇယားအရ နိုင်ငံကြိုဂျင်ဒိုဒ်အောက်ဆိုင်နှင့်အိုဇုန်းပါဝင်မှုများသည် စံနှုန်းအတွင်းရှိနေပြီး PM₁₀ နှင့် PM_{2.5} တို့မှာစံနှုန်းထက်ကျော်လွန်၍ ပိုမိုများပြားနေပါသည်။

ဖြစ်နိုင်ဖွယ်ရာများမှာ -

- စီမံကိန်း၏ဧရိယာအတွင်း မြေကြီးတူး၊ မြေဖို့၊ မြေသယ်လုပ်ငန်းများနှင့် ယာဉ်သွားလာမှုများရှိခြင်း
- တိုင်းတာသည့် အောက်တိုဘာလသည် ခြောက်သွေ့ရာသီ ဖြစ်ခြင်းတို့ကြောင့် ဖြစ်နိုင်ဖွယ်ရှိပါသည်။

Compare Table of ambient air quality at Kon Ta La Baund Village 9th October 2018 with that of NEQ(E)G guideLine

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Variation from standard
1.	Nitrogen dioxide	µg/m ³	1.8 (8hr) 2 (1hr)	- 200 (1hr)	-198
2.	Particulate Matter PM ₁₀	µg/m ³	95.14 (8hr)	50	+45.14
3.	Particulate Matter PM _{2.5}	µg/m ³	57.79 (8hr)	25	+32.79
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	7.95(8hr)	100 (8hr)	-92.05

အထက်ဖော်ပြပါ လေထုအရည်အသွေး နိုင်းယုဉ်ဇယားအရ နိုင်ငံကြိုဂျင်ဒိုဒ်အောက်ဆိုင်နှင့်အိုဇုန်းပါဝင်မှုများသည် စံနှုန်းအတွင်းရှိနေပြီး PM₁₀ နှင့် PM_{2.5} တို့မှာ စံနှုန်း ထက်ကျော်လွန်၍ ပိုမိုများပြားနေပါသည်။

ဖြစ်နိုင်ဖွယ်ရာများမှာ -

- ကုန်းတလပေါင်ရွာတွင် တိုင်းတာသည့်နေရာမှ မော်တော်ယာဉ်သွားလာသည့်နေရာဖြစ်ခြင်း



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- တိုင်းတာသည့်လသည် အောက်တိုဘာလသည် ခြောက်သွေ့ရာသီ ဖြစ်ခြင်းတို့ကြောင့် ဖြစ်နိုင်သွယ်ရှိပါသည်။

စီမံကိန်းလည်ပတ်ချိန်ပတ်ဝန်းကျင်လေအရည်အသွေးတိုင်းတာမှုများ

စီမံကိန်းလည်ပတ်ချိန် ဖေဖော်ဝါရီ ၇-၉ ရက် ၂၀၂၃ ခုနှစ်တွင် ပတ်ဝန်းကျင်လေထုအရည်အသွေးတိုင်းတာမှုနှုန်းဖြင့် နှိုင်းယှဉ်ဖော်ပြမှု

No.	Parameter	Unit	Measured Result	GuideLine Value	Deviation From Standard
1.	Nitrogen dioxide	µg/m ³	10.15 (24hr) 29.62 (1hr)	- 200 (1hr)	-170.38
2.	Sulfur Dioxide	µg/m ³	0.5 (24hr)	20 (24hr)	-19.5
3.	Particulate Matter PM ₁₀	µg/m ³	44.45 (24hr)	50 (24hr)	-5.55
4.	Particulate Matter PM _{2.5}	µg/m ³	24.57 (24hr)	25 (24hr)	-0.43
5.	Ozone	µg/m ³	2.36(24hr) 3.41(8hr)	200 (1hr)	-196.39
6.	Ammonia	ppm	1.12 (24hr)	-	-
7.	Carbon Dioxide	ppm	283.79	-	-
8.	Carbon Monoxide	ppb	0.24	-	-
9.	Volatile Organic Carbon (VOC)	ppm	0	-	-
10.	Wind Speed	mph	1.67	-	-
11.	Wind Direction	Deg	SE	-	-

စီမံကိန်းတည်ဆောက်ချိန် (October 2018) နှင့် လည်ပတ်ချိန် (February 2023) တို့တွင် ပတ်ဝန်းကျင်လေအရည်အသွေးနှိုင်းယှဉ်မှု

No.	Parameter	Unit	Measurement result at N17°1' 7.40", E 96°9' 25.77" October 2018	Measurement result at N17°1' 7.61", E 96°9' 25.01" February 2023	More/less
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	10.15 (24hr) 29.62 (1hr)	-10.35 +7.66
2.	Sulfur Dioxide	µg/m ³	-	0.5	-
3.	Particulate Matter PM ₁₀	µg/m ³	84.84	44.4	-40.44
4.	Particulate Matter PM _{2.5}	µg/m ³	47.93	24.57	-23.36
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	2.36 3.41	-17.69 -19.87
6.	Ammonia	ppm	23.8	0.24	-23.56
7.	Carbon Dioxide	ppm	331.59	283.79	-47.8
8.	Carbon Monoxide	ppb	0.19	0.24	+0.05
9.	Volatile Organic	ppm	-	-	-



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No.	Parameter	Unit	Measurement result at N17°1'7.40", E 96°9'25.77" October 2018	Measurement result at N17°1'7.61", E 96°9'25.01" February 2023	More/less
	Carbon (VOC)				

အထက်ဖော်ပြပါ နိုင်းယုဉ် ဇယားအရ ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီ ပတ်ဝန်းကျင်လေထုအရည် အသွေး (လည်ပတ်ချိန်) သည် ကာဗွန်ဒိုင်အောက်ဆိုဒ်မှ အပ ကျန်တိုင်းတာမှုအားလုံးသည် ၂၀၁၈ ခုနှစ် အောက်တိုဘာတိုင်းတာမှုများထက် ပိုမိုကောင်းမွန်ကြောင်းတွေ့ရပါသည်။

ယင်းအချက်မှာ လည်ပတ်ချိန်ကာလ ပတ်ဝန်းကျင်လေအရည်အသွေးသည် တည်ဆောက်ချိန်ကာလထက် ပိုမိုကောင်းမွန်ကြောင်းမှတ်ယူနိုင်ပါသည်။

က-၄-၃-၆-၂။ ဆူညံသံပတ်ဝန်းကျင်

ဆူညံသံအဆင့်ကို အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ စံနှုန်းဖြင့်တိုင်းတာခဲ့ပါသည်။ စီမံကိန်းတွင် ဆူညံသံတိုင်းတာခြင်းဖြင့် အခြေခံအချက်အလက်ကို ရရှိပါသည်။ လေထုအရည်အသွေးတိုင်းတာသည့်နေရာများတွင်လည်းတိုင်းတာခဲ့ပါသည်။ ရလဒ်များကို အောက်ပါအတိုင်းတင်ပြထားပါသည်။

စီမံကိန်းနယ်မြေတွင် ၂၀၁၈ ခုနှစ် အောက်တိုဘာလ ဆူညံသံရလဒ်

Results of Ambient Noise Level at Project Site on October 2018

8.10.18 -9.10.18	24 Hours Average Value, dB (A) Leq	National Environmental Quality (Emission) GuideLine Values Industrial, Commercial
Day time	51.3	70
Night time	53.75	70

စီမံကိန်းနယ်မြေတွင် တည်ဆောက်ချိန် တိုင်းတာမှုရလဒ်များအရ နေ့စံနှုန်း၊ ည စံနှုန်းများ အတွင်းကျရောက်ကြောင်းတွေ့ရပါသည်။

ကုန်းတလပေါင် ရွာတွင် ဆူညံသံတိုင်းတာမှုရလဒ်

Results of Noise Level in Kone Ta La Baund Village

9.10.2018	8 Hours Average Value, dB (A) Leq (11:00 am -7:00 pm)	National Environmental Quality (Emission) GuideLine Values, Residential, Institutional, Educational, Industrial, Commercial



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		Day time 07:00~22:00 (10:00 ~ 22:00 for public holidays)
Day time	59.4	55

ကုန်းတလပေါင်ရွာတွင် (၈)နာရီ ဆူညံသံအဆင့်တိုင်းတာမှုသည် စံနှုန်းထက် အနည်းငယ် ကျော်လွန်နေကြောင်း တွေ့ရပါသည်။ မော်တော်ယာဉ်သွားလာမှုများကြောင့် ဖြစ်နိုင်ပါသည်။

စီမံကိန်းလည်ပတ်ချိန်ဆူညံသံတိုင်းတာမှုများ

စီမံကိန်းလည်ပတ်ချိန် ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလတွင် စီမံကိန်း ဧရိယာအတွင်း ပင်မအဝင်နေရာ၊ ဧည့်ကြိုနေရာအနီး၊ စွန့်ပစ်ရေဧရိယာ၊ လေထုအရည်အသွေးတိုင်းတာ သည့်နေရာ၊ စွန့်ပစ်ရေသန့်စင်သည့်နေရာအနီး တို့တွင် စုစုပေါင်း(၅)နေရာကို ၂၄ နာရီ အချိန်ယူတိုင်းတာခဲ့ပါသည်။

Noise level measuring results (day time) at site on February 2023

No.	Location of measurement point	Unit	Noise level day time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1' 11.90' E 96°9' 25.16	dBA	47.59	80.70	37.50	70	-22.41
2.	Near reception area N17°1' 3.32' E 96°9' 24.69"	dBA	51.46	71.2	37.2	70	-18.54
3.	Wastewater area N17°1' 0.62" E 96°9' 19.39"	dBA	47.76	80.9	39.6	70	-22.24
4.	Ambient air measurement point N17°1' 3.33" E 96°9' 17.82"	dBA	67.39	87.7	58.2	70	-2.61
5.	Treated wastewater point N17°1' 9.59' E 96°9' 9.14"	dBA	45.43	78.0	35.8	70	-29.57

Noise level measuring results (night time) at site on February 2023

No.	Location of measurement point	Unit	Noise level night time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		



No.	Location of measurement point	Unit	Noise level night time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1' 11.90" E 96°9' 25.16"	dB(A)	48.09	82.80	42.60	70	-21.91
2.	Near reception area N17°1' 3.32" E 96°9' 24.69"	dB(A)	48.03	71.10	44.20	70	-21.97
3.	Wastewater area N17°1' 0.62" E 96°9' 19.39"	dB(A)	43.19	55.5	39.50	70	-26.81
4.	Ambient air measurement point N17°1' 3.33" E 96°9' 17.82"	dB(A)	47.77	50.33	45.40	70	-22.23
5.	Treated wastewater point N17°1' 9.59" E 96°9' 9.14"	dB(A)	45.47	59.08	31.25	70	-24.53

တိုင်းတာမှုရလဒ်များအရ နေ့နှင့်ည တိုင်းတာမှု ပျမ်းမျှ တန်းဘိုးများသည် စံနှုန်းအတွင်းရှိနေကြောင်းတွေ့ရပါသည်။ အချို့အမြင့်ဆုံးတန်းဘိုးများသည် တခါတရံ စံနှုန်းထက်မြင့်မားနေ၍ လျော့နည်းရန် ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

ကုန်းတလပေါင်ရွာတွင် ဆူညံသံတန်းဘိုးများကို တိုင်းတာခဲ့ရာတွင် နေ့အချိန် တိုင်းတာမှုများသည် စံနှုန်းအတွင်းရှိပြီး ညအချိန်တိုင်းတာမှုများသည်စံနှုန်းထက်ကျော် လွန်နေကြောင်းတွေ့ရပါသည်။ နေ့ညတိုင်းတာမှုရလဒ်များသည်သိပ်မကွာသော်လည်း ညစံနှုန်းမှာ နိမ့်ထား၍ ညတိုင်းတာမှုသည် စံနှုန်းထက်ကျော်လွန်ခြင်းဖြစ်ပါသည်။

Result of noise level at Kone Ta La Baund at February 2023

8~9 th -2-2023	Measurment	Average Value, dB (A)	NEQ(E)G GuideLine Values
	Day time	50.34	55
	Night time	50.95	45

က-၄-၃-၆-၃။ လုပ်ငန်းခွင်လေထုအရည်အသွေးနှင့်ဆူညံသံအဆင့်တိုင်းတာခြင်း

က-၄-၃-၆-၃-၁။ လုပ်ငန်းခွင်လေထုအရည်အသွေးနှင့်ဆူညံသံအဆင့် တိုင်းတာခြင်း

လုပ်ငန်းခွင်လေထုအရည်အသွေးကို ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလတွင် PM₁₀၊ PM_{2.5} တို့ကို အရည်ဖြည့်စက်အဝင်နေရာ၊ အရည်ဖြည့်စက်အထွက်နေရာ၊ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ထုတ်သည့်နေရာ၊ ဘီယာချက်ခန်း(အပေါ်ထက်)၊ ဘီယာချက်ခန်း



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(အောက်ထပ်)၊ မော့ကြိတ်သည့်နေရာ (အပေါ်ထပ်) နှင့် မော့ကြိတ်သည့်နေရာ (အောက်ထပ်) တို့တွင် တိုင်းတာခဲ့ပြီး ရလဒ်များကို အောက်ပါ အတိုင်းတင်ပြအပ်ပါသည်။

Results of workplace air quality monitoring on February 2023

No.	Location	PM ₁₀ µg/m ³			PM _{2.5} µg/m ³		
		Measurement result	Standard	More/ Less	Measurement result	Standard	More/ Less
1.	Filling area (starting point)	38	50	-12	17	25	-8
2.	Filling area (End point)	43	50	-7	22	25	-3
3.	CO ₂ plant area	48	50	-2	24	25	-1
4.	Brewing area (up)	40	50	-10	19	25	-5
5.	Brewing area (down)	43	50	-7	22	25	-3
6.	Malt milling area (up)	38	50	-12	20	25	-5
7.	Malt milling area (down)	41	50	-9	20.5	25	-4.5

တိုင်းတာမှုရလဒ်များအရ လုပ်ငန်းခွင်လေအရည်အသွေးသည် စံနှုန်းအတွင်း ကျရောက်ကြောင်းတွေ့ရပါသည်။

က-၄-၃-၆-၃-၂။ လုပ်ငန်းခွင်ဆူညံသံတိုင်းတာခြင်း

လုပ်ငန်းခွင် ဆူညံသံတိုင်းတာခြင်းအဆင့်ကို ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလ အရည်ဖြည့်စက်အဝင်နေရာ၊ အရည်ဖြည့်စက်အထွက်နေရာ၊ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ထုတ်သည့်နေရာ၊ ဘီယာချက်ခန်း(အပေါ်ထပ်)၊ ဘီယာချက်ခန်း(အောက်ထပ်)၊ မော့ကြိတ်သည့်နေရာ (အပေါ်ထပ်) နှင့်မော့ကြိတ်သည့်နေရာ (အောက်ထပ်) တို့တွင် တိုင်းတာခဲ့ပြီး ရလဒ်များကို အောက်ပါ အတိုင်းတင်ပြထားပါသည်။

Results of monitoring of workplace noise level and compairson with standards

No.	Location	Noise level			More/ Less
		Unit	Measurement	Standard NEQ(E)G	
1.	Filling area (starting point)	dBA	78.1	70	+8.1
2.	Filling area (End point)	dBA	71.5	70	+1.5
3.	CO ₂ plant area	dBA	88.7	70	+18.7
4.	Brewing area (up)	dBA	75.9	70	+5.9
5.	Brewing area (down)	dBA	79.4	70	+9.4
6.	Malt milling area (up)	dBA	72.1	70	+2.1
7.	Malt milling area (down)	dBA	85.3	70	+15.3

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နေရာ (၇)နေရာတို့တွင် ဆူညံသံတိုင်းတာမှုရလဒ်များအရ တိုင်းတာရရှိသည့် ရလဒ်များအားလုံးသည် စံနှုန်း 70 dBA ထက် များနေသော်လည်း လုပ်ငန်းခွင်ကျန်းမာရေး နှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး၏ အလုပ်ချိန်(၈)နာရီ အတွက်ဆူညံသံသတ်မှတ်ချက် ၉၀ dBA ကို ကျော်လွန်ခြင်းမရှိကြောင်းတွေ့ရပါသည်။

က-၄-၃-၆-၃-၃။ ခေါင်းတိုင်ထုတ်လွှတ်မှုအရည်အသွေးတိုင်းတာခြင်း

- ဘွိုင်လာခေါင်းတိုင်ထုတ်လွှတ်မှု
- လျှပ်စစ်ထုတ်စက်အိမ်ဇေပိုက်ထုတ်လွှတ်မှု

ဘွိုင်လာခေါင်းတိုင်ထုတ်လွှတ်မှု

ဘွိုင်လာခေါင်းတိုင် ထုတ်လွှတ်မှုတိုင်းတာမှုရလဒ်နှင့် စံနှုန်းနှိုင်းယှဉ်ခြင်း

Boiler stack emission monitoring result and compairson with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	14.27	13.57	-	-
2.	CO	mg/m ³	30	51	-	-
3.	CO ₂	mole%	2.6	5.5	-	-
4.	NO ₂	mg/m ³	24(2.65Avg)	29	460	-433.5
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	150	-

PM₁₀ ကို ခေါင်းတိုင်အတွင်း တိုင်းတာသည့် စက်ကိရိယာမရှိ၍ မတိုင်းတာနိုင်ခဲ့ပါ။ တိုင်းတာမှုရလဒ်များသည် စံနှုန်းအတွင်း ကျရောက်ပါသည်။

လျှပ်စစ်ထုတ်စက်အိမ်ဇေပိုက်ထုတ်လွှတ်မှု

Electric generator stack (Exhaust) emission monitoring result and compairson with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	19.92	20	-	-
2.	CO	mg/m ³	133	125	-	-
3.	CO ₂	mole%	0.8	0.8	-	-
4.	NO ₂	mg/m ³	154(153Avg)	152	460	-307
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	-	-

PM₁₀ ကို အိမ်ဇေပိုက် အတွင်း တိုင်းတာသည့် စက်ကိရိယာမရှိ၍ မတိုင်းတာနိုင်ခဲ့ပါ။ တိုင်းတာမှုရလဒ်များသည် စံနှုန်းအတွင်းကျရောက်ပါသည်။



က-၄-၃-၆-၄။ ရေအရည်အသွေး

အပိုဒ် ၄-၃-၆-၄ တွင် မြေအောက်ရေ၊ ပတ်ဝန်းကျင်ရေ နှင့် စွန့်ပစ်ရေ တို့ကို ရေထုပတ်ဝန်းကျင်အဖြစ်ဆန်းစစ်ခဲ့ကြောင်းနှင့် ဆန်းစစ်ခြင်းကိစ္စရပ်များကို တင်ပြထားပါသည်။

တည်ဆောက်ရေးအဆင့်

ဤခေါင်းစဉ်အောက်တွင်

- ရေနမူနာရယူခဲ့သည့် နေရာဖော်ပြချက်များ
- မြေအောက်ရေဓာတ်ခွဲရလဒ်များနှင့် စံနှုန်းတို့ပါဝင်ပါသည်။

စီမံကိန်းလည်ပတ်ချိန် ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလ မြေအောက်ရေအရည်အသွေးများ

ဤခေါင်းစဉ်အောက်တွင် နေရာ(၅)ခုမှ မြေအောက်ရေနမူနာများကို ရယူပြီး ဓာတ်ခွဲရလဒ်များနှင့် စံနှုန်းများတို့ကို ဖော်ပြထားပါသည်။

ထို့ပြင် စီမံကိန်းဧရိယာအတွင်းမှ တည်ဆောက်ချိန်မြေအောက်ရေ ဓာတ်ခွဲရလဒ်များ နှင့် လည်ပတ်ချိန် မြေအောက်ရေဓာတ်ခွဲရလဒ်များနှင့် အောက်ဖော်ပြပါအတိုင်း နှိုင်းယှဉ်ဖော်ပြထားပါသည်။

Comparison table of tube well water analyzed results at project site of October 2018 with those of February 2023

Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
1	pH	-	5.93	6.4	+0.47	
2	Chloride (Cl ⁻)	mg/l	10	23.9	+22.9	
3	Total Hardness as CaCO ₃	mg/l	7	7.5	+0.5	
4	Total Iron (Fe)	mg/l	0.1	0	-0.1	
5	Sulphate (SO ₄)	mg/l	2	6	+4	
6	Total Alkalinity as CaCO ₃	mg/l	25	34	+9	
7	Turbidity	NTU	0.22	2.42	+2.2	



Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
8	Manganese (Mn)	mg/l	ND	0.23	+0.23	
9	Aluminum (Al)	mg/l	0.02	ND	-0.02	
10	Cyanide (CN)	mg/l	ND	ND	-	
11	Arsenic (As)	µg/l	53	0	-53	
12	Total Dissolved Solids (TDS)	mg/l	-	40	+40	
13	Copper	mg/l	ND	0.1	+0.1	

အထက်ဖော်ပြပါ နှိုင်းယှဉ်ဇယားအရ

- pH, ကလိုရိုက်၊ ရေစေးဓာတ်၊ ဆာလဖိတ်၊ နောက်ကျိုမှု၊ မန်းဂနီ(စ်) နှင့် စုပေါင်းပျော်ဝင်ပစ္စည်းများ ပိုမိုများပြားကြောင်းတွေ့ရသော်လည်း စံနှုန်းအတွင်းရှိနေပါသည်။
- စုပေါင်းသံဓာတ်၊ ဒန်ဓာတ်၊ အာဆင်းနစ် တို့ လျော့နည်းသွားကြောင်းတွေ့ရပြီး စံနှုန်းအတွင်း ရှိနေပါသည်။
- မြေအောက်ရေအရည်အသွေးသိသာစွာ မပြောင်းလဲကြောင်းမှတ်ယူနိုင်ပါသည်။

မြေပေါ်ရေ (ပတ်ဝန်းကျင်ရေ) အရည်အသွေး

မြေပေါ်ရေမူနာရယူခြင်းနှင့် ဓာတ်ခွဲစမ်းသပ်ခြင်း

၂၀၁၈ ခုနှစ်အောက်တိုဘာလ (စီမံကိန်းတည်ဆောက်ချိန်ကာလ)တွင်

ဤခေါင်းစဉ်အောက်တွင် ဘားလားချောင်းရေကို စီမံကိန်းအထက်အပေါ်ဘက်၊ စီမံကိန်းအထက်ဘက်၊ စီမံကိန်းနှင့်နီးကပ်နေရာနှင့် စီမံကိန်းအောက်ဘက် များမှ ရယူဓာတ်ခွဲစမ်းသပ်ပြီး စံနှုန်းများဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။

ထို့ပြင် ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလ စီမံကိန်းလည်ပတ်ချိန် ဘားလားချောင်းရေ များကို တည်ဆောက်ချိန်ကာလ နမူနာရယူသည့်နေရာများနည်းတူ နမူနာရယူဓာတ်ခွဲစမ်းသပ်ခဲ့ပါသည်။ ကိုလီဖောင်းပါဝင်မှုမှလွဲ၍ ကျန်တိုင်းတာသည့် တန်ဖိုးများအားလုံး စံနှုန်းအတွင်း ကျရောက်ကြောင်းတွေ့ရပါသည်။

၂၀၁၈ ခုနှစ် အောက်တိုဘာလ၊ ၂၀၂၃ ခုနှစ်ဖေဖော်ဝါရီလနှင့် ၂၀၂၃ ခုနှစ် ဩဂုတ်လများတွင် ဘားလားချောင်းရေ၏မျက်မြင်အခြေအနေများကိုလည်း



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ဓာတ်ပုံမှတ်တမ်းများဖြင့် တင်ပြထားပါသည်။ အသေးစိတ်ကို အပိုဒ် ၄-၃-၆-၄ တွင် တင်ပြထားပါသည်။

က-၄-၃-၆-၅။ စွန့်ပစ်ရေ အရည်အသွေးများ

ဤအခန်းတွင်

- ဘီယာလုပ်ငန်းနှင့်အရက်ချက်လုပ်ငန်းတို့၏ တူညီမှုကွဲပြားမှုတို့ကို လည်းကောင်း
- နည်းစနစ်
- ချဉ်းကပ်ပုံနည်းလမ်း
- နမူနာကောက်ယူသည့်နေရာဖော်ပြချက်
- နမူနာကောက်ယူသည့် ဓာတ်ပုံများ
- ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလ စွန့်ပစ်ရေ ဓာတ်ခွဲရလဒ်များတို့ကို တင်ပြထားပါသည်။

Laboratory analyzed results of wastewaters February 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	5.8	7.8	7.3	6~9
2.	Total Suspended Solids	mg/l	148	38	28	50
3.	Biochemical Oxygen Demand	mg/l	980	650	180	50
4.	Chemical Oxygen Demand	mg/l	1850	1455	386	250
5.	Total Phosphorous	mg/l	4.3	29	16	2
6.	Oil and Grease	mg/l	9	7	6	10
7.	Total nitrogen	mg/l	16	32	23	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	>1100	23	>1100	400
9.	Temperature increase	°C	<3	<3	<3	<3

အထက်ပါဓာတ်ခွဲရလဒ်များအရ စွန့်ပစ်ရေသန့်စင်မှုစနစ်ကို ပြုပြင်သင့်ကြောင်း တင်ပြထားပါသည်။

Emerald Brewery Myanmar Limited တွင် ၂၀၂၁ ခုနှစ် ဇန်နဝါရီလ ၅ ရက်နေ့တွင် Foreb Marshall Pte Ltd. နှင့် Real Time OnLine Monitoring System ကို



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

တပ်ဆင်အသုံးပြုလျက်ရှိကြောင်း ဖော်ပြထားပါသည်။ Online Monitoring ရလဒ်အချို့ကို အခန်း ၄-၃-၆-၅ တွင် တင်ပြထားပါသည်။

Laboratory analyzed results of wastewaters August 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	3.6	6.7	7	6~9
2.	Total Suspended Solids	mg/l	252	9	12	50
3.	Biochemical Oxygen Demand	mg/l	1480	26	28	50
4.	Chemical Oxygen Demand	mg/l	3800	76	94	250
5.	Total Phosphorous	mg/l	1.2	2.8	1.2	2
6.	Oil and Grease	mg/l	49.5	9	8	10
7.	Total nitrogen	mg/l	6.8	3.2	2.6	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	210	9	9	400
9.	Temperature increase	°C	<3	<3	<3	<3

၂၀၂၃ ခုနှစ် ဩဂုတ်လ ဓာတ်ခွဲစမ်းသပ်မှုရလဒ်များအရ စွန့်ပစ်ရေသန့်စင်သည့် ကိရိယာအထွက်နှင့် နောက်ဆုံးစွန့်ပစ်ရေတို့သည် စံနှုန်းအတွင်း ကျရောက်ကြောင်း ဖော်ပြ ထားပါသည်။

က-၄-၃-၆-၆။ မြေထုအရည်အသွေး

ဤအခန်းတွင်

- ၂၀၁၈ ခုနှစ် အောက်တိုဘာလတွင် မြေနမူနာရယူသည့်နေရာဖော်ပြချက်
- မြေနမူနာရယူနေပုံဓာတ်ပုံ
- မြေနမူနာဓာတ်ခွဲရလဒ်များ (၂၀၁၈ အောက်တိုဘာ)
- ၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီ မြေနမူနာရယူသည့်နေရာဖော်ပြချက်
- မြေနမူနာဓာတ်ခွဲရလဒ်များ (၂၀၂၃ ဖေဖော်ဝါရီလ)
- ၂၀၁၈ ခုနှစ် အောက်တိုဘာ မြေနမူနာ ဓာတ်ခွဲရလဒ်များနှင့် ၂၀၂၃ ခုနှစ်ဖေဖော်ဝါရီ မြေဓာတ်ခွဲရလဒ်များ နှိုင်းယှဉ်ဖော်ပြချက်တို့ကို ဖော်ပြထားပြီး ယင်းနှိုင်းယှဉ်ဖော်ပြချက်ဇယားကို ပူးတွဲတင်ပြထား ပါသည်။



Comparison table of analyzed results of soil at October 2018 with those of February 2023

No	Parameters	Unit	Analyzed result Oct 2018	Analyzed result Feb2018	More / Less
1	pH	-	6.1	6.8	+0.7
2	Chloride (Cl)	g/kg soil	0.15	0.017	-0.133
3	Total Iron (Fe)	mg/kg soil	7.5	<0.5	-7.0
4	Copper	mg/kg soil	ND	0.05	+0.05
5	Cyanide (CN)	g/kg soil	0.15	ND	-0.15
6	Aluminum	mg/kg soil	0.35	<0.05	-0.3
7	Manganese (Mn)	mg/kg soil	ND	<01	+<01
8	Arsenic (As)	mg/kg soil	ND	<0.025	+0.025
9	P- AlkaLineity	mmol/l extract	0	0	-
10	Total AlkaLineity	mmol/l extract	0.8	1.8	+1.0
11	Extractable Acidity	cmol/kg soil	4.25	2.5	-1.75

ဖော်ပြပါနိုင်းယုတ် ဇယားအရ pH, ကော့ပါး၊ မန်းဂနီ(စ်)၊ အာဆင်းနစ် နှင့် Total AlkaLineity များပိုမိုများပြားလာပြီး ကလိုရိုက်၊ သံဓာတ်၊ ဆိုင်ယနိုက်၊ ဒန်ဓာတ်၊ p-alkaLineity နှင့် Extractable acidity များ လျော့နည်းသွားပါသည်။ ပိုမိုများပြားခြင်း၊ လျော့နည်းခြင်းများသည် ပမာဏနည်းပါသဖြင့် မြေထုအရည်အသွေးသိသာစွာပြောင်းလဲခြင်းမရှိကြောင်းကောက်ချက်ချထားပါသည်။

က-၄-၃-၆-၇။ တုန်ခါမှုတိုင်းတာခြင်း

ဤအခန်းတွင်

- တုန်ခါမှုတိုင်းတာသည့် လတ္တီတွဒ်၊ လောင်ဂျီတွဒ် ဖော်ပြချက်
- တုန်ခါမှုတိုင်းတာသည့် နေရာဖော်ပြချက်ဓာတ်ပုံ
- တုန်ခါမှုရလဒ်များ
- စံနှုန်းများနှင့်
- တုန်ခါမှုတိုင်းတာသည့် ဓာတ်ပုံများကို တင်ပြထားပါသည်။

ကောက်ချက်ချခြင်း

တုန်ခါမှုတိုင်းတာသည့် နေရာသုံးနေရာတွင် Maximum Peak Value Sum (PVS-mm/sec) တို့မှာ ဘုန်းတော်ကြီးကျောင်းအတွင်း၀.၆၇၊ စွန့်ပစ်ရေသန့်စင်ကိရိယာနေရာတွင် ၀.၆၉ နှင့် အဝင်ဂိတ်အနီးတွင် ၁.၅၃ အသီးသီးရှိကြပြီး ရှေးဟောင်းသမိုင်းဝင် အဆောက်အဦအနီးတွင် PVS သတ်မှတ်ချက်မှာ 3mm/sec ဖြစ်၍ တိုင်းတာမှုရလဒ်များသည် စံနှုန်းအတွင်း ရှိပါကြောင်းတင်ပြထားပါသည်။



က-၄-၄။ ဇီဝဝိသေသများ

ဤ အခန်း ၄-၄ ဇီဝဝိသေသများတွင်

- ဇီဝမျိုးစုံမျိုးကွဲများ၏နိဒါန်း
- ဇီဝမျိုးစုံမျိုးကွဲများဆန်းစစ်ခြင်း၏ရည်မှန်းချက်
- ဥပဒေ၊ နည်းဥပဒေများ ခြုံငုံတင်ပြချက်
- ကွင်းဆင်းလေ့လာမှုများ
- လေ့လာမည့်စီမံကိန်းပတ်ဝန်းကျင်ဖော်ပြချက်
- ဇီဝမျိုးစုံမျိုးကွဲကွင်းဆင်မှု အကျယ်အဝန်း
- ကွင်းဆင်းလေ့လာမှုနည်းစဉ် နယ်ပယ်
- သက်ရောက်မှုအဆင့်အုပ်စုခွဲခြားခြင်း
- ဇီဝမျိုးစုံမျိုးကွဲအပေါ်သက်ရောက်မှုခွဲခြမ်းစိတ်ဖြာခြင်း
- အပင်နှင့်တိရိစ္ဆာန် အပေါ်ဆွေးနွေးချက်များကို ဖော်ပြထားပါသည်။

နိဂုံးချုပ်အားဖြင့်

စီမံကိန်းဧရိယာပတ်ဝန်းကျင်တွင် အပင်နှင့် မျိုးစိတ်များ အနည်းအကျဉ်းသာရှိပြီး မြက်ပင်၊ ခြံပင်များကို အများအပြားတွေ့ရပါသည်။ စီမံကိန်းဧရိယာသည် ဇီဝမျိုးစုံမျိုးကွဲများ အတွက် အရေးပါမှုအနည်းအကျဉ်းသာရှိပြီး၊ ငမိုးရိပ်ချောင်း၏ လက်တက်ဖြစ်သော ဘားလားချောင်းကို ရေနေဂေဟစနစ်အတွက် အရေးပါပြီး ရေချိုအရင်းအမြစ် တွေ့ရပါသည်။

အပင်နှင့်တိရိစ္ဆာန်များအပေါ်တွင် သက်ရောက်မှုကာလကာရှည်ပြီး ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အပေါ်မူတည်ပြီး လက်ရှိရေနေသက်ရှိများကို စိုက်ပျိုးမှုများကို တိုက်ရိုက်သက်ရောက်နိုင်ပါသည်။ စီမံကိန်းဧရိယာသည် ဇီဝမျိုးစုံမျိုးကွဲအပေါ် အရေးပါမှု အနည်းငယ်ဖြစ်သော်လည်း ကာဗွန်ဒိုင်အောက်ဆိုဒ်ထုတ်လွှတ်မှုနှင့် စွန့်ပစ်ရေ စွန့်ပစ်မှုတို့ သည် ညစ်ညမ်းမှုကို ဖြစ်စေနိုင်ပါသည်။

စီမံကိန်းပတ်ဝန်းကျင်ဇီဝအခြေအနေထူးခြားမှု

စီမံကိန်းပတ်ဝန်းကျင်ဧရိယာသည် မြေနိမ့်ပိုင်းတွင် တည်ရှိပြီး ဘားလားချောင်း ငယ်နဘေး၌ ကပ်လျှပ်တည်ရှိသည်။ ဘားလားချောင်းသည် ငမိုးရိပ်ချောင်းမကြီး၏ ချောင်းလက်တက်ငယ် တစ်ခုဖြစ်သည်။ ချောင်းသည် တိမ်ပြီး (<1m) ရေနောက်ကျိနေ သည်။ ဤသည်မှာ စီမံကိန်းမတင်မီ Data အချက်အလက်များကောက်ယူစဉ် တွေ့ရှိရခြင်းဖြစ်သည်။ ဘားလားချောင်းသည် (polluted Water) အဖြစ် တွေ့ရှိရသည်။ ချောင်းအတွင်းငါးမျိုးစိတ်အနည်းငယ်နှင့် ငှက်အချို့ကိုသာ တွေ့ရှိရသည် ထူးခြားမှုမှာ အန္တရာယ်ရှိသော မျိုးစိတ်များ တွေ့ရှိနေရခြင်းဖြစ်သည်။ ၎င်းတို့မှာ ရေဆူးပုတ်ပင် (Mimosa



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pigra)များချောင်းဘေးတစ်လျှောက်အများအပြားပေါက်ရောက်နေပြီး ၎င်းအပင်ခြေရင်းနှင့် ရေနှင့်ထိစပ်သောနေရာများ၌ ရွှေခရု Golden Apple Snail သိပ္ပံအမည် (Pomacea canaliculate) တို့ကိုလည်း အများအပြားတွေ့ရှိရသည်။ ရေထဲတွင် စုပ်ခွက်ငါး သိပ္ပံအမည် (Hypostomus Plecostomus) ကိုလည်း မကြာခဏ တွေ့ရှိရသည်။ တစ်နေရာတည်း၌ ရေနှင့်ချောင်း၏ ဂေဟဝန်းကျင်ကို အန္တရာယ်ပေးနိုင်သော မျိုးစိပ်များတွေ့ရှိနေခြင်းမှာ မူးရင်းမျိုးစိပ်များ လျော့နည်းပျောက် ကွယ်သွားနိုင်သည်ထိ အန္တရာယ်မျိုးဖြစ်သည်။ ငမိုးရိပ်ချောင်းမကြီးနှင့် ဆက်စပ်နေသဖြင့် ပို၍ပင် အန္တရာယ်များပါသည်။ စီမံကိန်း အကောင်အထည်ဖော်ဆောင်ရွက်မှုနှင့် ဆက်စပ်မှုမှာ အလွန်နည်းပါသည်။ သို့သော်စီမံကိန်း ဧရိယာနှင့် ထိစပ်နေသဖြင့် အန္တရာယ်ရှိမျိုးစိပ်များ နိမ်နင်းမှုတွင် သက်ဆိုင်ရာများနှင့် ပူးပေါင်းပါဝင်ဆောင်ရွက်သင့်ဟု ရှုမြင်ပါသည်။

က-၄-၅။ လူမှုစီးပွားရေးဆိုင်ရာဝိသေသများ

ဤ အခန်း တွင် ပထမပိုင်းနှင့် ဒုတိယပိုင်းအနေဖြင့်

- ဆင့်ပွားအချက်အလက်များရယူသည့်အရင်းအမြစ်နှင့်ဝက်ဆိုဒ်လိပ်စာ
- နိဂုံး (ခြုံငုံတင်ပြချက်၊ လူဦးရေဆိုင်ရာဖော်ပြချက်၊ အုပ်ချုပ်ပိုင်း၊ မြေအသုံးချမှု၊ လူမျိုးဘာသာစကားနှင့် ကိုးကွယ်သည့်ဘာသာ၊ ပညာရေး၊ ကျန်းမာရေးစောင့်ရှောက်မှု၊ အသက်မွေးမှု ပုံစံ) တို့ကို အပိုဒ် ၄-၅ နှင့် ၄-၅-၂ တို့ တွင် တင်ပြထားပါသည်။

တတိယအပိုဒ်တွင် လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းကို အောက်ပါခေါင်းစဉ်များ ဖြင့် အပိုဒ် ၄-၅-၃ တွင် တင်ပြထားပါသည်။

- နိဒါန်း
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၏ရည်ရွယ်ချက်များ
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းနယ်ပယ်ကန့်သတ်ခြင်း
- လူမှုဝန်းကျင်အခြေခံအချက်အလက်များ
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဧရိယာ
 - နည်းစနစ်နှင့်ချဉ်းကပ်ပုံ (ပစ္စည်းနှင့်နည်းစနစ်၊ စားပွဲပိုင်းဆွေးနွေးခြင်း၊ ကွင်းဆင်းဆန်းစစ်ခြင်း)
 - လူမှုဝန်းကျင်အခြေခံအချက်အလက်များ (ပထဝီဆိုင်ရာဆန်းစစ်ခြင်း၊ နည်းစနစ်နှင့် ချဉ်းကပ်ပုံ)
 - လူမှုစီးပွားအခြေခံအချက်အလက်များအခြေအနေ(၂၀၁၈ခုနှစ် ဆောက်လုပ်ရေးကာလ)



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(နေထိုင်မှုသတင်းအချက်အလက်များ၊ စွမ်းအင်အရင်းအမြစ်နှင့် သုံးစွဲမှုရေ အရင်းအမြစ်နှင့်သုံးစွဲမှု၊ မိလ္လာစနစ်နှင့်စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှု၊ အဆောက်အဦ အမျိုးအစား၊ သယ်ယူပို့ဆောင်ခြင်း)

- လူမှုစီးပွားအခြေခံအချက်အလက်များအခြေအနေ (၂၀၂၃ မတ်လ စီမံကိန်း လည်ပတ်ချိန်)

(နေထိုင်မှုသတင်းအချက်အလက်များ၊ စီးပွားရေးအဆင့်အတန်း၊ ကျန်းမာရေးအရင်းအမြစ်များ)

- ဘားလားချောင်းတလျှောက်အသက်မွေးမှုများ

အဓိက သက်ရောက်မှုဆန်းစစ်ခြင်းနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ချက်များ

- သက်ရောက်မှုဆန်းစစ်သည့်နည်းစနစ် (မက်ထရစ်စနစ်)
- သက်ရောက်မှုဆန်းစစ်ခြင်း

(အဓိကသက်ရောက်မှုအရင်းအမြစ်ကို သတ်မှတ်ဖော်ထုတ်ခြင်း၊ သက်ရောက်မှုများတွက်ချက်ခြင်း)

- လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများ

စတုတ္ထပိုင်းအနေဖြင့် လူမှုပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းကို အပိုဒ် ၄-၅-၄ တွင် အောက်ပါအတိုင်း တင်ပြထားပါသည်။

လူမှုပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် အချက်သုံးချက်ရှိပါသည် -

- အနံ့ဆိုးများ (အနည်းငယ်)
- အဟာရညစ်ညမ်းခြင်း (ဗေဒါပင်များတိုးပွားခြင်း) (အလယ်အလတ်)
- အသက်မွေးမှုလုပ်ငန်းများလျော့နည်းခြင်း (အလယ်အလတ်)

အနံ့ဆိုးများသက်ရောက်မှုကို ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနည်းလမ်းများ၊ စက်ရုံက ဘားလားချောင်း ကမ်းပါးတွင် ဒေသမျိုးရင်းအပင်များကို လေကာပင်များစိုက်ပျိုးခြင်း၊ လုပ်ကိုင်ခြင်းဖြင့် လျော့နည်းစေပါ သည်။

အဟာရညစ်ညမ်းမှုကို ဘားလားချောင်းအတွင်းစွန့်ပစ်သည့် အခြားအရင်း အမြစ်များ၊ မွေးမြူရေးလုပ်ငန်းများ (နွားခြံ၊ ကြက်ခြံ၊ ဘဲခြံနှင့် ငါးမွေးမြူရေးကန်များ) စိုက် ပျိုးရေးလုပ်ငန်းများ၊ ကျူးကျော်ဝင်ရောက်သည့် အခြားမျိုးစိတ်များ (အပင်နှင့် သတ္တဝါ)နှင့် လူနေအိမ်များမှ စွန့်ပစ်ပစ္စည်းကို ထည့်သွင်းစဉ်းစားရန်ဖြစ်ပါသည်။

စက်ရုံအနေဖြင့် ဘားလားချောင်းအတွင်း ဗေဒါပင်များလျော့နည်းစေရန် ဆောင်ရွက်သည့်လုပ်ငန်းများကို ပါဝင်ကူညီလုပ်ဆောင်ခြင်းနှင့် စက်ရုံလုပ်ငန်းလိုအပ်ချက် အရည်အချင်းနှင့် ကိုက်ညီသည့်ရွာသားများကို အလုပ်ခန့်ထားခြင်းဖြင့် အသက်မွေးမှုလုပ် ငန်းလျော့နည်းခြင်းကို လျော့နည်းစေရန် ဆောင်ရွက်သင့်ကြောင်း တင်ပြထား ပါသည်။



က-၄-၅-၅။ လှည်းကူးမြို့နယ်၏ အချက်အလက်များ

လှည်းကူးမြို့နယ်၏ လူတစ်ဦးချင်းဝင်ငွေနှင့် အလုပ်လုပ်ကိုင်သူ၊ အလုပ်အကိုင်မရှိသူ တို့၏ စာရင်းများကို အပိုဒ် ၄-၅-၅ တွင် တင်ပြထားပါသည်။

က-၄-၅-၅-ခ။ မင်္ဂလာဒုံမြို့နယ်

မင်္ဂလာဒုံမြို့နယ်၏ လူတစ်ဦးချင်းဝင်ငွေနှင့် အလုပ်လုပ်ကိုင်သူ၊ အလုပ်အကိုင်မရှိသူ တို့၏ စာရင်းများကို အပိုဒ် ၄-၅-၅-ခ တွင် တင်ပြထားပါသည်။

က-၄-၆။ ယဉ်ကျေးမှုအမွေအနှစ်များထိခိုက်မှုဆန်းစစ်ခြင်း

အဆိုပြုစီမံကိန်းသည် ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်တွင် တည်ရှိပါသည်။ တည်နေရာသည် ပြည်တွင်းအခြေချနေထိုင်သူများနှင့် အလွန်နီးကပ်စွာတည်ရှိပါသည်။ ထို့ကြောင့် ဘုန်းကြီးကျောင်းများ၊ သာသနာရေးအဆောက်အဦ၊ စေတီဘုရားပုထိုးများနှင့် နီးကပ်စွာတည်ရှိပါသည်။ တခါတရံ ပွဲတော်နှင့် ကြုံတွေ့ရပါသည်။ အဓိကထိခိုက်မှုများကို ဆန်းစစ်ရာတွင် လူမှုယဉ်ကျေးမှုများ၊ လူမှုစီးပွားရေးအချက်အလက်များကို မူတည်ပြီးဆောင်ရွက်ရပါသည်။

က-၄-၆-၁။ ဆန်းစစ်ခြင်းဗျူဟာ

ယဉ်ကျေးမှုအမွေအနှစ်များဆန်းစစ်ရာတွင် အသုံးပြုသည့် မဟာဗျူဟာ

- ရှေးဟောင်းပစ္စည်းများကို ခွဲခြမ်းစိတ်ဖြာခြင်း
- ယဉ်ကျေးမှုအမွေအနှစ်များ(ရုပ်ပစ္စည်းမဟုတ်သော) ကို ခွဲခြမ်းစိတ်ဖြာခြင်း
- စီမံကိန်းလည်ပတ်ခြင်းအဆင့်တွင် ညစ်ညမ်းပစ္စည်းများ စွန့်ထုတ်ခြင်း တို့ဖြစ်ပါသည်။

က-၄-၆-၂။ စည်းကမ်းချက်ကိန်းကားမှု

ယဉ်ကျေးမှုအမွေအနှစ်များ ဆန်းစစ်ခြင်းကို ဒေသတွင်းယဉ်ကျေးမှုအမွေအနှစ်များကို အောက်ပါအချက်သုံးချက်ဖြင့် ဆက်စပ်ဆောင်ရွက်ပါသည်။

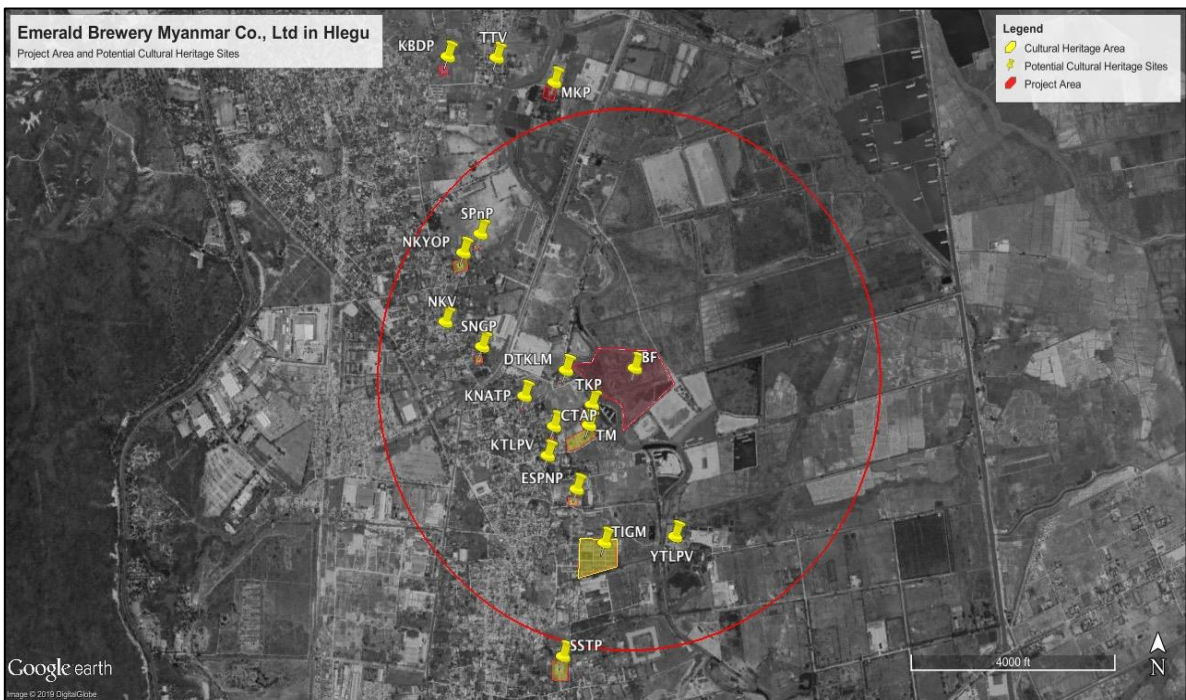
- စီမံကိန်းဧရိယာ ပတ်ဝန်းကျင် ကျေးရွာများ၏ လူမှုယဉ်ကျေးမှု၊ လူမှုစီးပွားရေးအချက်အလက်များနှင့် ဆက်သွယ်ပူးပေါင်းဆောင်ရွက်၍ သာသနာနယ်မြေများ၏ အရေးပါမှုကို ဆန်းစစ်ခြင်း
- စီမံကိန်းတည်ရှိသောမြို့နယ်၏ ဖွံ့ဖြိုးတိုးတက်မှုနှင့် နည်းပညာများ ပေါ်မူတည်၍ အဓိက ထိခိုက်မှုများကို ဆန်းစစ်ခြင်း
- စီမံကိန်းဧရိယာနှင့်ဒေသတွင်း ဘာသာရေးဓလေ့ထုံးစံများနှင့် ဆက်စပ်မှုများ၊ ကျင်းပသည့် ဘာသာရေးအဖွဲ့အစည်းများ၏



ပွဲတော်များကို ဆန်းစစ်ပြီး ထိခိုက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်
ချက်များကို ရယူခြင်း

က-၄-၆-၃။ ယဉ်ကျေးမှုအမွေအနှစ်များဆန်းစစ်ရန်အဓိကကျသည့်နေရာဒေသများ

စီမံကိန်းဧရိယာအဝန်းမှ ၃.၆ ကီလိုမီတာခန့် အဝေးဆုံးနှင့် အနီးဆုံး ၁၀၀
မီတာခန့် ကို ဆန်းစစ်သည့် ဧရိယာအဖြစ်သတ်မှတ်ပါသည်။ စီမံကိန်း၏ ၃ ကီလိုမီတာ
အဝန်းအဝိုင်းတွင် သာသနာနယ်မြေ (၁၃) ခုကို တွေ့ရှိရပြီး အောက်ပါမြေပုံဖြင့်
တင်ပြထားပါသည်။ လေ့လာသည့် ဘားလားချောင်းကမ်းပါးတွင် တည်ရှိသော စီမံကိန်း
နေရာဝန်းကျင် ဧရိယာသည် ယဉ်ကျေးမှုအမွေအနှစ်များ စုံစမ်းဖော်ထုတ်ရန် လုံလောက်
ကြောင်းတွေ့ရပါသည်။



The Project Area and Potential Cultural Heritage Sites

အထက်ပါပုံတွင် အဝါရောင်ဧရိယာများသည် ယဉ်ကျေးမှုအမွေအနှစ်
ဆန်းစစ်သည့် နေရာများဖြစ်ပါသည်။ အနီရောင်သည် စီမံကိန်းဧရိယာဖြစ်ပါသည်။
KBDP= ကျိုက်ဘောဒီဘုရား၊ TTV= တံခွန်တိုင်ကျေးရွာ၊ MKP= မိုးကောင်းဘုရား၊ SPP=
ရှင်ပုညဘုရား၊ NKYOP=နွယ်ခွေရာဦးစေတီ၊ NKV= နွယ်ခွေစံပြကျေးရွာ၊ SNGP=
ရွှေနတ်ဂူဘုရား၊ DTKLM=ဓမ္မသိဒ္ဓိကောလင်းဘုန်းကြီးကျောင်း၊ KNATP=
ကိုးနဝင်းအောင်သိဒ္ဓိဘုရား၊ TKP= ထိုင်းကျောင်းဘုရား၊ ESPNP=ကိုဇ္ဇာ ပုညဘုရား၊
TIGM=သဲအင်းဂူဘုန်းကြီးကျောင်း၊ YTLPV= ရေတလပေါင်ကျေးရွာ၊ SSTP= ရွှေစေတီ
ဘုရား။

က-၄-၆-၄။ စီမံကိန်းဧရိယာဝန်းကျင်ရှိုကျေးရွာများ

ဆန်းစစ်မည့် စီမံကိန်းဧရိယာဝန်းကျင်တွင် ကျေးရွာလေးရွာရှိပြီး၊ ကုန်းတလပေါင်၊ တံခွန်တိုင်၊ နွယ်ခွေစံပြကျေးရွာနှင့် ရေတလပေါင် တို့ဖြစ်ပါသည်။ တံခွန်တိုင်တွင် သာသနာရေးနယ်မြေ ၂ခု ကျိုက်ဖောမိနှင့် မိုးကောင်းဘုရား၊ နွယ်ခွေစံပြကျေးရွာတွင် သုံးနယ်မြေ၊ ရှင်ပုညဘုရား၊ ရွာဦးစေတီ၊ ရွှေနတ်ဂူဘုရား၊ ကုန်းတလပေါင်ကျေးရွာတွင် ရှစ်နယ်မြေ၊ မွေသိဒ္ဓိကောလင်းဘုန်းကြီးကျောင်း၊ ကိုးနင်းအောင်သိဒ္ဓိဘုရား၊ ထိုင်းကျောင်းဘုရား၊ ထိုင်းဘုန်းတော်ကြီးကျောင်း၊ ချမ်းသာအေးဘုရား၊ ကိုဇ္ဇာပုညဘုရား၊ သဲအင်းဂူဘုန်းကြီးကျောင်းနှင့် ရွှေစေတီဘုရားတို့ဖြစ်ပါသည်။

က-၄-၆-၅။ ယဉ်ကျေးမှုအမွေအနှစ်များထိခိုက်မှုဆန်းစစ်ခြင်းကောက်နုတ်ချက်

စီမံကိန်းပတ်ဝန်းကျင်တွင် ဘာသာရေးနယ်မြေများရှိပါသည်။ အဓိကထိခိုက်မှု များမှာ ဘာသာရေးနယ်မြေ၏ ထိလွယ်ရှလွယ်မှုကိစ္စရပ်များ၊ မြင်ကွင်းနှင့် လေဝင် လေထွက် ကိစ္စရပ်များအတွက် ညစ်ညမ်းမှုများကြောင့် စိန်ခေါ်မှုများဖြစ်ပါသည်။ စီမံကိန်း ပတ်ဝန်းကျင်ရွာနီးချုပ်စစ်များ၏ ဒေသအတွင်း အဖွဲ့အစည်းများနှင့် ဘာသာရေးနယ်မြေကို အထူးအလေးထားဆန်းစစ်ရန်လိုအပ်ပါသည်။ ယင်းသို့ဆန်းစစ်မှုပြုလုပ်ရာတွင် ရှေးဟောင်း ယဉ်ကျေးမှုအမွေအနှစ် အရေးပါမှုတစ်ခုတစ်ရာကို တွေ့ရှိလျှင် ရှေးဟောင်းသုတေသန နှင့် ပြုတိုက်ဦးစီးဌာန သာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာနသို့ သတင်းပို့ပေးရန်လိုအပ်ပါ သည်။ ထို့ပြင် ထိခိုက်မှုဆန်းစစ်ခြင်း အစိတ်အပိုင်းတိုင်းသည် တည်ဆဲဥပဒေ၊ နည်းဥပဒေများကို လိုက်နာရမည်ဖြစ်ပါသည်။ ဥပမာ ယဉ်ကျေးမှုအမွေအနှစ်နယ်မြေများ ထိန်းသိမ်းစောင့်ရှောက်ခြင်းနှင့်ကာကွယ်ခြင်းဥပဒေ (၁၉၉၈)

က-၄-၇။ ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်း

ဤအခန်းတွင်

- လေ့လာခြင်း၏ ဦးတည်ချက်များ
- HIA ကွင်းဆင်းလေ့လာမှုအကျယ်အဝန်းနှင့်
- ဥပဒေဆိုင်ရာလိုအပ်ချက်များကို ပထမပိုင်းအနေဖြင့် တင်ပြထားပါသည်။

ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်းတွင်

- ခြုံငုံ နိဒါန်း
- ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်း
(အသုံးပြုနိုင်သူ၊ ဖွံ့ဖြိုးတိုးတက်မှု၊ ဆန်းစစ်သည့်နည်းစနစ်)
- စီမံကိန်းနောက်ခံနှင့်လေ့လာမှု
(အဓိကရည်မှန်းချက်၊ လုပ်ငန်းနယ်ပယ်)
- နိဒါန်း



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(ဥပဒေများ၊ အုပ်ချုပ်ရေးဆိုင်ရာဥပဒေများ၊ မူဘောင်ရည်ရွယ်ချက်များနှင့်လုပ်ငန်းနယ်ပယ်၊ လေ့လာသည့်နည်းစနစ်)

- ကွင်းဆင်းလေ့လာမှုအဖွဲ့အစည်း၏ကျန်းမာရေးပုံရိပ် (လက်ရှိလူဦးရေနှင့်ကျန်းမာရေးအဆင့်အတန်း)
- ကျန်းမာရေးစောင့်ရှောက်မှု
- (အနီးဆုံးဆေးကုဌာန၊ ဒေသခံအဖွဲ့အစည်းများ၏ကျန်းမာရေးပညာပေးအစီအစဉ်)
- အဓိကကျန်းမာရေးထိခိုက်မှုများနှင့်လျော့နည်းစေရန်ဆောင်ရွက်မှုများ (ရေဖြန့်ဝေခြင်းနှင့် ရေသန့်စင်မှုစနစ်၊ ဆူညံသံညစ်ညမ်းမှု၊ စဦးအစီအစဉ်နှင့် နေရာချထားမှုအပေါ်သက်ရောက်မှုများ၊ ကွန်မြူနီတီ၏ကျန်းမာရေးထိခိုက်မှု)
- ကျန်းမာရေးထိခိုက်မှုစီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်နှင့် လေ့လာမှုကန့်သတ်ချက်များတို့ကို ဒုတိယပိုင်းအနေဖြင့် တင်ပြထားပါသည်။

နောက်ဆုံးအပိုင်းအနေဖြင့် လှည်းကူးမြို့နယ်နှင့် မင်္ဂလာဒုံမြို့နယ်တို့၏ ကျန်းမာရေးဆိုင်ရာအချက်အလက်အချို့တို့ကို တင်ပြထားပါသည်။

က-၄-၈။ ယာဉ်သွားလာမှုဆန်းစစ်ခြင်း

ဤအခန်းတွင်

- ယာဉ်သွားလာမှုဆန်းစစ်ခြင်းနည်းစနစ် (လမ်းစွမ်းရည်နှင့် ယာဉ်သွားလာမှု၊ အချိုး)
- ယာဉ်သွားလာမှုထိခိုက်မှုဆန်းစစ်ခြင်းရည်ရွယ်ချက်များ
- ဆန်းစစ်သည့်အချိန်ကာလ
- လေ့လာသည့်နယ်ပယ်
- ယာဉ်သွားလာမှုပမာဏ
- ယာဉ်သွားလာမှုလေ့လာမှုရလဒ်နှင့်
- ကောက်နုတ်ချက်များတို့ကို တင်ပြထားပါသည်။

ကောက်ချက်ချခြင်း

အထက်ပါကွင်းဆင်းလေ့လာမှုရလဒ်များအရ အမှတ် ၃ လမ်းမကြီးတွင် ရုံးပိတ်ရက်နှင့် ရုံးဖွင့်ရက်များတွင် ယာဉ်သွားလာမှုကွာခြားမှုများစွာမရှိဘဲ စက်ရုံအတွင်းသို့ ဝင်ထွက်သည့်ယာဉ်အရေအတွက်သည် လမ်းမကြီးပေါ်တွင် သွားလာသည့်ယာဉ် အရေအတွက်၏ ဆယ်ပုံတစ်ပုံခန့်သာ ရှိကြောင်းတွေ့ရပါသည်။

က-၄-၉။ သတ်မှတ်ထားသော AOI လုံလောက်မှုရှိမရှိဖော်ပြခြင်း

ဤအခန်း ၄-၉ တွင်



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- အတည်ပြုနယ်ပယ်တိုင်းတာခြင်းအစီရင်ခံစာ၏ ပိုဒ်(က)ပါ ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာန၏ ညွှန်ကြားချက်ကို လိုက်နာခြင်းဖြစ်ကြောင်း
- လေ့လာသည့်ကန့်သတ်နယ်မှာ စီမံကိန်းဗဟိုမှ အချင်းဝက် ၁.၅ ကီလိုမီတာနှင့် မင်္ဂလာဒုံ၊ လှည်းကူးမြို့နယ်တို့ ဖြစ်ကြောင်း
- လေ့လာသည့်နယ်ပယ်အသီးသီးအတွက် AOI သတ်မှတ်ချက်သည် လုံလောက်ကြောင်း conclusion စာတိုင်တွင် တင်ပြထားပါသည်။

က-၅။ အဓိက ပတ်ဝန်းကျင်ထိခိုက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများ

ဤအခန်းတွင်

- ပတ်ဝန်းကျင်အပေါ်ကောင်းကျိုးဆိုးကျိုးဖြစ်နိုင်သည့် စီမံကိန်း၏အချက်အလက်များ ရှာဖွေခြင်း
- ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများကို ကြိုတင်မှန်းဆခြင်း၊ ဆန်းစစ်ခြင်း
- သက်ရောက်မှုများ၏ အရေးပါမှုများကို အသေးစိတ်စစ်ဆေးခြင်း
- သက်ရောက်မှုများကိုလျော့နည်းစေသည့် နည်းလမ်းများကို သတ်မှတ်ခြင်း
လက်တွေ့လိုက်နာနိုင်သည့် နည်းလမ်းများကို အခြေခံပြီး ယင်းတို့မှ အသင့်တော်ဆုံး နည်းလမ်းများကို ရွေးချယ်ခြင်းတို့ဖြစ်ပါသည်။

က-၅-၁။ နည်းစနစ်နှင့် ချဉ်းကပ်ပုံ

က-၅-၁-၁။ နည်းစနစ်

အဓိက (၄) နည်းဖြင့် ဆောင်ရွက်ပါသည်-

- စီမံကိန်းစာရွက်စာတမ်းများ၊ အခြားသတင်းအချက်အလက်များရယူလေ့လာခြင်း
- စီမံကိန်းသို့သွားရောက်လေ့လာခြင်း
- အထူးအချက်အလက်များရယူခြင်း
- လူထုတွေ့ဆုံခြင်း (သုံးကြိမ်ပြုလုပ်ခဲ့ပါသည်)

လူထုတွေ့ဆုံပွဲများကို နောက်ဆက်တွဲ (၁)၊ နောက်ဆက်တွဲ (၇) နှင့် နောက်ဆက်တွဲ (၈) တို့တွင် တင်ပြထားပါသည်။

က-၅-၁-၂။ ချဉ်းကပ်ပုံစနစ်

တည်ဆောက်ရေးလည်ပတ်ရေးနှင့် ပိတ်သိမ်းချိန်ကာလများ၏ သက်ရောက်မှုများနှင့် အသွင်သဏ္ဍာန်များကို ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်တို့တွင် သတ်မှတ်ပြီး သက်ဆိုင်ရာ ပညာရှင်များ၊ စိတ်ပါဝင်စားသူများတို့၏ အကြံဉာဏ်ဖြင့်



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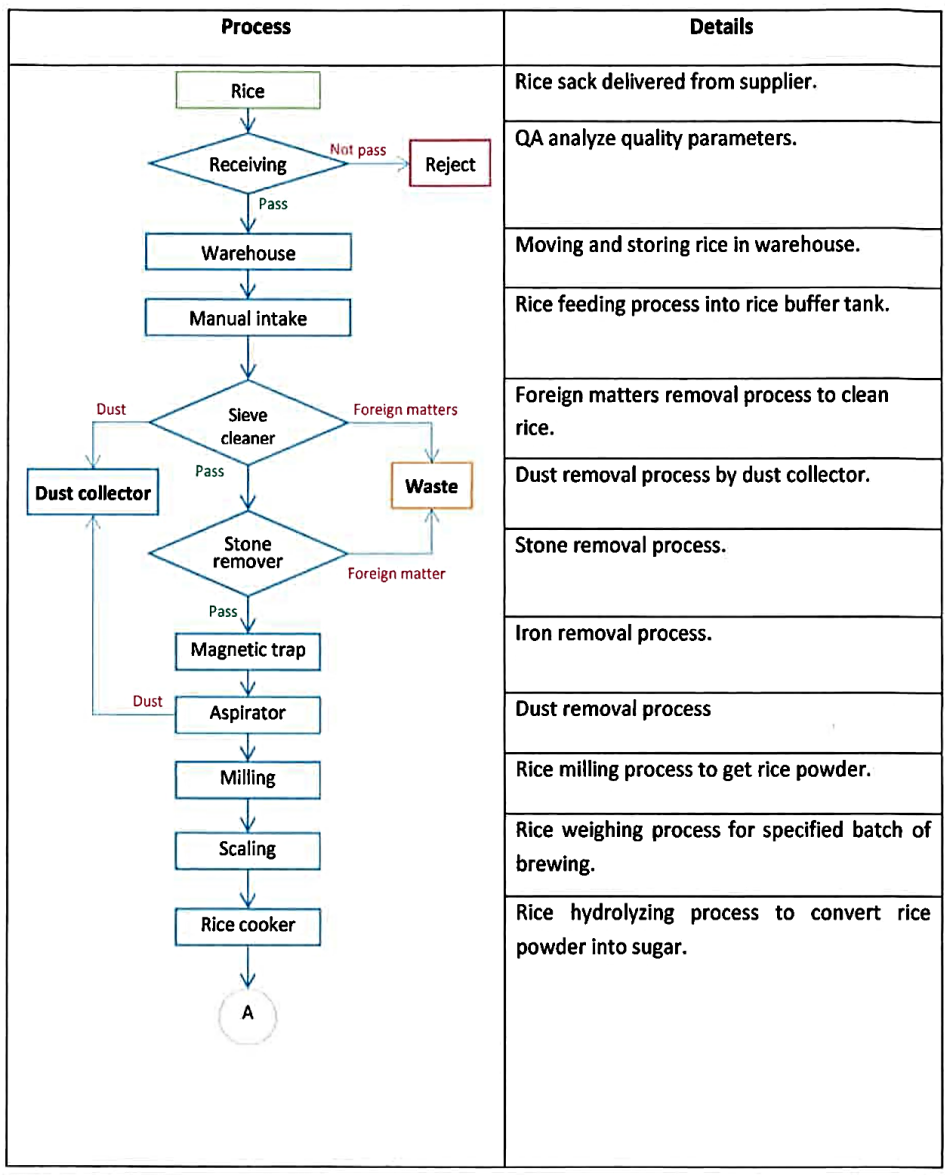
ထိခိုက်မှုများကို လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများကို ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် တွင် အစီရင်ခံတင်ပြထားပါသည်။




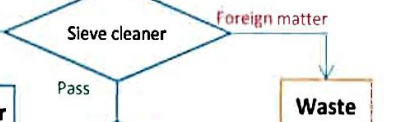


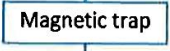




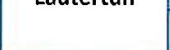
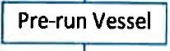

က-၅-၂။ ထုတ်လုပ်ပုံနည်းစဉ်အကျဉ်း

Emerald Brewery Myanmar Limited သည် ဆန်အညှောင့်ဖောက်ထားသော မုယောစပါး (မော့) တို့ကို အဓိက ကုန်ကြမ်းအဖြစ်အသုံးပြုပြီး ဘီယာထုတ်လုပ်ပါသည်။ ဘီယာသည် အရက်အပျောစားဖြစ်ပြီး ဖြစ်ပွင့်နှင့် မော့တို့၏ အနံ့အရသာပါဝင်ပါသည်။ မော့သည် အရက်ဖြစ်နိုင်သော အဓိက ကာဗိုဟိုက်ဒြိတ်နှင့် တဆေးအဟာရများအတွက် အဓိကအရင်းအမြစ် ပစ္စည်းဖြစ်ပါသည်။ ဖြစ်ပွင့်သည် အခါးအရသာ၏ အဓိက အစိတ်အပိုင်းဖြစ်ပါသည်။

ဘီယာထုတ်လုပ်မှုနည်းစဉ်ပုံကို အခန်း ၃-၁၇ တွင် အောက်ပါအတိုင်း တင်ပြထားပါသည်။

Brewery processing flow chart



Process	Detail
	Malt delivered from supplier.
	QA analyze quality parameters.
	Malt delivery process from truck into buffer.
	Foreign matters removal process to clean malt.
	Stone removal process.
	Storing cleaned malt prior being used in the brew house.
	Iron removal process.
	Dust removal process.
	Malt milling process to convert malt grain into grist.
	Malt weighing process for specified batch of brewing.
	Malt hydrolyzing process to convert malt into sugar (During this process, the sugar from rice cooker is transferred into this Mash kettle)
	Separation process to collect wort then remove spent grain and others into spent grain bin (being sold as animal feed).
	Wort collection and preparation processes for next step.
	Wort boiling process with hop addition during the process.

Beer Fermentation and Packing Process

Process	Detail
	<p>Separation process to remove any precipitates or adulterants from wort.</p>
	<p>Cooling down process prior be transferred for further fermentation process.</p>
	<p>Yeast is added into the cold wort.</p>
	<p>Fermentation process to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.</p>
	<p>Yeast removal process from beer.</p>
	<p>Maturation process at low temperature to let yeast settling down to the bottom of treatment tank.</p>
	<p>Cooling down process to prepare the batch before filtration.</p>
	<p>Addition process of stabilizing agents.</p>
	<p>Filtration process for particle removal to clarify beer.</p>
	<p>Carbon dioxide adjusting process to appropriate carbon dioxide level.</p>
	<p>Storing bright beer prior be transferred to filling process.</p>
	<p>Filling process (bottle, can or keg containers) with pasteurization prior being packed in packaging and arranged on the pallet.</p>
	<p>Storing process of finished products in warehouse.</p>

က-၅-၃။ ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများနှင့် ကြွင်းကျန်သက်ရောက်မှုများဖော်ပြခြင်း

ဤအခန်းတွင် ဆိုးကျိုးသက်ရောက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ရန်လိုအပ်ကြောင်းနှင့် လုပ်ငန်းစဉ်အတွက် သွင်းအားစုနှင့် ထုတ်လွှတ်မှုများကို ဖော်ပြထားပါသည်။

က-၅-၃-၁။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း

Emerald Brewery Myanmar Limited သည် ပုလင်းဘီယာ၊ သံဗူးဘီယာနှင့် စည်ဘီယာများထုတ်လုပ်ဖြန့်ဖြူးပါသည်။

က-၅-၃-၁-၁။ စီမံကိန်းတည်ဆောက်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များ

စီမံကိန်းတည်ဆောက်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များကို အပိုဒ် ၅-၃-၁-၁ တွင် ဖော်ပြထားပါသည်။

က-၅-၃-၁-၂။ စီမံကိန်းလည်ပတ်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များ

စီမံကိန်းလည်ပတ်ချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များကို အပိုဒ် ၅-၃-၁-၂ တွင် ဖော်ပြထားပါသည်။

က-၅-၃-၁-၃။ စီမံကိန်းပိတ်သိမ်းချိန်သက်ရောက်မှုများနှင့် အရင်းအမြစ်များ

စီမံကိန်းပိတ်သိမ်းချိန် သက်ရောက်မှုများနှင့် အရင်းအမြစ်များကို အပိုဒ် ၅-၃-၁-၃ တွင် ဖော်ပြထားပါသည်။

က-၅-၃-၂။ ပတ်ဝန်းကျင်သက်ရောက်မှု အရေးပါမှုအဆင့်

သက်ရောက်မှုအရေးပါမှုတွက်ချက်သည့် မက်ထရစ် ကို အပိုဒ် ၅-၃-၂ တွင် တင်ပြထားပါသည်။ ယင်းမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

$$\text{အရေးပါမှု} = (\text{အချိန်ကာလ} + \text{နေရာဒေသ} + \text{ပမာဏ}) \times \text{ဖြစ်တန်ခွေ}$$

ထိုပြင် တစ်မျိုးခြင်းစီကို အမှတ်ပေးပုံနှင့် ရှင်းလင်းတင်ပြချက်ကိုလည်း တင်ပြထားပါသည်။

သက်ရောက်မှုအရေးပါမှုကို စီမံကိန်း Phase သုံးမျိုးအတွက် လျော့နည်းရန် မဆောင်ရွက်မီတွက်ချက်မှုရလဒ်များကို အပိုဒ် ၅-၃-၂-၁၊ ၅-၃-၂-၂နှင့် ၅-၃-၂-၃ တို့တွင် တင်ပြထားပါသည်။

က-၅-၃-၃။ သက်ရောက်မှုများနှင့် ယင်းတို့ကို လျော့နည်းစေရန် ဆောင်ရွက်ချက်များ

Emerald Brewery Myanmar Limited စီမံကိန်းကြောင့် ပတ်ဝန်းကျင် အပေါ်သက်ရောက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ချက်များကို စီမံကိန်းအဆင့် သုံးဆင့် အတွက် အပိုဒ် ၅-၃-၃-၁၊ ၅-၃-၃-၂ နှင့် ၅-၃-၃-၃ တို့တွင် တင်ပြထားပါသည်။



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က-၅-၃-၄။ ကြွင်းကျန်သက်ရောက်မှုများ၏ အရေးပါမှု တွက်ချက်ခြင်း

Emerald Brewery Myanmar Limited ၏ ထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် ပတ်ဝန်းကျင်သက်ရောက်မှုများကို စီမံကိန်းအဆင့်သုံးဆင့်အတွက် တွက်ချက်မှုများကို အပိုဒ် ၅-၃-၄-၁၊ ၅-၃-၄-၂ နှင့် ၅-၃-၄-၃ တို့တွင် တင်ပြထားပါသည်။

က-၅-၃-၅။ သက်ရောက်မှုများလျော့နည်းစေရန် မဆောင်ရွက်မီနှင့် ဆောင်ရွက်ပြီးသက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း

အဆိုပြုစီမံကိန်း၏ အဆင့်သုံးဆင့်အတွက် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့် လျော့နည်းရန်ဆောင်ရွက်ပြီး သက်ရောက်မှု အရေးပါမှု များကို အပိုဒ် ၅-၃-၅-၁၊ ၅-၃-၅-၂ နှင့် ၅-၃-၅-၃ တို့တွင် ဖော်ပြထားပြီး အောက်ပါအတိုင်းပူးတွဲတင်ပြထားပါသည်။

က-၅-၃-၅-၁။ စီမံကိန်းတည်ဆောက်ချိန် သက်ရောက်မှုများကိုလျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Minor	-20	
6.	Ground water and surface water	48	Minor	32	Minor	-16	
7.	Waste water and solid wastes	48	Minor	32	Minor	-16	
8.	Socio economic	48	Minor	32	Minor	-16	

က-၅-၃-၅-၂။ စီမံကိန်းလည်ပတ်ချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	60	Minor	36	Minor	-24	
2.	Air pollution	66	Minor	54	Minor	-12	



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3.	Noise	60	Minor	54	Minor	-6	
4.	Biodiversity	60	Minor	36	Minor	-24	
5.	Archaeology and Heritage	36	Minor	36	Minor	-	
6.	Ground water and surface water	60	Minor	36	Minor	-24	
7.	Waste water and solid wastes	60	Minor	54	Minor	-6	
8.	Socio economic	60	Minor	36	Minor	-24	

က-၅-၃-၅-၃။ စီမံကိန်းပိတ်သိမ်းချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Negligible	-20	
6.	Ground water and surface water	48	Minor	28	Negligible	-20	
7.	Waste water and solid wastes	48	Minor	28	Negligible	-20	
8.	Socio economic	48	Minor	28	Negligible	-20	

က-၅-၄။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပါဝင်မည့်အချက်အလက်များနှင့် လျော့နည်းစေရန်ဆောင်ရွက်သည့် နည်းလမ်းများဖော်ပြခြင်း

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပါဝင်မည့်အချက်အလက်များနှင့် လျော့နည်းစေရန် ဆောင်ရွက်သည့်နည်းလမ်းများကို ယာဉ်အန္တရာယ်၊ လေထုအရည်အသွေး၊ ဆူညံသံ၊ ဇီဝမျိုးစုံမျိုးကွဲ၊ ယဉ်ကျေးမှုအမွေအနှစ်များ၊ မြေပေါ်ရေမြေအောက်ရေ၊ စွန့်ပစ်ရေနှင့်စွန့်ပစ်ပစ္စည်းများ၊ လူမှုစီးပွားတို့အပေါ်တွင် သက်ရောက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မှုများတို့ကို အပိုဒ် ၅-၄-၁၊ ၅-၄-၂၊ ၅-၄-၃၊ ၅-၄-၄၊ ၅-၄-၅၊ ၅-၄-၆၊ ၅-၄-၇၊ ၅-၄-၈ တို့တွင် တင်ပြထားပါသည်။ ထို့ပြင် * မြေပေါ်ရေနှင့်မြေအောက်ရေ၊ စွန့်ပစ်ရေနှင့် စွန့်ပစ်ပစ္စည်းများ၊ လူမှုစီးပွားများ သက်ရောက်မှုများတို့အတွက် လျော့နည်းစေရန် ဆောင်ရွက်မည့်နည်းလမ်းများကို အပိုဒ် ၅-၄-၆ တွင် တင်ပြထားပါသည်။

က-၅-၅။ တိုးပွားလာသော သက်ရောက်မှုများ

တိုးပွားလာသော သက်ရောက်မှုများ ဆန်းစစ်သည့်နည်းစဉ်နှင့် တိုးပွားလာသော သက်ရောက်မှုများ တို့ကို အပိုဒ် ၅-၅ တွင် တင်ပြထားပါသည်။

က-၆။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (အီးအမ်ပီ)

က-၆-၁။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ရည်ရွယ်ချက်များ

အပိုဒ် ၆-၁ တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ရည်ရွယ်ချက် (၆)ရပ်ကို ဖော်ပြထားပြီး ယင်းသည်သက်ရောက်မှုများကို မှန်ကန်စွာစီမံခန့်ခွဲနိုင်သည့် နည်းလမ်းဖြစ်ကြောင်း ဖော်ပြထားပါသည်။

က-၆-၂။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအဖွဲ့အစည်းဆိုင်ရာအစီအစဉ်

စီမံကိန်း၏အုပ်ချုပ်မှုဒါရိုက်တာသည် အဖွဲ့အစည်းဆိုင်ရာတာဝန်ရှိသူဖြစ်ပြီး ဌာနခွဲ(၆)ခုမှ ခေါင်းဆောင်များသည် အဖွဲ့ဝင်များဖြစ်ကြပြီး ဒါရိုက်တာအဖွဲ့၏ ဖွဲ့စည်းပုံဇယားကို ဖော်ပြထားပါသည်။

က-၆-၃။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့နှင့် စောင့်ကြပ်ကြည့်ရှုမှုအဖွဲ့များ ဖွဲ့စည်းခြင်း

အဖွဲ့ခေါင်းဆောင် တစ်ဦးနှင့်အဖွဲ့ဝင် (၅)ဦးတို့ပါဝင်သော ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့ကို ဖွဲ့စည်းထားပါသည်။

အဖွဲ့ခေါင်းဆောင်တစ်ဦးနှင့် အဖွဲ့ဝင်(၄)ဦးတို့ပါဝင်သော ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုမှု အဖွဲ့ကို ဖွဲ့စည်းထားပါသည်။

ယင်းအဖွဲ့များကို အပိုဒ် ၆-၃ တွင် တင်ပြထားပါသည်။

က-၆-၃-၁။ တာဝန်နှင့်ဝတ္တရားများ

အဖွဲ့ခေါင်းဆောင်နှင့်အဖွဲ့ဝင်များတို့၏ တာဝန်နှင့်ဝတ္တရားများကို အပိုဒ် ၆-၃-၁ တွင် တင်ပြထားပါသည်။

က-၆-၄။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

က-၆-၄-၁။ ပတ်ဝန်းကျင်လေထုအရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

ပတ်ဝန်းကျင်လေထုအရည်အသွေး၊ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊



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လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှုဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသောခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Form of Ambient Air Monitoring Plan

Emerald Brewry Myanmar Limited													
Sr. No.	Parameters	Unit	Measureme nt Methods	Time Schedule	Measured Place	Budget Allotment	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The particulate matters PM _{2.5} PM ₁₀	µg/m ³ µg/m ³	HAZ Scanner Model EPAS	October April	Fornt of administrative office N 17°1' 7.6Γ, E 96°9' 25.01"	2000,000	Twice a year						10 – 1 year 25 – 24 hours 20 – 1 year 50 – 24 hours
2.	Sulfur Dioxide	µg/m ³											20 – 24 hours 500 – 10 minutes
3.	Nitrogen Oxide	µg/m ³											40 – 1 year 200 – 1 hour
4.	Ozone	µg/m ³											100 – 8 hours daily maximum

က-၆-၄-၁(က)။ လုပ်ငန်းခွင်လေထုအရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

လုပ်ငန်းခွင်လေထုအရည်အသွေးစီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှုဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသောခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁-က တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Report Form of Workplace Air Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquol 500)	October April	- filling area (starting point) - filling area (end point) - co; plant area - brewing area (up) - brewing area (down) - malt milling area (up) - malt milling (down)	4200,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98										2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³											460 mg/Nm ³

က-၆-၄-၁(ခ)။ ဘွိုင်လာခေါင်းတိုင်ဓာတ်ငွေ့အရည်အသွေးစီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

ဘွိုင်လာခေါင်းတိုင်ဓာတ်ငွေ့အရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ် ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင် အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှုဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထား ချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသောခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁-ခ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါ သည်။

Report Form of Boiler Stack Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquol 500)	October April	- boiler stack	600,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98										2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³										460 mg/Nm ³	

က-၆-၄-၁(ဂ)။ လျှပ်စစ်ထုတ်စက်အိမ်ဇေပိုက်ဓာတ်ငွေ့အရည်အသွေးစီမံခန့်ခွဲမှု နှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

လျှပ်စစ်ထုတ်စက်အိမ်ဇေပိုက် ဓာတ်ငွေ့အရည်အသွေး စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု

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ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁-ဂ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Report Form of Electric Generator Exhaust Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquil 500)	October April	Electric generator exhaust pipe N17°1'5.79" E 96°9' 18.61"	600,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98										2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³											460 mg/Nm ³

က-၆-၄-၂။ ဆူညံသံအဆင့် စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

က-၆-၄-၂(က)။ Boundary Noise Level

Boundary Noise Level စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၂-က တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Form of Noise Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The Noise	dB(A)	Noise meter	October April	-Near main entrance gate - Near reception area - Wastewater area - In front of main office - Treated wastewater pond	1000000	Twice a year						70

*NEQ(E)G – National Environmental Quality (Emission) Guidelines



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၆-၄-၂(ခ)။ လုပ်ငန်းခွင်ဆူညံသံအဆင့် စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

လုပ်ငန်းခွင်ဆူညံသံအဆင့် စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၂-ခ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Report Form of Workplace Noise Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	The Noise	dBA	Noise meter	October April	- filling area (starting point) - filling area (end point) - cog plant area - brewing area (up) - brewing area (down) - malt milling area (up) - malt milling (down)	1400,000	Twice a year						70

က-၆-၄-၃။ တုန်ခါမှု စီမံခန့်ခွဲခြင်းနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

တုန်ခါမှု စီမံခန့်ခွဲခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၃ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Report Form of Vibration Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Vibration	mm/sec	Vibration meter	October April	- near wastewater area -monastery (Amayawatty) - main entrance gate	1800,000	Twice a year						

က-၆-၄-၄။ မြေအောက်ရေအရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

မြေအောက်ရေ အရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၄ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Aluminum	mg/l	Spectrophotometer	October	- Kone Ta La	3000,000	Twice a year					0.02	
	Arsenic	mg/l	APHA-AWWA-WPCF	September	Baund							10	
	Chloride	mg/l	APHA-AWWA-WPCF		- Yay Ta La							250	
	Copper	mg/l	Spectrophotometer		Baund							2	
	Cyanide	mg/l	Spectrophotometer		-Ta Kon Taing							0.07	
	Manganese	mg/l	Spectrophotometer		-Nwel Khwe							0.4	
	pH	-	pH meter		-Emerald Beer							6-9	
	Sulfate	mg/l	APHA-AWWA-WPCF										
	Total Alkalinity as CaCO ₃	mg/l	APHA-AWWA-WPCF									250	
	Total Dissolved Solids	mg/l	APHA-AWWA-WPCF									-	
	Total Hardness as CaCO ₃	mg/l	APHA-AWWA-WPCF									600	
	Total Hardness as CaCO ₃	mg/l	APHA-AWWA-WPCF									500	
	Total Iron	mg/l	APHA-AWWA-WPCF									0.3	
	Turbidity	NTU	Turbidity meter									5	

က-၆-၄-၅။ မြေပေါ်ရေ အရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

မြေပေါ်ရေ အရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊



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ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၅ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method				The Standards and Reference *NEQ(E)G	
								Previous and Present Data Comparison Method					
								Previous Data		Present Data			More/ Less
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper s tream -Middle Stream -Down Stream -Lateral Side	Twice a year	2400,000					50	
2	Active ingredients/ Antibiotics		Spectrophotometer									-	
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF									250	
4	Oil and grease	mg/l	APHA-AWWA-WPCF									10	
5	pH	-	pH meter									6-9	
6	Temperature increase	C	Thermometer									<3	
7	Total Coliform bacteria	100ml	Plate count									400	
8	Total phosphorus	mg/l	Spectrophotometer									5	
9	Total suspended solids	mg/l	APHA-AWWA-WPCF									50	
10	Total nitrogen	mg/l	APHA-AWWA-WPCF									10	

က-၆-၄-၆။ စွန့်ပစ်ရေ အရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

စွန့်ပစ်ရေ အရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၆ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Report Form of Wastewater Quality Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G			
								Previous and Present Data Comparison Method								
								Previous Data		Present Data		More/ Less				
								Date	Value	Date	Value					
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	January	- wastewater treatment plant inlet - wastewater treatment outlet - treated final discharge wastewater	Every month	10800,000						50			
2	Active ingredients/ Antibiotics		Spectrophotometer	February												
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF	March												
4	Oil and grease	mg/l	APHA-AWWA-WPCF	April												250
5	pH	-	pH meter	May												10
6	Temperature increase	°C	Thermometer	June												6-9
7	Total Coliform bacteria	100ml	Plate count	July												<3
8	Total phosphorus	mg/l	Spectrophotometer	August												400
9	Total suspended solids	mg/l	APHA-AWWA-WPCF	September												5
10	Total nitrogen	mg/l	APHA-AWWA-WPCF	October												30
				November									10			
				December												

က-၆-၄-၇။ မြေထု အရည်အသွေး စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

မြေထုအရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးမှုမြေပုံကြီးများ၊ လုပ်ငန်းခွင် အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၇ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000						
၂။	Arsenic	mg/kg											
၃။	Chloride	mg/kg											
၄။	Copper	mg/kg											
၅။	Cyanide	mg/kg											
၆။	Extractable Acidity	cmol/kg											
၇။	Manganese	mg/kg											
၈။	P-Alkalinity	mmol/l.extract											
၉။	Total Alkalinity	mmol/l.extract											
၁၀။	pH	-											
၁၁။	Total Iron	mg/kg											

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၆-၄-၈။ အနံ့ရရှိမှု စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

အနံ့ရရှိမှု စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၈ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report Form of odor Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Odor	5-10	Odor meter	April October	- near main entrance gate - near reception - wastewater area, - in front of main office - treated wastewater pond.	600,000	Twice a year						5-10

က-၆-၄-၉။ ယာဉ်သွားလာမှု စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

ယာဉ်သွားလာမှု စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၉ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report Form of Traffic Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Accident and injury record	frequency and severity	Documentation of record	The whole month	- administration office	600,000	Every month						



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၆-၄-၁၀။ ဇီဝမျိုးစုံမျိုးကွဲ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

ဇီဝမျိုးစုံမျိုးကွဲ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁၀ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report Form of Invasion of Alein Species

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Invasion of alein species	frequency and severity	Document the record	every month	Hlegu and Mingalardon	600,000	The whole mont						

က-၆-၄-၁၁။ ယာဉ်ကျေးမှုနှင့်အမွေအနှစ်များ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

ယာဉ်ကျေးမှုနှင့်အမွေအနှစ်များ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁၁ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report Form of Cultural and Heritage Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Information about antique object, ancient monument, cultural heritage	frequency and evidence	Collecting the information	The whole month	Hlegu and Mingalardon	100,000	monthly						



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

က-၆-၄-၁၂။ စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁၂ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(EG)
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper stream - Middle Stream - Down Stream - Lateral Side	Twice a year	2400,000						50
2	Active ingredients/ Antibiotics		Spectrophotometer										-
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF										250
4	Oil and grease	mg/l	APHA-AWWA-WPCF										10
5	pH	-	pH meter										6-9
6	Temperature increase	°C	Thermometer										<3
7	Total Coliform bacteria	100/ml	Plate count										400
8	Total phosphorus	mg/l	Spectrophotometer										5
9	Total suspended solids	mg/l	APHA-AWWA-WPCF										50
10	Total nitrogen	mg/l	APHA-AWWA-WPCF										10

Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Aluminum	mg/L		October	- Kone Ta La	3000,000	Twice a year						0.02
	Arsenic	mg/L		September	- Baund								10
	Chloride	mg/L			- Yay Ta La								250
	Copper	mg/L			- Baund								2
	Cyanide	mg/L			- Ta Kon Taing								0.07
	Manganese	mg/L			- Nwel Khwe								0.4
	pH	-			- Emerald Beer								6-9
	Sulfate	mg/L											250
	Total Alkalinity as CaCO ₃	mg/L											-
	Total Dissolved Solids	mg/L											600
	Total Hardness as CaCO ₃	mg/L											500
	Total Iron	mg/L											0.3
	Turbidity	NTU											5



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G			
								Previous and Present Data Comparison Method								
								Previous Data		Present Data		More/ Less				
								Date	Value	Date	Value					
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000									
၂။	Arsenic	mg/kg														
၃။	Chloride	mg/kg														
၄။	Copper	mg/kg														
၅။	Cyanide	mg/kg														
၆။	Extractable Acidity	cmol/kg														
၇။	Manganese	mg/kg														
၈။	P-Alkalinity	mmol/extract														
၉။	Total Alkalinity	mmol/extract														
၁၀။	pH	-														
၁၁။	Total Iron	mg/kg														

က-၆-၄-၁၃။ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး စီမံခန့်ခွဲမှု နှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်

လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေး စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာလိုအပ်ချက်များ၊ လွှမ်းမိုးခြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊ ဂြိုဟ်တုဓာတ်ပုံများ၊ အကောင်အထည်ဖော် ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှု ဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသော ခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ် ၆-၄-၁၃ တွင် တင်ပြထားပြီး စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထား ပါသည်။

Report form of occupational health and safety

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimate d budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	-sick leaves -average number of working hours for employee -occupational illness -days of absence caused by occupational illness -complaints and grievance information	No. No. No. No.	Data collection and comparison	every month	leave, record section of Administrative Department	every month	600,000						



က-၇။ ဘေးအန္တရာယ်သက်ရောက်မှုဆန်းစစ်ခြင်း

က-၇-၁။ ရာသီဥတုပြောင်းလဲမှုအပါအဝင် သဘာဝဘေးအန္တရာယ်ဆန်းစစ်ခြင်း

ဤခေါင်းစဉ်အောက်တွင်

- ၁၉၀၀ မှ ၂၀၁၄ ခုနှစ်အတွင်း ကြုံတွေ့ရသောသဘာဝဘေးအန္တရာယ်များ (ငလျင်လှုပ်ခြင်း၊ ရေကြီးခြင်း၊ မြေပြိုခြင်း၊ လေပြင်းမုန်တိုင်းကျခြင်းနှင့် တောမီးလောင်ခြင်းများ)
- မိုးရာသီ ရက်များလျော့နည်းလာခြင်း
- ပင်လယ်ရေမျက်နှာပြင်အပူချိန်မြင့်တက်လာခြင်း
- အပူချိန်နှင့်မိုးခေါင်မှု ညွှန်းကိန်းများတိုးတက်လာခြင်း
- ကြည်လင်သောမိုးကောင်းကင်နေ့ရက်များပိုမိုများပြားလာခြင်း
- ဆိုင်ကလုံး/လေပြင်းမုန်တိုင်း/လှိုင်းကြီးပြင်းထန်မှုများဖြစ်ပွားခြင်း
- ပင်လယ်ရေမျက်နှာပြင်မြင့်တက်လာခြင်းတို့ကို အခန်း ၇-၁ တွင် ဖော်ပြထားပါသည်။

က-၇-၂။ ဘီယာထုတ်လုပ်မှုစက်ရုံကြောင့် ဘေးအန္တရာယ်ဖြစ်နိုင်ခြေဆန်းစစ်ခြင်း

ဤအခန်းတွင်

- ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် လေထုအပေါ်သက်ရောက်မှုများ ကို သက်ရောက်မှုအရင်းအမြစ်၊ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှုပမာဏနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မည့်နည်းလမ်းများ ခေါင်းစဉ်ခွဲငယ်များဖြင့် ဆန်းစစ်တင်ပြထားပါသည်။
- ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် ရေထုအပေါ်သက်ရောက်မှုများ ကို သက်ရောက်မှုအရင်းအမြစ်၊ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှုပမာဏနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မည့်နည်းလမ်းများ ခေါင်းစဉ်ခွဲငယ်များဖြင့် ဆန်းစစ်တင်ပြထားပါသည်။
- ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် မြေထုအပေါ်သက်ရောက်မှုများ ကို သက်ရောက်မှုအရင်းအမြစ်၊ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှုပမာဏနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မည့်နည်းလမ်းများ ခေါင်းစဉ်ခွဲငယ်များဖြင့် ဆန်းစစ်တင်ပြထားပါသည်။
- ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် ဆူညံသံ၏သက်ရောက်မှုများ ကို သက်ရောက်မှုအရင်းအမြစ်၊ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှုပမာဏနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မည့်နည်းလမ်းများ ခေါင်းစဉ်ခွဲငယ်များဖြင့် ဆန်းစစ်တင်ပြထားပါသည်။



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

- ဘီယာထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် အနံ့၏သက်ရောက်မှုများ ကို သက်ရောက်မှုအရင်းအမြစ်၊ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း၊ သက်ရောက်မှုဧရိယာ၊ သက်ရောက်မှုပမာဏနှင့် လျော့နည်းစေရန်ဆောင်ရွက်မည့်နည်းလမ်းများ ခေါင်းစဉ်ခွဲငယ်များဖြင့် ဆန်းစစ်တင်ပြထားပါသည်။

က-၇-၃။ သဘာဝဘေးအန္တရာယ်နှင့်စက်မှုလုပ်ငန်းဘေးအန္တရာယ်များ

သဘာဝဘေးအန္တရာယ်

ဤအခန်းတွင် ၂၀၁၄ ခုနှစ်က သတ်မှတ်ထားသော သဘာဝဘေးအန္တရာယ်အုပ်စု (၆) စု နှင့် ဘေးအန္တရာယ် (၂၁)မျိုးကို စုစည်းတင်ပြထားပါသည်။ ထို့ပြင် ငလျင်လှုပ်ခြင်း၊ ရေကြီးခြင်း၊ လေမုန်တိုင်းတိုက်ခြင်းနှင့် မိုးကြိုးအန္တရာယ်များကို စီမံကိန်းအတွက် ဆန်းစစ်ပြီး အပိုဒ် ၇-၃ တွင် တင်ပြထားပါသည်။

က-၇-၄။ သဘာဝဘေးအန္တရာယ်ဆန်းစစ်ခြင်းကိုတွက်ချက်ခြင်း

သဘာဝဘေးအန္တရာယ်ဆန်းစစ်ခြင်းကို မက်ထရစ်စနစ်ဖြင့် တွက်ချက်ပြီး ပုံသေနည်းမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

$$[\text{ဘေးအန္တရာယ်ဆန်းစစ်ခြင်း}] = [\text{ဖြစ်နိုင်ချေ}] \times [\text{ပြင်းထန်မှု}]$$

ဤအခန်းတွင်ငလျင်လှုပ်ခြင်း၊ ရေကြီးခြင်း လေမုန်တိုင်းကျခြင်းနှင့် မိုးကြိုးပစ်ခတ်မှုများ၏ ဘေးအန္တရာယ်ဆန်းစစ်ခြင်းကို လျော့နည်းစေရန်မဆောင်ရွက်မီနှင့် လျော့နည်းစေရန်ဆောင်ရွက် ပြီးအခြေအနေတို့ကို မက်ထရစ်စနစ်ဖြင့် တွက်ချက်ပြီးနှိုင်းယှဉ်တင်ပြထားပါသည်။

Comparison of Risk Assessments of Natural Hazards (Earthquake, Flood, Storm and Lightning) before and after Mitigation/Enhancement Mitigation

SR. NO.	Natural Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	
1.	Earthquake	6	Medium	2	Low	-4
2.	Flood	6	Medium	2	Low	-4
3.	Storm	4	Medium	2	Low	-2
4.	Lightning	4	Medium	2	Low	-2

စက်မှုလုပ်ငန်းဘေးအန္တရာယ်

ဤအခန်းတွင် စက်မှုလုပ်ငန်း ဘေးအန္တရာယ်ကို ယေဘုယျအားဖြင့် (၆) အုပ်စုခွဲခြား ထားပြီး အသေးစိတ်တင်ပြထားပြီး မီးဘေးအန္တရာယ်၊ စက်မှုဘေးအန္တရာယ်နှင့် ဓာတုပစ္စည်းဘေးအန္တရာယ်များကို ဆန်းစစ်တင်ပြထားပါသည်။



က-၇-၅။ စက်မှုဘေးအန္တရာယ်ဆန်းစစ်ခြင်းကိုတွက်ချက်ခြင်း

စက်မှုလုပ်ငန်းဘေးအန္တရာယ်များမှ မီးဘေးအန္တရာယ်၊ စက်မှုဘေးအန္တရာယ်နှင့် ဓာတုပစ္စည်းဘေးအန္တရာယ်များကို လျော့နည်းစေရန်မဆောင်ရွက်မီနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ပြီးတို့ကို တွက်ချက်ပြီး အောက်ပါအတိုင်း နှိုင်းယှဉ်တင်ပြထားပါသည်။

Comparison of Risk Assessments on Industrial Hazards (Fire, Mechanical, and Chemical) before and after Mitigation/Enhancement Mitigation

SR. NO.	Industrial Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	
1.	Fire Hazards	4	Low	1	Low	-3
2.	Mechanical Hazards	4	Low	1	Low	-3
3.	Chemical Hazards	4	Low	1	Low	-3

က-၈။ လူထုတွေ့ဆုံပွဲနှင့်ဖွံ့ဖြိုးမှုအစီအစဉ်

ဤအခန်းတွင်

- လူထုတွေ့ဆုံပွဲသုံးကြိမ်ကို ပထမအကြိမ်အတွက် နယ်ပယ်သတ်မှတ်ခြင်း၊ အစီရင်ခံစာအတွက်နှင့် ဒုတိယအကြိမ်နှင့် တတိယအကြိမ် လူထုတွေ့ဆုံပွဲများကို နယ်ပယ်သတ်မှတ်ခြင်းအစီရင်ခံစာအတည်ပြုပြီး ဆောင်ရွက်ခဲ့ကြောင်းနှင့် ပထမအကြိမ်ကို နောက်ဆက်တွဲ (၁) တွင်လည်းကောင်း၊ ဒုတိယအကြိမ်နှင့်တတိယအကြိမ်တို့ကို နောက်ဆက်တွဲ (၁၂) နှင့် (၁၃) တို့တွင် အသီးသီးတင်ပြထားကြောင်းဖော်ပြထားပါသည်။

က-၈-၂။ ဖွံ့ဖြိုးမှုအစီအစဉ်

ဤအခန်းတွင်

- ဝန်ထမ်းများအတွက်လူမှုရေးအစီအစဉ်များ
- ပြည်သူလူထုဖွံ့ဖြိုးရေးလုပ်ငန်းများနှင့်လှူဒါန်းမှုများနှင့်
- အစိုးရဌာနများနှင့်ပူးပေါင်းဆောင်ရွက်မှုများတို့ကို တင်ပြထားပါသည်။

က-၈-၂-၃။ လူမှုရေးတာဝန်သိမှုအစီအစဉ်နှင့် ငွေကြေးလျာထားချက်

ဤအခန်းတွင် လူမှုရေးတာဝန်သိမှုအစီအစဉ်အတွက် ငွေကြေးလျာထားချက်ကို နှစ်စဉ်အသားတင်အမြတ်ငွေ၏ ၂%ကို ထားရန်နှင့် မလုံလောက်ပါက ဖြည့်စွက်သုံးစွဲရန်စီစဉ်ထားကြောင်းနှင့် ဝန်ထမ်းများအတွက် လူမှုရေးကိစ္စရပ်များနှင့် ပြည်သူလူထုအတွက်နှင့် လှူဒါန်းမှုများကို တင်ပြထားပါသည်။



က-၈-၃။ မကျေနပ်ချက်နှင့်လိုလားချက်များအစီအစဉ်

ဤအခန်းတွင်

- မကျေနပ်ချက်နှင့်လိုလားချက်များအစီအစဉ်၏အကြောင်းအရင်း
- GRM ၏ အခြေခံအချက်များ
- GRM အင်္ဂလိပ် မြန်မာ နှစ်ဘာသာပုံစံ
- GRM စည်းမျဉ်း
- မကျေနပ်ချက်နှင့်လိုလားချက်များဖြေရှင်းမည့်အဖွဲ့အစည်း
- မကျေနပ်ချက်နှင့်လိုလားချက်များစုစည်းခြင်း၊ ဖြေရှင်းခြင်းနှင့်ပြန်ကြားခြင်း
- ဖြေရှင်းရန်ကြာမြင့်မည့်အချိန်ခန့်မှန်းချက်များကို တင်ပြထားပါသည်။

က-၉။ နိဂုံး

Emerald Brewery Myanmar Limited သည် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်၏ ၂၀၁၈ ခုနှစ် မတ်လ ၂၇-ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် ၀၇၁/၂၀၁၈ ဖြင့် ဖက်စပ်နိုင်ငံရေးရင်းနှီးမြှုပ်နှံမှု ဘီယာ ထုတ်လုပ်ရောင်းချခြင်းလုပ်ငန်းကို ကွင်းအမှတ် ၄၉၈၊ ရေတလပေါင်ရွာတွင် တည်ဆောက်ခဲ့ပါသည်။ အဆိုပါလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို စီမံလမ်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်နှင့် စာချုပ်ချုပ်ဆိုလျက် ၂၀၁၇ ခုနှစ် ဇူလိုင်လမှ စတင်၍ ခွင့်ပြုမိန့်ရယူခြင်း၊ ဖက်စပ်လုပ်ငန်းတည်ထောင်ခြင်း၊ မြေရယူခြင်း၊ မြေစမ်းသပ်ခြင်းနှင့် စက်ရုံတည်ဆောက်ခြင်းလုပ်ငန်းများ ဆောင်ရွက်ခဲ့ပါသည်။ စီမံလမ်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်က နယ်ပယ်တိုင်း တာမူအစီရင်ခံစာကို ၂၀၁၉ ခုနှစ်မှ ၂၀၂၁ ခုနှစ် အတွင်း သုံးကြိမ်ရေးသားတင်ပြခဲ့ပြီး ၂၀၂၂ ခုနှစ် နိုဝင်ဘာ လတွင် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆက်လက်ဆောင်ရွက်ရန် ခွင့်ပြုမိန့်ရရှိခဲ့ပါသည်။ စက်ရုံတည် ဆောက်ရေးလုပ်ငန်းများ၊ စက်ပစ္စည်းများတပ်ဆင်ခြင်းများ၊ စက်စမ်းသပ်လည်ပတ်ခြင်းများ ဆက်လက်လုပ် ကိုင်ခဲ့ရာ ၂၀၁၉ ခုနှစ် စက်တင်ဘာလတွင် စီးပွားဖြစ်ထုတ်လုပ်မှုစတင်လျက်ရှိပါသည်။

နယ်ပယ်သတ်မှတ်ရာတွင် ပါဝင်သည့် ယာဉ်အသုံးပြုမှုဆန်းစစ်ခြင်း ကို ဆောင်ရွက်ခဲ့ရာ အဆိုပါ စီမံကိန်းအတွင်းဝင်ထွက်သွားလာသည့် ယာဉ်ပမာဏမှာ အဓိကလမ်းမကြီးတွင် သွားလာသည့် ယာဉ်ပမာဏ နှင့် ၁: ၁၀ ရှိကြောင်း တွေ့ရပါသည်။ ဟိုက်ဒြိုလော့ဂျီ ဆန်းစစ်ချက်အရ စီမံကိန်းနှင့် ပတ်ဝန်း ကျင်အတွက် မြေအောက်ရေလုံလောက်ကြောင်းနှင့် စွန့်ပစ်ရေအရည်အသွေးထိန်းသိမ်းရန် ဖော်ပြထား ပါသည်။ ဇီဝမျိုးစုံမျိုးကွဲများ ဆန်းစစ်ချက်အရ စီမံကိန်းမစတင်မီကပင်ဘားလားချောင်းအတွင်း ကျူးကျော် မျိုးစိပ်များ၏ အန္တရာယ်ရှိနေကြောင်းနှင့် ပတ်ဝန်းကျင်က ချောင်းအတွင်း ပေဒါပင်များရှင်းလင်းရေးလုပ်ငန်း များတွင် စက်ရုံက ပါဝင်ကူညီရန်နှင့် စွန့်ပစ်ရေ အရည်အသွေး၊ ထုတ်လွှတ်အစိုးအငွေ့များ၊ ဆူညံသံများ၊ တုန်ခါမှုများတို့သည် စံနှုန်းအတွင်း ကျရောက်စေရေးဆောင်ရွက်ရန်ဖော်ပြထားပါသည်။ ယဉ်ကျေးမှုအမွေ အနှစ်များဆန်းစစ်ချက်အရ ၁-၅ ကီလိုမီတာ အချင်းဝက်အတွင်း ဘာသာရေးအဆောက်အဦ ၁၃ ခုတွေ့ရှိ ကြောင်းနှင့် စက်ရုံ၏ အစိုးအငွေထုတ်လွှတ်မှုများ၊ ဆူညံသံနှင့် တုန်ခါမှုများကြောင့် မထိခိုက်နိုင်ရန် ဆောင်

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

ရွက်သင့်ကြောင်း ဖော်ပြထားပါသည်။ ကျန်းမာရေး ဆန်းစစ်ချက်များအရ ပုံမှန်အချက်အလက်များသာ တွေ့ရပြီး စက်ရုံမှ ထုတ်လွှတ်မှုများကို စံနှုန်းများအတွင်းရှိစေရန် ဖော်ပြထားပါသည်။ လူမှုစီးပွား ဆန်းစစ်ချက်များ အရ စက်ရုံဘက်မှအနံ့ဆိုးများကို ကာကွယ်ရန် ဘားလားချောင်းကမ်းပါးတွင် ဒေသမျိုးရင်း အပင်များစိုက်ခြင်း၊ ဒေသခံများချောင်းအတွင်း ပေဒါပင်များရှင်းလင်းသည့် အချိန်များတွင် စက်ရုံကကူညီပေးရန်နှင့် ဖြစ်နိုင်ပါက ဒေသခံများကို ဦးစားပေးအလုပ်ခန့်ထားပေးရန်တို့ ဖော်ပြထားပါသည်။

အဆိုပါစီမံကိန်းတည်ဆောက်ရေးကာလနှင့် လည်ပတ်ချိန်ကာလများတွင် ပတ်ဝန်းကျင်လေ၊ လုပ်ငန်းခွင်လေ၊ ပတ်ဝန်းကျင်ဆူညံသံ၊ လုပ်ငန်းခွင်ဆူညံသံ၊ ဘျိုင်းလာခေါင်းတိုင် ထုတ်လွှတ်မှု၊ လျှပ်ထုတ် စက်အိမ်ဖောထုတ်လွှတ်မှု၊ မြေပေါ်ရေ၊ မြေအောက်ရေ၊ တုန်ခါမှုများ၊ စွန့်ပစ်ရေတို့ကို တိုင်းတာခြင်းများပြု လုပ်ခဲ့ရာတွင် တည်ဆောက်ချိန်စီမံကိန်းဧရိယာတွင် PM₁₀ နှင့် PM_{2.5} ၊ အဝီစိတွင် အာဆင်းနပ်စ်ပါဝင်မှု နှင့် pH လည်ပတ်ချိန်လုပ်ငန်းခွင်ဆူညံသံတို့မှအပ ကျန်တိုင်းတာမှုများ NEQ(E)G နှင့် ကျန်းမာရေး ဝန်ကြီးဌာနသောက်ရေ စံနှုန်းများအတွင်းရှိကြပါသည်။ လည်ပတ်ချိန်လုပ်ငန်းခွင်ဆူညံသံသည် NEQ(E)G စံနှုန်းမဝင်သော်လည်း လုပ်ငန်းခွင်ကျန်းမာရေး နှင့် ဘေးကင်းလုံခြုံရေး အလုပ်ချိန် ၈ နာရီအတွက် ရှိသင့်သည့် စံနှုန်းကို ဝင်ကြောင်းတွေ့ရပါသည်။ ဤအချက်များသည် ဇီဝမျိုးစုံမျိုးကွဲ၊ ယဉ်ကျေးမှုအမွေ အနှစ်များ၊ ဟိုက်ဒြိုလော့ဂျီနှင့် ကျန်းမာရေးနှင့် လူမှုစီးပွားထိခိုက်မှုများအပေါ် အနည်းဆုံးသက်ရောက် နိုင်မည့်အခြေအနေဖြစ်ကြောင်းဖော်ပြထားပါသည်။ ယခုလက်ရှိအခြေ အနေများကို ဆက်လက် ထိန်းသိမ်းသွားမည်ဆိုပါက တနည်းပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှု ခြင်းများဖြင့် ထိန်းကြောင်းသွားပါက ဆိုးကျိုးတရားများအနည်းဆုံးနှင့် ကောင်းကျိုးတရားများ တိုးပွားစေမည့် စီမံကိန်းဖြစ်ကြောင်း မှတ်ယူနိုင်ပါသည်။



A-1 Introduction

A-1-1 General Overview

This report identifies the proposed of the **Environmental and Social Impact Assessment (ESIA)** that will be undertaken in connection with the “**Manufacturing and Distribution of Beer**” project in Union of Myanmar. **Emerald Brewery Myanmar Limited** is going to manufacture and distribute beer and the proposed project is located at Plot No.498, Yay Ta La Baung Village, Hlegu Township, Yangon District (Beside No.3 Main Road, Htauk Kyant, Mingalardon).

The annual production capacity is 400 million liter. Actual production quantity beer from year 2019 to 2023 are shown at paragraph 1-1.

A.1.2 EIA Process

There are three phases of EIA process as **Application Phase, Scoping Phase,** and **EIA Phase**. Application phase and scoping phase are already fulfilled and EIA phase is continued. Within the scoping phase there are one public meeting (three parties and three scoping reports with instructions by ECD. Facts about public meeting and three scoping reports are attached as Appendix 1, Appendix 2,3 and Appendix 4.

During the EIA phase, a draft Environmental Impact Assessment Report, describing consideration of all the key issues and associated impacts identified from the Scoping Phase, together with a draft Environmental Management Program for the proposed mitigation measures, is to be implemented. This draft report will be made available to proponent to review and verify. Then the final report will be submitted to ECD for consideration.

A.1.3 EIA Working Group

Details of the EIA team are presented in the Appendix (5).

A.1.4 Overall Context of the Project

Emerald Brewery Myanmar Limited is proposing to establish “Manufacturing and Distribution of Beer” project at Plot No. (498), East Field of Yay Ta La Baung, Yay Ta La Baun5 Village Tract with holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.

The objectives of the project are:

- To manufacture and distribute international standard quality Beer
- To reduce the import of beer from foreign in local market.
- To distribute high quality beer, consisting of highest quality ingredients with reasonable price.



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

Emerald's Vision and Mission

OUR VISION IS:

TO BUILD A SOLID FOUNDATION FOR THE COMPANY, BASED ON THE FOLLOWING KEY PILLARS;

- BREWING TO PERFECTION,
- COMMERCIAL EXCELLENCE
- IMPROVEMENT IN THE QUALITY OF LIFE FOR OUR STAFF AND THE COMMUNITY.

So as to;

TO ACHIEVE SUSTAINABLE GROWTH AND TO BE A PROFITABLE NUMBER 2 IN THE BEER MARKET OF MYANMAR.

Our Mission

- Achieving breakeven position by 2023.
- Utilize the full capacity ,0.5 Million HL of the brewery by 2025.
- Create an environment to nurture the staff, reward for meritocracy and improving with the community.

A.1.5 Project Proponent

Some facts about the project proponent are following.

Details of the Project Proponent

Project Proponent	Emerald Brewery Myanmar Limited
Office Address	No.151, Block A#01-L1, Yaw Gi Kyaung Road, Hlaing Township, Yangon, Myanmar.
Project Address	Plot No. (498), East Field of Kone Ta La Baund, Yay Ta La Baund Village Tract with holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.
Contact Person	Ma May Khin Zaw
Designation	Human Capital Director
Contact number	09-449607879
Email	maykhin.zaw@emeraldbrewery.com

A.1.6 Salient Features of the Project

Salient Features of the Project

1.	Project Name	Manufacturing and Distribution of Beer
2.	Project Proponent	EMERALD BREWERY MYANMAR LIMITED
3.	Office Address	No.151, Block A#01-L1, Yaw Gi Kyaung Road, Hlaing Township, Yangon, Myanmar.
4.	Company	No. 104783007



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

	Registration Number		
5.	Exporter/Importer Registration No.	53801 (06-11-2018)	
6.	Type of Proposed Business	Manufacturing and Distribution	
7.	Geographical Information	Longitude - - - 96° 9' 18.41" E Latitude - - - 17° 1' 7.78" N	
8.	Project Address	Plot No. (498), East Field of Kone Ta La Baund, Yay Ta La Baund Village Tract with Holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.	
9.	Type of Land	Grant Land (for Industrial use)	
10.	Land Acquisition	Owner - U Aung Thu	
11.	Total Area	32.84 acres	
12.	Area for Buildings Construction	18 acres	
13.	Proposed Buildings in the Project	2-storeyed steel structure Office Building 1-storeyed Steel Structure Canteen (I) 1-storeyed Steel Structure Canteen (II) Beer Manufacturing Building Utility Building Wastewater Treatment Building	
14.	Construction or Preparatory of Period	2 years	
15.	Starting Time for Construction	June 2018	
16.	Estimated Time for Commercial Operation Date	August 2019	
17.	Investment Period	50 years (50+10+10)	
18.	Amount of Foreign Capital	US\$ 49.48 Million	
19.	Total Amount of Capital (Kyat)	Equivalent in kyat US\$ 61.85 million (Including US\$ 49.48 Million)	
20.	Form of Investment	Joint Venture	
21.	Surrounding Environment	East Side	Field
		West Side	Barlar Creek
		Left Side	Field
		Right Side	Field
22.	Nearest Residential Places	Yay Ta La Baund Village, Kone Ta La Baund Village	
23.	Nearest Water Bodies	Barlar Creek, Hlaw Kar Lake	
24.	Topography	Flat Field	
25.	Equipment and Auxiliary Plants used in the Project are- Process / Packaging Equipment (Brewing, Fermentation, Filtration, Packaging)	Refrigeration Unit CO ₂ Plant	



	Lab Equipment Air Compressor Boiler	Water Treatment Plant Wastewater Treatment plant
26.	Water Source	From Tube Wells Numbers of units 6 in Diameter 6 in Depth Well No.1 = 110 m Well No.2 = 101.6 m Well No.3 = 99.6 m Well No.4 = 97.6 m Well No.5 = 101.6 m Well No.6 = 93.6 m Well No.7 = 120 m Well No.8 = 120 m
27.	Total water demand	Approximately 170 - 850 m ³ / day
28.	Source of electrical power	From National Grid Solar Energy (From 3 2023 July 24 th)
29.	Power Supply	Transformers and generators Transformer One unit, 3,760 KVA Generators Four units 4 set of 1,250 KVA,
30.	Boiler	Type of Fuel Diesel Fuel consumption Approximately 700,000 ~800000gal/year
31.	Raw materials	Rice Crown cap Keg Barley Body label Keg closure Malt Neck label Outer carton Hop Cold glue Fuel oil Yeast Hot melt Beer concentrated Water Empty crate Hop bitter pellet in alpha acid Cans Pallet Hop aroma pellet in alpha acid Can lids Glass bottles Hop extract in alpha acid
32.	Product	Beer bottle, Beer Keg, Beer Can (with 5 % alcohol v/v)
33.	By- product	Spent Grain
34.	Workforce	Local Employees 165 Foreign technicians 5 Total 170
35.	Factory Operation Hours	8 hours per day with three shifts Working day 6 days per week
36.	Working Hours of Management Office	9.5 hrs. per day (8:00 AM ~ 5:30 PM) 5 days per week (Monday ~ Friday)
37.	CSR percent	2 % of net profit
38.	Contact Person Designation Mobile Phone: Email:	Ma May Khin Zaw Human Capital Director 09- 449607879 maykhin.zaw@emeraldbrewery.com



A.2 OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

A.2.1 Overview of Environmental and Social Related Laws Applicable to the Project

A.2.2 Myanmar Regulatory Framework for Environmental Assessment

A.2.3 Legal Compliance

A.2.1 Overview of Environmental and Social Related Laws Applicable to the Project

The EIA Regulations require that any development proposal will be required to be the subject of EIA, where such development is likely to have “significant” effects on the environment, by virtue of factors such as its nature, size or location. An EIA of this proposed project is considered to be necessary, which is likely to have some “significant” environmental effects.

The EIA study will cover for only the development of the “Manufacturing and Distribution of Beer” Project. The Overview of the environmental and social related laws applicable to the construction and operation of the factory are followed.

A.2.2 Myanmar Regulatory Framework for Environmental Assessment

Myanmar Government issued an Environmental Policy in 1994, Myanmar Agenda 21 in 1997, and National Sustainable Development Strategy in 2009, the Environmental Conservation Law in 2012, Environmental Conservation Rules in 2014, Environmental Impact Assessment Procedure and National Environmental Quality (Emission) GuideLines in 2015.

A.2.3 Legal Compliance

- The Penal Code of Offences
- The Myanmar Fire Brigade Law (2015)
- The Ward or Village Tract Administration Law (2012)
- The Water Power Act (1927)
- **The Underground Water Act (1930)**
- The Yangon City Development Law (2018)
- Myanmar Insurance Law, 1993
- The Environmental Conservation Law (2012)
- The Environmental Conservation Rules (2014)
- National Environmental Quality (Emission) GuideLines (2015)
- The Income Tax Law (1974)
- The Money Laundering Law, 2014
- The Import Export Law, 2012
- The Assistance and Treatment of Injured Emergency Patient, 2014
- The Electricity Law (2014)
- The Boiler Law (2015)
- **The Petroleum and Petroleum Product Law (2017)**
- The Prevention of Hazard from Chemical and Related Substances Law (2013)
- The Factories Act (1951) Amendment (2016)



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- The Excise Act, 1917
- The Law Amending the Excise Act 2016
- The National Food Law (1997)
- The Consumer Protection Law (2014)
- The Standardization Law (2014)
- The Myanmar Investment Law (2016)
- The Import Export Law (2012)
- The Motor Vehicle Law (2015) and The Motor Vehicle Rules (1989)
- The Highway Law (2000)
- The Workmen's Compensation Act (1923)
- The Leave and Holiday Act (1951)
- The Minimum Wages Law (2013) and The Minimum Wages Rules (2013)
- Employment and Skill Development Law (2013)
- The Labor Organization Law (2011) and The Labor Organization Rules (2012)
- The Settlement of Labor Disputes Law, 2012
- The Social Security Law (2012) and The Social Security Rules (2014)
- Myanmar Engineering Council Law, 2013
- The Ethnic Rights Protection Law, 2015
- Protection and Preservation of Cultural Heritage Regions Law (1998)
- The Protection and Preservation of Antique Objects Law, 2015
- The Protection and Preservation of Ancient Monuments Law, 2015
- The Union of Myanmar Public Health Law (1972)
- The Prevention and Control of Communicable Disease Law, 1995
- Conservation of Water Resources and River Law (2006)
- The Control of Smoking and Consumption of Tobacco Product Law, 2006
- The Occupational Safety and Health Law, 15th March 2019

- **Standards Comply by Proponent about Beer Production Industry**
 - General GuideLines
 - Air Emissions
 - Small Combustion emission gas guideLine
 - Effluent Levels
 - Wastewater, Storm Water Runoff, Effluent and Sanitary Discharges
 - Effluent Levels (Breweries and Distilleries)
 - Noise Levels
 - Odor
 - Drinking Water Standard by Ministry of Health
 - Soil Standard of Industrial GuideLine



- Environmental, Health and Safety GuideLine for and Beverage Processing

A.3.0 PROJECT DESCRIPTION AND ALTERNATIVES

A.3.1 Project Objectives

The overall objectives of the project are towards the socio-economic improvement. The Environmental Assessment has been undertaken to identify and highlight what concerns are represented for the environmental sustainability and to manufacture the beer products by using modern technology and distribute to local and foreign with great quality.

A.3.2 Financial Information and Investment Plan

The financial information and investment plan are shown as follow.

Particulars of Company incorporation

Authorized Capital	USD 100 Millions
Type of Share	Common Share
Number of Shares	100,000,000 shares (1 share = 1 USD)

$$1\text{USD} = 1350 \text{ Ks}$$

Particulars of Paid-up Capital of The Investment

	Kyats	USD
Amount / percentage of local capital to be contributed (51%)	44,752,500,000	33,150,000
Amount/ percentage of foreign capital to be brought in (49 %)	42,997,500,000	31,850,000
Total	87,750,000,000	65,000,000

A.3.2.1 Investment Plan

This project is “Manufacturing and Distribution of Beer” and the proposed amount of the investment is USD-65,000,000 / Kyats 87,750,000,000. The proponent has submitted an investment proposal of the proposed project to Myanmar Investment Commission (MIC) in 2018. The investment type of *Emerald Brewery Myanmar Limited* is joint venture.

Annually or period of proposed capital to be brought in	Within 2 years of the permission granted by MIC
Value/ amount of investment	USD 65 millions
Investment period	(50+10+10) years
Construction/ preparation period	2 years



Commercial Operation Date	September 2019
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A.3.2.2 List of Shareholders

List of Shareholders

No.	Name of Shareholder	Citizenship	Share Percentage
1.	Than Lwin Aye Yar Industrial Production & Construction Co., Ltd. (Represented by : Myint Myint Win)	469/1999-2000 12/La Tha Na (N) 006833	20%
2.	F & N Investments Pte. Ltd. (Represented by Mr. Hui Choon Kit)	198502513G E 5805768 N	80%

A.3.3 Project Location and Connectivity

A.3.3.1 Project Location

Emerald Brewery Myanmar Limited is proposing to establish “Manufacturing and Distribution of Beer” project at Plot No.498, Yay Ta La Baund Village with Holdings number (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Northern District, Yangon Region. It is northeast of the city Yangon and is largely rural.

Mingalardon Township also includes within the 1.5 km radius (3 km diameter) scope of the proposed project and is located in the northernmost part of Yangon, Myanmar. The proposed project site occupies 32.84 acres of land and, which lies beside the No.3 Main Road. **This is grant land for industrial use and the owner of the land is U Aung Thu.**

The project area lies in the north latitude of 17° 01' 7.78"N and east longitude of 96° 9' 18.41" E.

The surrounding highlight features of proposed project site is given below.

Surrounding Highlight Features

Project Location	Plot No.498, Yay Ta La Baund Village with Holdings number (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Northern District, Yangon Region, Republic of the Union of Myanmar
Topography	Plain
Water Bodies/Rivers	Barlar Creek exits beside the project site.
Archaeologically important places / Reserved/ Forests within scope area	Non existent
Assess Road	No (3) Main Road and Project's inner road



A.3.3.2 Existing Road Connectivity

No.3 Main Road (also called Yangon-Hlegu Express Highway) exists in front of the project site and another access way of the project site is very simple. People can also be reaching to the project site through the village lane. There is 8-meter-wide inner road in the project area, which has approximately 1.2 km distance to No.3 Main Road. The chosen site is located beside No. 3 Main Road and surrounded by fields.

A.3.3.3 Surrounding Villages

The villages within the 1.5 km radius around the project site are:

North-west Ta Kon Taing Village and Nwel Khwe San Pya Village

South Yay Ta La Baung Village

West Kone Ta La Baung Village

A.3.4 Scope of the Project Area

It is necessary to understand the characteristics of the site and the surrounding area of the project in order to identify the scope of the issue, which will need to be addressed by EIA. The following section describes the location of the proposed development and summarizes the existing environmental features / conditions of the site and the surrounding area. For this project, 1.5 km radius of scope from the project site is selected to study.

A.3.5 List of Suppliers/Contractors for the Project

In this section list of suppliers/contractors for the project are shown.

A.3.6 Implementation Schedule

For the construction of beer plant, implementation schedule concerning from initially Joint Venture agreement, land acquisition, MIC approval etc., to roll out market was shown as follow. During the construction phase, earth preparation and construction activities photos are shown at Appendix (6).

Emerald Brewery Myanmar Limited started to soil test at 2017, November 17, performed the test run at 2019, August and commercial run at September 2019.

A.3.7 Raw Materials

The main ingredients needed for brewing are usually barley malt, rice, hops bitter pellet and (aroma pellet) and hop extract, pure water, and brewer's yeast. Each ingredient can affect flavor, color, carbonation, alcohol content, and other subtle changes in the beer.

The process also requires various acids and cleaning chemicals to maintain and sterilize the brewing equipment. For the finished product, cardboard for boxes



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and cans, bottles, and kegs are also needed. In this proposed project, raw materials and their import countries are also described at Table 3-6.

A.3.7.1 Source of Raw Materials

Some of the raw materials are imported from Thailand, Singapore, China, Europe, Japan, Vietnam, Spain and Germany. The main raw material, rice, and the rest are obtained from local.

Raw materials and imported countries are shown at section 3-7-1 at table.

A.3.7.2 Transportation System

Transport by sea, air and roads; direct transport from Airport or Harbor to factory's warehouse. There vehicles used for transportation are rented from logistics company and no factory's vehicles used for transportation of raw materials and finished products.

A.3.7.3 Raw Materials Requirement, Consumption, Available, Storage Condition

Requirements of Raw Materials for daily and monthly, consumption, available and storage condition are shown at section 3-7-3.

Raw Materials Requirement (Local Purchase) Available, Consumption and Storage Condition

Sr. No	Commodities	A/U	Quantity		Manufacture	Available From	Storage Condition
			Daily	Monthly			
1.	Rice	Kg	227	5428	local	Bayint Naung Market	50 kg rice in plastic bags and stored at ware house and cylos
2.	Calcium Chloride	Kg	1.8	43	China	Chemical Market	plastic bags 50kg stored at ware house
3.	Zinc Sulphate	Kg	0.16	4	China	Chemical Market	50 kg rice in plastic bags and stored at ware house
4.	Calcium Sulphate	Kg	0.98	23.6	China	Chemical Market	50 kg rice in plastic bags and stored at ware house
5.	Can	Pcs	937	22400	local	Can Factory	Plastic Crate
6.	Can Lid	Pcs	312	7467	local	Can Factory	Plastic bag
7.	Outer Carton 24*320 ml	Pcs	167	3999	local	Market	packd in plastic rope and stored at ware house



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8.	Outer Carton 24*320 can	Pcs	44	1063	local	Market	packd in plastic rope and stored at ware house
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Raw Materials Requirement (Import) Consumption, Available, Storage Condition

Sr. No	Commodities	A/U	Quantity		Manufacture	Available From	Storage Condition
			Daily	Monthly			
1.	Malt	kg	7224.08	173,378	Australia	import	plastic bags 50kg and stored at ware house and cylos
2.	Bitter hop	kg	1.24	29.83	Germany	import	Can and stored at ware house
3.	CO2 extract hop	KAI	1.56	37.6	Germany	import	Can and stored at ware house
4.	Termamyl SC/Amlex 2T/4T	kg	0.56	13.58	Denmark	import	30 liter plastic bucket
5.	Calcium chloride granule	kg	15.68	376.5	China	import	plastic bags and stored at ware house
6.	Calcium Sulphate powder	kg	25.11	602.8	China	import	plastic bags and stored at ware house
7.	Phosphoric acid 85 % Food grade	kg	3.13	75.3	Thailand	import	plastic bucket
8.	Zinc Sulfate 7 hydrate	kg	0.037	0.91	Thailand	import	plastic bucket
9.	Yeast slant	EA	0.037	0.91	Thailand	import	In test tube and stored in refrigerator
10.	Black malt	kg	9.4	225.6	Australia	import	plastic bags and stored at ware house
11.	Beer concentrate	tin	3.375	81	Thailand	import	Tin and stored at ware house
12.	Sodium metabisulphite	kg	1.12	27.1	Thailand	import	plastic bag and stored at ware house

A.3.7.3.1 Management of Hazardous Raw Material (Caustic Soda)

The mangement plan for moderately hazardous raw material as caustic soda is shown at section 3-7-3-1.

A.3.8 Production Capacity, Products and Sale Plan

The main product is Beer with 5 % alcohol v/v (Bottles, Cans, and Kegs) and by-products (spent grain) will be sold to poultry food manufacturers. The production capacity is presented as below.



Production Capacity (five year)

Product	Annual Production	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022	2022 ~ 2023	2023 ~ 2024
Beer	,000 Hundred liters /Year	500	1,400	2,000	2,800	4,000

A.3.8.1 Products, Daily, Monthly, Yearly Production

Production Capacity

Product Name	A/U	Daily Production	Monthly Production	Yearly Production
Beer	Liters	174,216	4,166,666	50,000,000
Spent Grain	tons	8	192	4608

A.3.8.2 Actual Productions of Beer Year form 2019-2020 to 2021-2022

The actual productions of beer from year 2019-2020 to 2021-2022

Sr.No	Product	A/U	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022
1	Chang 330ml can	HL	99680	131080	206370
2	Chang 500ml can	HL	63510	182830	302660
3	Chang 620ml Bot carton	HL	15260	39490	113860
4	Chang 320ml Bot carton	HL	1270	640	130
5	Chang 30l keg	HL	920	4330	20860
6	Spent grain	Ton	3800	6500	11400

A.3.9 Auxiliary Items

The following sections are intentionally included for the proposed project.

Auxiliary Items

No.	Item	Size / Capacity	No. of units	Technology
1	Water Treatment Section	1,400 m ³ /day		
2	Boiler Section	2 tons /hr	5 Units	
3	Boiler Stack	diameter-1.5 m, Stack height-15 m		
4	CO ₂ Recovery Section	250 kg/hr		
5	CO ₂ Storage	20 tons	2 foam catcher	
6	Compressed Air Section			
7	Air Compressors	5 m ³ /min		
8	Refrigeration Section			
9	Industrial Refrigeration System	1,232 KW capacity compressor		



10	Wastewater Treatment Section			
11	Wastewater Treatment Plant	2500 m ³ /day		

A.3.9.1 Height of Boiler Stack Calculation

At this section calculation of boiler stack height as shown and it is concluded the height of stack is enough.

A.3.9.2 Management Plan for Ammonia (Refrigerant)

Management plan for ammonia, moderately hazardous substance is shown at section 3-9-2.

A.3.10 Utilities Requirement

A.3.10.1 Electricity

The project proponent will use electricity from National Grid Line (electricity for main Line of Electrical and Power Communities) through (11/33 KV) distribution transformer which capacity is 3,760 KVA and 400 V main distribution boards.

For the emergency cases, the project proponent prepares to use 4 numbers of generators;

1,250 kVA 4 set,

Emerald Brewery Myanmar Limited installed the solar energy system on the roof of office since 2019 and it cover 50% of office electricity consumption. At 2023 July 24th 2 MW solar energy system was installed and it cover the totally electricity requirement of the plant.

A.3.10.2 Fuel Requirement

Main used fuel for this project is diesel and used as fuel for boiler. The average yearly used amount of diesel is approximately 500,000 gallons per year. The estimated yearly amount of fuel oil (liter) for 5 years is described in Table 3-14.

Annual Utilities Requirement

Consumption Year	Electricity	Fuel	Water
	,000 kW/hr.	Liter/yr.	0000 m3/yr.
2019 ~ 2020	500	293,760	45
2020 ~ 2021	1,400	806,400	126
2021~ 2022	2,000	1,152,000	180
2022~ 2023	2,800	1,635,840	252



Consumption Year	Electricity	Fuel	Water
	,000 kW/hr.	Liter/yr.	0000 m3/yr.
2023~ 2024	4,000	2,322,893	360

A.3.10.3 Water Requirement

There are 8 numbers of 6 inches tube and they cover the water requirement.

A.3.10.4 Carbondioxide Recovery Plant

A.3.10.4.1 Carbondioxide Recovery Plant

In this section, 5 step of procedures as

- Collection from beer fermenter
- Washing
- Compression
- Drying
- Liquifying and Storing are shown and capacity of plants is 1250 kg/hr.

A.3.10.5 Boiler Section

There are 9 numbers of boiler eight are two ton/hr (steam) and one is 10ton/hr steam. Diesel is used as fuel.

A.3.11 Solid Wastes

In this section, there

- Non-hazardous wastes
- Hazardous wastes
- Estimated amount in daily, monthly, yearly and
- Disposed by guideLine of YCDC are stated at section 3-11.

A.3.12 Sanitation and Sewage Disposal

In this section, there

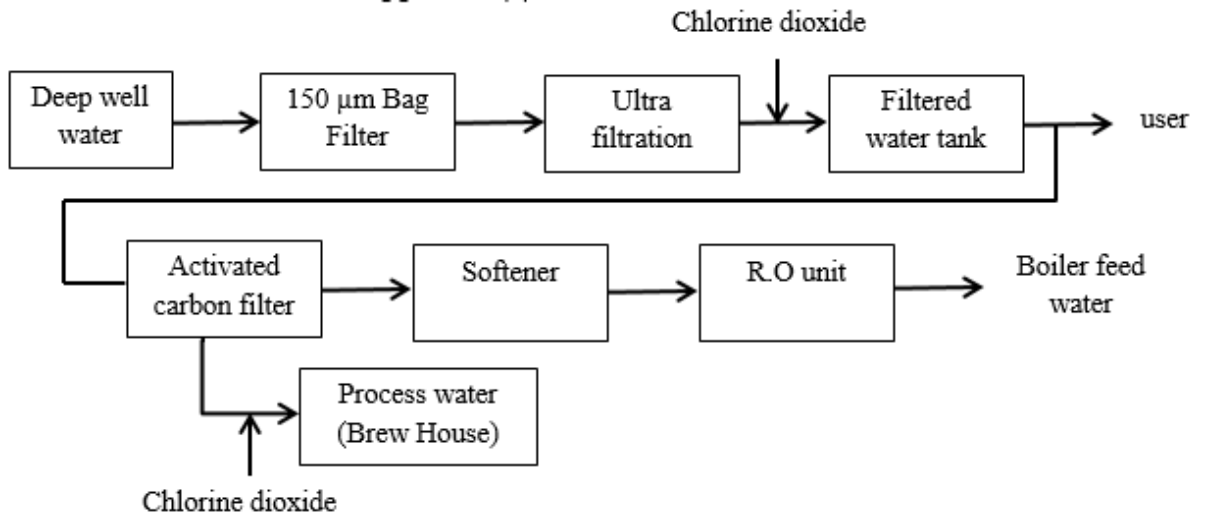
- Water resource of eight tube wells and treated before using,
- Sanitary wastewater and process wastewater are treated in WWT plant,
- 36 Nos.of toilet (20 for male and 18 for females) and using the Bio Septic Tank (Φ 1300 mm and 1400 mm length) are stated at section 3-12.

A.3.13 Water and Wastewater Treatment Systems

A.3.13.1 Water Treatment Plant

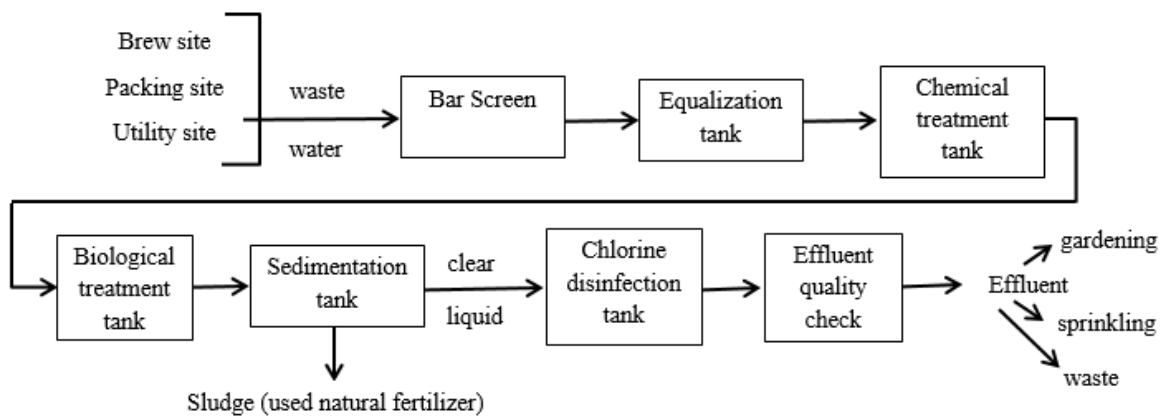
Process flow diagram for water treatment plant is shown as follow.





A.3.13.2 Wastewater Treatment Plant

Process flow diagram for wastewater treatment plant is shown as follow.



Capacity of wastewater treatment plant = 2500m³/day
 = 550,000 gal/day

Estimate wastewater per day = 15000 gal/day

Residence-time of wastewater in WWT = 36.6 day

Process equipments/procedure and function are stated at section 3-13-2.

In this section wastewater quality from online monitoring system, from 2023 February analyzing results and from 2023 August analyzing results are stated at section 3-13-2. From 2023 August analyzing results effluent of WWT and final discharge from plant wastewaters are in standards.

A.3.14 Machinery and Equipment List

At that section machinery and equipment and tank for beer plant are shown as two tables at section 3-14.



A.3.15 List of Buildings and Layout

At that section eleven building and layout are shown in table and building completion certificate is shown at section 3-27.

A.3.16 Working Hour, Manpower, and Factory Organization

At that section working hours for factory operation and management office, and manpower and factory organization are shown.

A.3.17 Manufacturing processes

A.3.17.1 Beer Production

A.3.17.2 Beer Bottling Plant

A.3.17.3 Beer Canning Plant

A.3.17.4 Beer Keg Plant

In this section beer production, beer Bottling, beer canning and beer keg production are shown.

A.3.18 Solar Power Utilization

Emerald Brewery Myanmar Limited installed the solar energy system on the roof of office since 2019 and it cover 50% of office electricity consumption. At 2023 July 24th 2 kw solar energy system was installed and it cover the totally electricity requirement.

There is another 2 MW solar energy system was installed and extra power may be distributed to other. The solar energy panel mounted on roof of building are shown as fig 3-63.

A.3.19 Management of Waste Materials

In this section

- Managements of **emitted gases or vapours and fine particles** are shown under such-heading as **the source; risk assessment; the impact area; the impact amount and duration; management procedure,**
- Managements of **liquid wastes** are shown under such-heading as **the source; risk assessment; the impact area; the impact amount and duration; management procedure,**
- Managements of **solid wastes** are shown under such-heading as **the source; risk assessment; the impact area; the impact amount and duration; management procedure,** at section 3-19.

A.3.20 Amount of Effluent and Wastewater, Ingredients and Management Procedure

In this section estimated amount of effluent and wastewater from various, containing substances and management procedures are shown.



A.3.21 Amount of Solid Wastes Issued, Containing Substances and Management Procedure

In this section estimated amount of solid wastes from various sources of project, containing substances and management procedures are shown.

A.3.22 Amount of Hazardous waste, Containing Substances and Management Procedure

In this section estimated amount of hazardous water from various sources of project, containing substances and management procedures are shown.

A.3.23 Storm Water and Drainage System

The storm water and drainage system of project is shown at section 3-23.

A.3.24 Water Distribution System

Water distribution system of project is shown at section 3-24.

A.3.25 Road Transportation

The transportation of raw materials and finished goods and ferry system are shown at section 3-25.

A.3.26 Analysis of Alternatives

In this section there

- Project Alternative
- Site Alternative
- Raw Materials Alternatives
(Refrigerant and Grain)
- Energy Alternative are shown.

Summary of pros and cons of chosen alternatives are summarized at following.

Summary of Pros and Cons of chosen Alternatives

Sr. No	Subject	Performance	Pros	Cons	Mitigation Measure
1	Project	No project	No environment and social impact	Revenue lost, unutilized land, price of land would drop	Eatablish with EMP, EmoP for construction and operation
2	Site	Extising place	- Accessible -Development -Sufficient fresh water -Employees	-Bad odor -Nutient in Barlar creek -Change livelihood	-Planting -Participating in removing hyacinth -Assigning as employees if possible

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3	Refrigerant	Amonia	-Not deplete ozone -Not banned material	Moderately hazard	-Under SOP -Conduct management plan -Assigning skill and cautious person
4	Adjanct as	Rice	-Local raw material -Match taste and sensory of consumer	Rice is staple food	-Avoid severe competition with public -Reseach for other raws
5	Energy	Solar energy	-Low annual cost -Eco-friend	-Fire hazard for solar pannel -High initial investment	-Good maintenances -Check and repair -Good control system

A.3.27 Certificates, Licences and Instructions Conducted by Emerald Brewery Myanmar Limited

Emerald Brewery Myanmar Limited conducts the certificates, licences and instructions are mentional Appendix (10).

Certificates, Licences and Instructions Conducted by Emerald Brewery Myanmar Limited and Responsible Person for EMP and budget Allotment

Sr. No.	Description
1.	<p>Permits and Certificates</p> <p>1) Certificate of Incorporation - Emerald Brewery Myanmar Ltd</p> <p>2) Certificate of Exportor/Importer Registration - End Date 05-11-2023</p> <p>3) Exise B1</p> <p>4) Exise Form FL8</p> <p>5) The Myanmar Investment Commission Permit 27th March 2018 – validity of investment permit 50 years - မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင် ခွင့်ပြုမိန့် ၂၀၁၈ ခုနှစ် မတ်လ ၂၇-ရက်မှ သက်တမ်း ၅၀ နှစ်</p> <p>6) Amendment onf Permit No.071/208,date 27th March 2018</p>



<ul style="list-style-type: none">- ၂၀၁၈ ခုနှစ် မတ်လ ၂၇-ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် ၀၇၁/၂၀၁၈ တွင် ပြင်ဆင်ချက်- Decision of the Myanmar Investment Commission for amendment of the amount of foreign capital and the total amount of capital of Emerald Brewery Myanmar Limited <p>7) Fire Safety Certificate (25-3-2023 up to 3 years)</p> <p>8) Hazardous enterprise and others licence No. 20 (Hlegu Development Committee) (1-4-2023 to 31-3-2024)</p> <p>9) Registration Certificate for Electricity Producing and Utilizing</p> <ul style="list-style-type: none">- YD-G(N) 244/6-2023 (13-6-2020 to 12-6-2027)- YD-G(N) 245/7-2023 (13-6-2023 to 12-6-2027) <p>10) Boiler Registration</p> <ul style="list-style-type: none">MASA 6283 9-6-2023 to Next 6 MonthsMASA 6284 9-6-2023 to Next 6 MonthsMASA 6361 9-6-2023 to Next 6 MonthsMASA 6362 9-6-2023 to Next 6 Months <p>11) Registration Certificate of Special Goods Trading (2024 March 31 Expired Date)</p> <p>12) Issuing the new certificate for petroleum storing (up to 023 Dec.31) ('L' - licence) No.221 1 1173L</p> <p>13) ('L' - licence) No.221 1 1174L Remain in force till the 31st day of December 2023</p> <p>14) Building Completion Certificate (B.C.C)</p>
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A.4.0 DESCRIPTION OF THE ENVIRONMENT

A.4.1 Introduction

In this chapter, there are

- Secondary informations of the Townships
- Project existing township as Hlegu
- Borders of Hlegu Township
- Airports nearest to Hlegu
- Weather of Hlegu shown in section 4.1

Secondary data of Hlegu Township are extracted from the '**Regional Data of Hlegu Township**' prepared by General Administration of Hlegu Township and available website is www.gad.gov.mm .

A.4.2 Setting the Study Limits

The scope of study includes detailed baseLine data generation and characterization of existing status of environment in an area of about 1.5 km radius with the proposed project as its center. Various environmental components such as air, noise and vibration, waters, soil, biological, cultural and heritage and socio-economic components and other parameters of interest are to be studied.

Mingaladon Township is included if 1.5 km radius scope is considered as affected area of the project. Both socio-economic and environmental condition will be affected due to the project activities. Therefore, this Mingaladon Township is also needed to consider.

A.4.2.1 Some Changes of BaseLine Data of Mingaladon Township before Starting the Project

These facts are directed by ECD on 2nd revised scoping report to revise and there are submitted the **changes of wet and dry season contribution to annual rainfall from season year 1981 to 2010**, annual averaging maximum temperature in Mingaladon from 1981 to 2010.

A.4.2.2 Affective Area (Mingaladon & Hlegu Townships)

In this paragraph, there are

- Noting the effective areas as Mingaladon and Hlegu Townships
- Some regional data of Mingaladon and
- That of showing the some regional data of Hlegu is already shown at paragraph 4-1.



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A.4.2.2.1 Area of Influence (AOI)

The area of influence are noted 1.5 km radius of project as center upon the **traffic, air pollution, noise pollution & vibration, biodiversity, archaeology and heritage, ground water and surface water, hydrology, soci-economic and health impact** and study place/area/ sources are summarized at section 4-2-2-1.

A.4.2.2.2 Time Schedule on Study of Activities of AOI

The area of influence are noted 1.5 km radius of project as center upon the **traffic, air pollution, noise pollution & vibration, biodiversity, archaeology and heritage, ground water and surface water, hydrology, soci-economic and health impact** and study time schedule are summarized at section 4-2-2-2.

A.4.2.2.3 Potential Impacts on Various Phases of Proposed Project

Potential impacts on various phase of Emerald Brewery Myanmar Limited, production and distribution of beer products are described in section 4-2-2-3 in brief and details in Section 6-5.

A.4.2.2.4 Impacts in Spatial and Temporal Boundaries

In section 4-2-2-4, there explain the definition of spatial and temporal Boundaries and classifies the environment componentts with spatial and temporal Boundaries.

A.4.3 Physical Characteristics

Under section 4-3 there are four sub headings as “ **Topography, Geology, Geography and soil, Seismology of the Project Area (Hlegu Township) and Hydrology** and stated at section 4-3-1,4-3-2,4-3-3 and 4-3-4 respectively-Among these informations, there is concluded that ‘**Underground water resource is more suffieict for brewing site and environment**’.

Moreover, section 4-3-5 as climate of the study area and states the tem (max,min,avg) for rainfall amount (mm), rainy day year 2009 to 2019.

A.4.3.6 Primary Source Data for Environmental Quality

A.4.3.6.1 Air Quality

At the section 4-3-6-1 Air Quality

- Equipments used for surveying the environmental base Line data,
- Materials and methods
- Natinal Standard GuideLines
- Ambient air quality at construction phase,
- Comparison results of air quality measured and standards are shown



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There are two comparison tables of ambient air quality at site and village with standards and are follows.

Compare Table of ambient air quality at site on 8~9th October 2018 with that of NEQ(E)G guideLine

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Variation from standard
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	- 200 (1hr)	-178.04
2.	Particulate Matter PM ₁₀	µg/m ³	84.84	50	+34.84
3.	Particulate Matter PM _{2.5}	µg/m ³	49.73	25	+22.93
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	100	-76.72

From the comparison table, nitrogen dioxide and ozone are under standards and PM₁₀, PM_{2.5} are beyond the standards.

The possible reasons are:

- There were earth work and vehicles movements
- October is drying reason.

Compare Table of ambient air quality at Kon Ta La Baund Village 9th October 2018 with that of NEQ(E)G guideLine

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Variation from standard
1.	Nitrogen dioxide	µg/m ³	1.8 (8hr) 2 (1hr)	- 200 (1hr)	-198
2.	Particulate Matter PM ₁₀	µg/m ³	95.14 (8hr)	50	+45.14
3.	Particulate Matter PM _{2.5}	µg/m ³	57.79 (8hr)	25	+32.79
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	7.95(8hr)	100 (8hr)	-92.05

From the comparison table, nitrogen dioxide and ozone are under standards and PM₁₀, PM_{2.5} are beyond the standards.

The ambient air quality results from both locations (at Project Site and at Kone Ta La Baund Village), some parameters such as NO₂, and Ozone are lower than the standards values and there is no result for SO₂. Result of PM_{2.5}



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and PM₁₀ are higher than the (guideLine) standards values and there are because of construction activities at site, vehicles movement in both site and village. Moreover measured data is 8th, 9th October is rather drying season.

Monitoring of ambient air quality during operation phase

Monitoring result of ambient air quality at site on 7th ~ 9th February 2023 and compairson data

At site N17°1' 7.61", E 96°9' 25.01"

No.	Parameter	Unit	Measured Result	GuideLine Value	Deviation From Standard
1.	Nitrogen dioxide	µg/m ³	10.15 (24hr) 29.62 (1hr)	- 200 (1hr)	-170.38
2.	Sulfur Dioxide	µg/m ³	0.5 (24hr)	20 (24hr)	-19.5
3.	Particulate Matter PM ₁₀	µg/m ³	44.45 (24hr)	50 (24hr)	-5.55
4.	Particulate Matter PM _{2.5}	µg/m ³	24.57 (24hr)	25 (24hr)	-0.43
5.	Ozone	µg/m ³	2.36(24hr) 3.41(8hr)	200 (1hr)	-196.39
6.	Ammonia	ppm	1.12 (24hr)	-	-
7.	Carbon Dioxide	ppm	283.79	-	-
8.	Carbon Monoxide	ppb	0.24	-	-
9.	Volatile Organic Carbon (VOC)	ppm	0	-	-
10.	Wind Speed	mph	1.67	-	-
11.	Wind Direction	Deg	SE	-	-

Compairson table of ambient air quality at site on October 2018 with that of February 2023

No.	Parameter	Unit	Measurement result at N17°1' 7.40", E 96°9' 25.77" October 2018	Measurement result at N17°1' 7.61", E 96°9' 25.01" February 2023	More/less
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	10.15 (24hr) 29.62 (1hr)	-10.35 +7.66
2.	Sulfur Dioxide	µg/m ³	-	0.5	-
3.	Particulate Matter PM ₁₀	µg/m ³	84.84	44.4	-40.44
4.	Particulate Matter PM _{2.5}	µg/m ³	47.93	24.57	-23.36
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	2.36 3.41	-17.69 -19.87
6.	Ammonia	ppm	23.8	0.24	-23.56
7.	Carbon Dioxide	ppm	331.59	283.79	-47.8
8.	Carbon Monoxide	ppb	0.19	0.24	+0.05
9.	Volatile Organic	ppm	-	-	-



No.	Parameter	Unit	Measurement result at N17°1'7.40", E 96°9'25.77" October 2018	Measurement result at N17°1'7.61", E 96°9'25.01" February 2023	More/less
	Carbon (VOC)				

From above comparison table except carbon monoxide, all measured parameters on February 2023 are less than of October 2018.

It may conclude that ambient air quality at operation phase is better than that of construction phase.

A.4.3.6.2 Noise Environment

Parameter for noise level survey was determined according to Myanmar National Environmental Quality (Emission) GuideLines. Noise survey has been conducted at the project site in order to establish an acoustic baseLine onto which potential impacts from the proposed project may be superimposed. Noise level monitoring was also done at the same sampling points of monitoring air quality. The survey results are described as follow.

Results of Ambient Noise Level at Project Site on **October 2018**

8.10.18 -9.10.18	24 Hours Average Value, dB (A) Leq	National Environmental Quality (Emission) GuideLine Values Industrial, Commercial
Day time	51.3	70
Night time	53.75	70

From the noise level measurement result at project sit, there are noise levels at day time and night time within the standard.

Results of Noise Level in Kone Ta La Baund Village

9.10.2018	8 Hours Average Value, dB (A) Leq (11:00 am -7:00 pm)	National Environmental Quality (Emission) GuideLine Values, Residential, Institutional, Educational, Industrial, Commercial Day time 07:00~22:00 (10:00 ~ 22:00 for public holidays)
Day time	59.4	55

From the noise level measurement results, at Kone Ta La Baund 8 hours noise level value is beyond the standard and it may be vehicles movements.

Noise level measuring at operation phase



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Noise level measuring are performed at the project site on February 2023 at five locations as near main entrance gate, near reception area, wastewater area, ambient air measuring point and treated wastewater plant point. **The measuring take place 24 hours and the results are following.**

Noise level measuring results (day time) at site on February 2023

No.	Location of measurement point	Unit	Noise level day time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1' 11.90' E 96°9' 25.16	dBA	47.59	80.70	37.50	70	-22.41
2.	Near reception area N17°1' 3.32' E 96°9' 24.69"	dBA	51.46	71.2	37.2	70	-18.54
3.	Wastewater area N17°1' 0.62" E 96°9' 19.39"	dBA	47.76	80.9	39.6	70	-22.24
4.	Ambient air measurement point N17°1' 3.33" E 96°9' 17.82"	dBA	67.39	87.7	58.2	70	-2.61
5.	Treated wastewater point N17°1' 9.59' E 96°9' 9.14"	dBA	45.43	78.0	35.8	70	-29.57

Noise level measuring results (night time) at site on February 2023

No.	Location of measurement point	Unit	Noise level night time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1' 11.90' E 96°9' 25.16	dBA	48.09	82.80	42.60	70	-21.91
2.	Near reception area N17°1' 3.32' E 96°9' 24.69"	dBA	48.03	71.10	44.20	70	-21.97
3.	Wastewater area N17°1' 0.62" E 96°9' 19.39"	dBA	43.19	55.5	39.50	70	-26.81
4.	Ambient air measurement point N17°1' 3.33" E 96°9' 17.82"	dBA	47.77	50.33	45.40	70	-22.23
5.	Treated wastewater point N17°1' 9.59' E 96°9' 9.14"	dBA	45.47	59.08	31.25	70	-24.53



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From the noise level measuring of day and night , all avarage results are within the standards, but some results of maximun are beyond the standard. It should manage the mitigation of noise.

Noise level measurement for Kone Ta La Baund Village on february 2023

8~9 th -2-2023	Measurement	Average Value, dB (A)	NEQ(E)G GuideLine Values
	Day time	50.34	55
	Night time	50.95	45

Although the noise levels of dag time and night time at Kone Ta La Baund are nearly same, the night time measured levels are higher than the standard, due to night time standard is lower than that of day time. (i.e 55 and 45)

A.4.3.6.3 Workplace air quality and noise level monitoring

A.4.3.6.3.1 Workplace air quality monitoring

There are seven points for work place air quality measuring as at **Filling area (starting point), Filling area (end point), co2 plant area, brewing area (up), brewing area (down), malt milling area (up), malt milling area (down)** on February 2023. The parameters are particulate matter, PM₁₀ and PM_{2.5} and the results are following.

Results of workplace air quality monitoring on February 2023

No.	Location	PM ₁₀ µg/m ³			PM _{2.5} µg/m ³		
		Measurement result	Standard	More/ Less	Measurement result	Standard	More/ Less
1.	Filling area (starting point)	38	50	-12	17	25	-8
2.	Filling area (End point)	43	50	-7	22	25	-3
3.	CO ₂ plant area	48	50	-2	24	25	-1
4.	Brewing area (up)	40	50	-10	19	25	-5
5.	Brewing area (down)	43	50	-7	22	25	-3
6.	Malt milling area (up)	38	50	-12	20	25	-5
7.	Malt milling area (down)	41	50	-9	20.5	25	-4.5

From results of workplace air quality monitoring at 7 location of site on February 2023, all measured results ar within the standards.



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A.4.3.6.3.2 Workplace noise level monitoring

There are seven points for workplace noise level monitoring (same location of air quality monitoring) as **Filling area (starting point), Filling area (end point), CO₂ plant area, brewing area (up), brewing area (down), malt milling area (up), malt milling area (down)** on February 2023. Both of air quality and noise level are monitored simultaneously with same type apparatus. The results of noise levels are shown as following.

Results of monitoring of workplace noise level and comparison with standards

No.	Location	Noise level			More/ Less
		Unit	Measurement	Standard NEQ(E)G	
1.	Filling area (starting point)	dBA	78.1	70	+8.1
2.	Filling area (End point)	dBA	71.5	70	+1.5
3.	CO ₂ plant area	dBA	88.7	70	+18.7
4.	Brewing area (up)	dBA	75.9	70	+5.9
5.	Brewing area (down)	dBA	79.4	70	+9.4
6.	Malt milling area (up)	dBA	72.1	70	+2.1
7.	Malt milling area (down)	dBA	85.3	70	+15.3

From 7 point noise level monitoring , all noise levels are beyond the standard 70 dBA, but there be within the 8 hour exposure limit of noise level 90 dBA of OHS guideLine.

A.4.3.6.3.3 Stack Emission Measurement

- Boiler stack emission
- Generator stack (Exhaust) emission

Boiler stack emission

- Stack Specification
- Diameter x Height = OD1150 mm x 15 m
- Fuel Type - Diesel

Boiler stack emission monitoring result and comparison with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	14.27	13.57	-	-
2.	CO	mg/m ³	30	51	-	-
3.	CO ₂	mole%	2.6	5.5	-	-
4.	NO ₂	mg/m ³	24(2.65Avg)	29	460	-433.5
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	150	-

There is lack of instrument for measuring the PM₁₀ at stack.



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From the above measured result and comparison, the measured results are with the standards.

Electric Generator stack (Exhaust) emission

Electric generator specification

Capacity - 1420 kVA

Fuel Type - Diesel

Electric generator stack (Exhaust) emission monitoring result and comparison with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	19.92	20	-	-
2.	CO	mg/m ³	133	125	-	-
3.	CO ₂	mole%	0.8	0.8	-	-
4.	NO ₂	mg/m ³	154(153Avg)	152	460	-307
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	-	-

There is lack of instrument for measuring the PM₁₀ at stack.

From the above measured result and comparison, the measured results are with the standards.

A.4.3.6.4 Water Quality

At section 4-3-6-4, the assessing the water environment as ground water, ambient water and wastewater is performed and state the purposes.

During Construction Phase

Under this heading, there are

- Location points of waters samPLineg
- Analyzed results of ground water and stands

Ground Water (tube well) Quality on February 2023 (Operation phase)

Under this heading, ground waters from five place are sampled and analyzed. The analyzed results and standard water quality are stated.

Moreover, comaparison table of ground water analyzed results of construction phase with those of operation phase is stated and attached here.

Comparison table of tube well water analyzed results at project site of October 2018 with those of February 2023

Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
1	pH	-	5.93	6.4	+0.47	
2	Chloride (Cl ⁻)	mg/l	10	23.9	+22.9	



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Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
3	Total Hardness as CaCO ₃	mg/l	7	7.5	+0.5	
4	Total Iron (Fe)	mg/l	0.1	0	-0.1	
5	Sulphate (SO ₄)	mg/l	2	6	+4	
6	Total Alkalinity as CaCO ₃	mg/l	25	34	+9	
7	Turbidity	NTU	0.22	2.42	+2.2	
8	Manganese (Mn)	mg/l	ND	0.23	+0.23	
9	Aluminum (Al)	mg/l	0.02	ND	-0.02	
10	Cyanide (CN)	mg/l	ND	ND	-	
11	Arsenic (As)	µg/l	53	0	-53	
12	Total Dissolved Solids (TDS)	mg/l	-	40	+40	
13	Copper	mg/l	ND	0.1	+0.1	

From comparison table of tube well water analyzed result at project site on October 2018 and with those of February 2023

- pH, chloride, total hardness, sulphate, turbidity, manganese, total dissolved solid are increased but still in standard.
- Total iron, aluminum, arsenic are decreased but still in standard.

There is conclusion that the change of tube well quality is not significant.

Surface Water (Ambient Water) Quality

Surface water sampling and analyzed was performed at October 2018 (Construction Phase)

Under this heading, ambient water (surface water) sample as **Barlar creek's above up stream, Up stream, Beside the project sit**, Down stream were taken and analyzed. Analyzed results and standard are shown.

Moreover surface water were sampled and analyzed at the same place at construction phase for the February 2023 (Operation Phase).

From the surface waters analysis results, except coliform, all measured parameters are in standards. There are also shown the visual conditions of



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Barlar creek at October 2018, at February 2023 and at August 2023. Detail information are stated at section 4-3-6-4.

A.4.3.6.5 Wastewater Quality

In this section, there

- Similar and different between
- Distillery and Brewery,
- Methodology,
- Approaching way;
- SampLineg points,
- Photos of sampLineg and
- Analyzed results of wastewater at February 2023 are shown.

Laboratory analyzed results of wastewaters February 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	5.8	7.8	7.3	6~9
2.	Total Suspended Solids	mg/l	148	38	28	50
3.	Biochemical Oxygen Demand	mg/l	980	650	180	50
4.	Chemical Oxygen Demand	mg/l	1850	1455	386	250
5.	Total Phosphorous	mg/l	4.3	29	16	2
6.	Oil and Grease	mg/l	9	7	6	10
7.	Total nitrogen	mg/l	16	32	23	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	>1100	23	>1100	400
9.	Temperature increase	°C	<3	<3	<3	<3

The parameters of wastewater beyond the standard are coloured at above laboratory samples results.

Conclusion

Final discharge wastewater should be in standard by improving the wastewater treatment procedure.

At Emerald Brewery Myanmar Limited, there has beer installed utilized the Realtime Online Monitoring System at 5th January 2021 by Forbe



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Marshall Pte. Ltd. The same analyzed on Line data are shown at section 4-3-6-5.

Moreover the wastewaters as influent, effluent final discharge are sampled and analyzed August 2023 and these results are shown as follows.

Laboratory analyzed results of wastewaters August 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	3.6	6.7	7	6~9
2.	Total Suspended Solids	mg/l	252	9	12	50
3.	Biochemical Oxygen Demand	mg/l	1480	26	28	50
4.	Chemical Oxygen Demand	mg/l	3800	76	94	250
5.	Total Phosphorous	mg/l	1.2	2.8	1.2	2
6.	Oil and Grease	mg/l	49.5	9	8	10
7.	Total nitrogen	mg/l	6.8	3.2	2.6	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	210	9	9	400
9.	Temperature increase	°C	<3	<3	<3	<3

From the laboratory analysis results, all parameter of effluent and final discharge wastewater are in standards.

A.4.3.6.6 Soil Quality

In this section, there

- Soil sample point at October 2018
- Photo of soil sample
- Analyzed results of soil quality, October 2018
- Soil sample point at February 2023
- Analyzed results of soil quality, February 2023 and
- Comparison table of soil analyzed results at October 2018 with those of February 2023, are shown and comparison table is shown as follow.

Comparison table of analyzed results of soil at October 2018 with those of February 2023



No	Parameters	Unit	Analyzed result Oct 2018	Analyzed result Feb2018	More / Less
1	pH	-	6.1	6.8	+0.7
2	Chloride (Cl)	g/kg soil	0.15	0.017	-0.133
3	Total Iron (Fe)	mg/kg soil	7.5	<0.5	-7.0
4	Copper	mg/kg soil	ND	0.05	+0.05
5	Cyanide (CN)	g/kg soil	0.15	ND	-0.15
6	Aluminum	mg/kg soil	0.35	<0.05	-0.3
7	Manganese (Mn)	mg/kg soil	ND	<01	+<01
8	Arsenic (As)	mg/kg soil	ND	<0.025	+0.025
9	P- AlkaLineity	mmol/l extract	0	0	-
10	Total AlkaLineity	mmol/l extract	0.8	1.8	+1.0
11	Extractable Acidity	cmol/kg soil	4.25	2.5	-1.75

From the above comparison table, pH, copper, manganese, arsenic and total alkalinity are more and chloride, total iron, cyanide, aluminum, p-alkalinity and extractable acidity are less. More and less quality are a little and it may conclude, the soil cyanide did not change significantly.

A.4.3.6.7 Vibration Measurement

In this section, there

- Location of vibration measurement points (latitude & Longitude)
- Photo of vibration measurement points
- Vibration results
- Standard and
- Photos of vibration measuring are shown.

Conclusion

Vibration measurement results in maximum Peak Vector (pvs-mm/sec) are 0.67, 0.93 and 1.53 at manastery, near wastewater treatment area and near entrance gate respectively. The maximum PVS for ancient and historic buildings is 3 mm/sec and as no three vibration results are in limit.

A.4.4 Biological Characteristics

In this section 4-4. Biological characteristics there,

- Introduction for Biodiversity
- Purposes of Assessment for Biodiversity
- Regulatory and Legislative Overview
- Survey
- Description of the Study Area and Project Environment
- Survey Range on Biodiversity



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- Survey Methodology
- Classification of Impact Levels
- Impact Analysis about Biodiversity
- Discussion for Plants and Animals are described.

Conclusions for Biodiversity

Plant density and species abundance are low in and around the project area. Grass and herbs vegetation types are mainly composing of land area. The proposed project area is slightly significant for biodiversity, but the surrounding area, aquatic environment Barlar Creek which is branch of Nga Moe Yeik Chaung is important for aquatic ecosystem and environmental values of fresh water sources.

There will be a direct impact on biological community especially to the existing aquatic organisms and vegetation. The extent of the impact on fauna and flora is investigated only in the site specific and the duration of the impact is assumed as long term which all depends on environmental management. Although, the project area is slightly significant for biodiversity, the emission of CO₂ from plants and disposal of wastewater into the creek lead to pollution.

Remarks on the finding significance of aquatic species (invasive species) in the water of Barlar Creek nearby the proposed project area

The proposed project area is on the low land and close to the Barlar Creek. The creek is one the branches of Ngamoeyeik Chaung/River. The water of Creek is shallow less than five feet depth and generally less than one meter and also the water is more turbid found during the study period before starting the project. Barlar creek is considered as already polluted in the water. Small numbers of fish and bird species were already observed, instead invasive species were largely encountered. They are *Mimosa pigra* (Ye-subok), *Pomacea canaliculate* (Golden Apple Snail) *Hypostomus Plecostomus* (Sucker-Mouth Fish). Those invasive species are dangerous for the native species means it can reduce and disappear the native species and also destroy the environment where they exist. This observation of invasive species in the Barlar creek is great concern as they can spread to the main river of Ngamoeyeik Chaung/river. But it may not relate by the Project activities. However, the project developer should be cooperated if there have a management plan to control/remove those invasive species.

A.4.5 Socio-Economic Characteristics

In this section there,

- Source of scondary data and aavailable website,
- Introduction for Socia-Economic,
(Overall profile; Demographic details; Adminstration devision; land use patter; Ethnicity, Language and Religion; Education; Healthcare Services; Occupational Patterns,



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are shown at first and second parts as 4-5-1 and 4-5-2. The third part, **Socio Impact Assessment** was shown by the following and heading as 4-5-3.

- Introduction
 - Objectives of the Social Impact Assessment (SIA)
 - Scope of Limitation of SIA
- Social BaseLine Environment
 - SIA Study Area
 - Methodology and Approach
(Materials and Methods; Desktop Assessment; Field Assessment)
 - Social BaseLine Results
(Assessment Geography; Methodology and Approach)
 - Socio-Economic BaseLine Conditions (as of 2018 of construction phase)
(Household Information, Energy Sources and Utilizations; Water Sources and Utilizations; Sanitation and Waste Management; Types of housing-Units; Transportation)
 - Socio-Economic BaseLine Conditions (as of March 2023 operation phase)
(Household Information; Economic Status; Source of Hygiene)
 - Livelihood Activities along the Bar Lar Creek
- Potential Impact Assessment and Mitigation Measures
 - Impact Assessment Methodology
 - Impact Assessment
(Identification of Sources of Potential Impacts; Evaluation of Impacts)
 - Mitigation Measures

As the fourth part, 'Conclusion Upon Social Impact Assessment' was shown as following as 4-5-4.

From the Social Impact Assessment, there are three negative impact as -

- Bad odor (Minor)
- Nutrient pollution [the growth of hyacinth -] [moderate]
- Livelihood loss (moderate)

Bad odor can be mitigated by EoP and EMP procedure and planting the native plants as the wind shield on the bank of Barlar creek.

Nutrient pollution should be considered the other causes on

- Unknown inlet sources to creek
- Farming (kettle, chicken, duck breeding, fish farming)
- Agriculturing
- Invasive species (plant, animal)
- Throwing the household debris



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However project should participate the mitigation action and livelihood loss should be mitigated by assigning the appropriate villagers when matching the qualifications and requirement.

A.4.5.5 Facts about Social Conditon of Hlegu Township

In this section there,

- Average per capita income
- Number of employment and
- Unemployment in Hlegu Township are shown as 4-5-5.

A.4.5.5.B Mingalardon Township

The avarage per capita income and employment and unemployment of Mingalardon Township are shown as section 4-5-5-B.

A.4.6 Cultural Heritage Impact Assessment (CHIA)

The project area is in the Hlegu Township of Yangon Region area. The location can be considered that is very close to the settlement area of local community. In this way, it could be related to the religious complexes like monasteries and religious temples or pagodas. Sometimes it will be faced with the festivals ceremonies and other ceremonial events. Therefore, the assessment must be carefully to measure the potential cultural sites and degree of impacts depending on the sociocultural and socioeconomic information.

A.4.6.1 Assessment Strategy

For the assessment strategy, there are suitable methods of CHIA field works as follows-

- (1) Material cultural analysis
- (2) Intangible cultural heritage
- (3) Pollutants discharged by the project operation stage

A.4.6.2 Terms of Reference

Area of CHIA is mostly concerned with religious complexes and the local intangible cultural heritages. There are three portions for the priority of CHIA for the project area as follows –

- (1) The significance of religious complexes must be assessed with the correlation of sociocultural and socioeconomic condition of the villages around the project area.*
- (2) The potential impacts must be measured with the references of the development and technical assistance of the Townnship including the project area.*
- (3) The relationship between the project area and the local religious traditions or festivals that can be celebrated inside and around the*

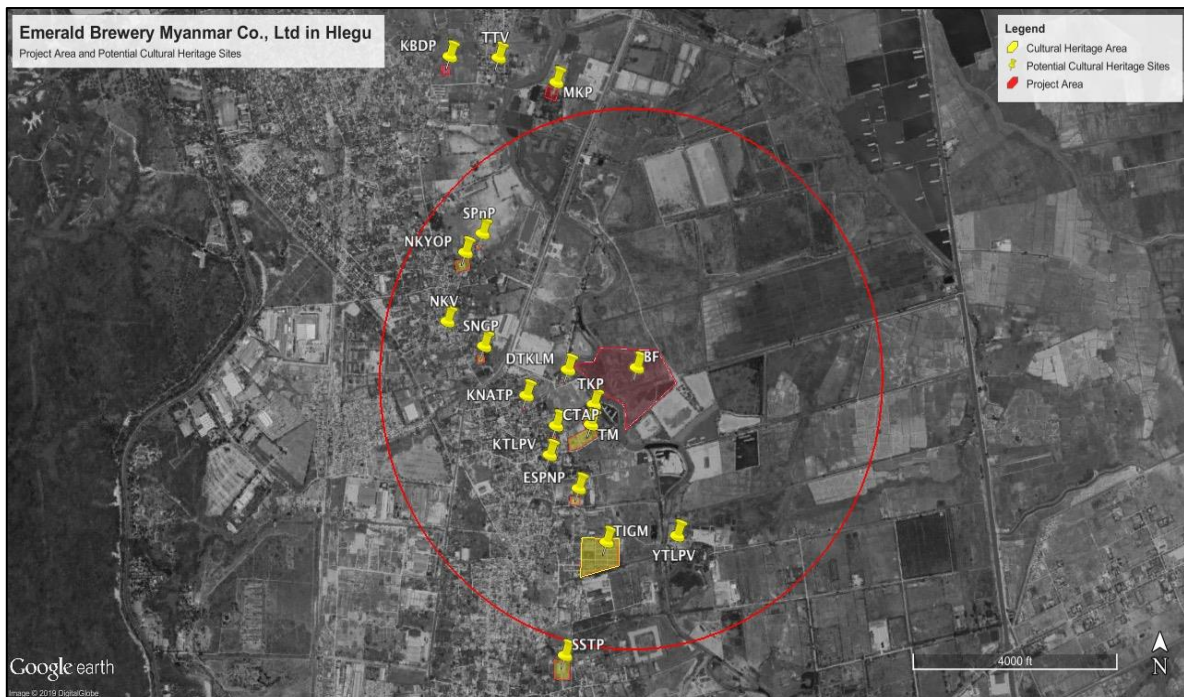


Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited associated places of religious complexes must be assessed to be able to draw the suitable mitigation process.

A.4.6.3 Potential Places for Cultural Heritage Impact Assessment Process

In the assessment area, the nearest place of the *potential cultural heritage site* (PCHS) is located c.100m away from the Boundary of project area and the outermost place is c.3.6km away. from the project territory, the potential places are (13) places concerning the religious complexes.

This study area is adequately efficient to investigate the cultural heritage and its association around the project area where located on the eastern bank of *Barlar Creek*.



The Project Area and Potential Cultural Heritage Sites

Yellow area is potential places of local religious edifice for cultural heritage impact assessment. Red area is the parameter of project area.

KBDP=Kyeik Boddhi Pagoda, TTV=Ta Kon Taing Village, MKP=Moe Kaung Pagoda, SPnP=Shin Punnya Pagoda, NKYOP=New Khwe Ywar Oo Pagoda, NKV=Newl Khwe San Pya Village, SNGP=Shwe Nat Gu Pagoda, DTKLM=Dhamma Thiddhi Kaw Line Monastery, KNATP=Koe Nawin Aung Thiddhi Pagoda, TKP=Thai Kyaung Pagoda, KTLPV= Kone Ta La Paung Village, CTAP=Chan Thar Aye Pagoda, TM=Thai Monastery, ESPNP=Eissa Punna Pagoda, TIGM=Thae Inn Gu Monastery, YTLPV=Yay Ta La Baund Village, SSTP=Shwe Se Ti Pagoda

A.4.6.4 Villages around the Project Area

There are four villages within the assessment area around the project boundary. They are Kone Ta La Baund, Ta Kon Taing, Nwel Khwe San Pya and Yay Ta La Baund. In Ta Kon Taing village, there are *two* religious places; Kyeik Bodhi Pagoda and Moe Kaung Pagoda. In Nwel Khwe San Pya village, there are *three* places; Shin Punnya Pagoda, Nwel Khwe Ywar Oo Pagoda and Shwe Nat Gu Pagoda. Kone Ta La Baund village, there are *eight* places; Dhamma Thiddhi Kaw Line Monastery, Koe Nawin Aung Thiddhi Pagoda, Thai Kyaung Pagoda, Thai Monastery, Chan Thar Aye Pagoda, Eissa Punna Pagoda, Thae Inn Gu Monastery and Shwe Se Ti Pagoda.

A.4.6.5 Conclusion of Cultural Heritage Impact Assessment for EIA

Within the project territory, there are many religious complexes. The potential impacts might be challenged as some pollutants for the visual and ventilation as well as accessibility to the Religious complexes. Therefore, the study area for Cultural Heritage Impact Assessment work is mainly focused on the religious complexes and associated local community of neighboring villages around the project area.

If some archaeological remains and cultural significance will be come out in assessment process, it will be reported to the heritage authority of Department of Archaeology and National Museum, Ministry of Religious Affairs and Culture. Moreover, every part of assessment process will follow the legal requirement; The Protection and Preservation of Cultural Heritage Regions Laws and Rules (1998).

A.4.7 Health Impact Assessment

In this section, there

- Gaals of study
- Survey range on HIA and
- Legal requirement are shown as first part.

In health Impact Assessment, there

- Overall Introduction
- Health impact assessment
(Potential users; Development; Methods of assessment)
- Introduction
(Legal, Administrative and Legislative Framework; Objectives and Scope of Work; Study Methodology)
- Community Health Profile of the Surveyed Communities
(The Existing Demographic Profile Related to Health Status)
- HEALTH SERVICES



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(Nearest Medical Care; Health Education Program in Local Community)

- Potential Health Impacts and Mitigation Measures

(Water Supply and Waste Treatment System; Noise pollution; Impact on Initial Planning and Lay out; Community health impacts)

- Health Impact Management and Monitoring Plan and
- Limitation of the Study

Are shown as second part.

Finally health componet of Hlegu and Mingalardon Township are shown.

A.4.8 Traffic Assessment Study

In this section, there

- Methodology of Traffic Assessment Study
(road capacity relative to traffic volume; traffic condition with V/C ratio)
- Objectives of Traffic Impact Assessment
- Assessment Period (07:00 am to 12:00 noon and 13:00 pm to 16:00 pm)
- Scope of Traffic Study
- Background Traffic Volume
- Traffic Volume Study Results and

Conclusion are shown,

Conclusion

According to the above survey results, the traffic load of the No.3 Highway road is not significant different between the weekday and weekend. The traffic ratio of public and other use and factory use is 10:1. The No.3 Highway road is not traffic jam due to the factory operation activities.

A.4.9 Determining whether the defined AOI is sufficient

At section 4-9, there

- It is conducting the comment of ECD of (A) of approving scope report,
- Defining the study limit as 1.5 km radius of core of project and Mingalardon and Hlegu Townships and
- Defined AOI is sufficient at conclusion column for each scope.



A.5.0 KEY POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In this chapter, we

- Identify project activities that could beneficially or adversely impact the environment,
- Predict and assess the environmental impacts of such activities,
- Examine each environmental aspect-impact relationship in detail and identify its degree of significance,
- Identify possible mitigation measures for these project activities and select the most appropriate mitigation measure, based on the reduction in significance achieved and practicality in implementation.

A.5.1 Methodology and Approach

At that paragraph 6-1 states the six objectives and EMP as tool to ensure the impacts are properly managed.

A.5.1.1 Methodology

Four main methods were used by

- Reviewing the project documents and other information:
- Site visits
- Specialized data collection
- Public Consultation (3 times)

Three public meeting are stated as

Appendix (1)

Appendix (7)

Appendix (8)

A.5.1.2 Approach

Aspects and impacts associated with the construction and operation and decommissioning phases identified during the EIA procedure shall be extensively assessed. Comprehensive mitigation measures informed by the specialist reports as well as consultation with key stakeholders shall be in the report as well as in the Environmental Management Plan.














A.5.2 Brief Description of the Process







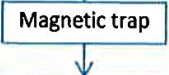





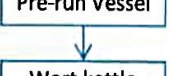
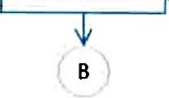
Emerald Brewery Myanmar Limited used rice and malt as main raw materials for manufacturing of beer. Beer is dilute solution of ethanol, obtaining its characteristic flavor from the use of hop and malt, which is the predominant source of fermentable carbohydrates and other yeast nutrients. Hops are the source of bitter components.

The flow diagram of beer production was already shown at section 3-17 and it be here.



Brewery processing flow chart

Process	Details
	Rice sack delivered from supplier.
	QA analyze quality parameters.
	Moving and storing rice in warehouse.
	Rice feeding process into rice buffer tank.
	Foreign matters removal process to clean rice.
	Dust removal process by dust collector.
	Stone removal process.
	Iron removal process.
	Dust removal process
	Rice milling process to get rice powder.
	Rice weighing process for specified batch of brewing.
	Rice hydrolyzing process to convert rice powder into sugar.
	

Process	Detail
	Malt delivered from supplier.
	QA analyze quality parameters.
	Malt delivery process from truck into buffer.
	Foreign matters removal process to clean malt.
	Stone removal process.
	Storing cleaned malt prior being used in the brew house.
	Iron removal process.
	Dust removal process.
	Malt milling process to convert malt grain into grist.
	Malt weighing process for specified batch of brewing.
	Malt hydrolyzing process to convert malt into sugar (During this process, the sugar from rice cooker is transferred into this Mash kettle)
	Separation process to collect wort then remove spent grain and others into spent grain bin (being sold as animal feed).
	Wort collection and preparation processes for next step.
	Wort boiling process with hop addition during the process.

Beer Fermentation and Packing Process

Process	Detail
<pre> graph TD B((B)) --> Whirlpool[Whirlpool] Whirlpool --> WortCooling[Wort cooling] WortCooling --> FermenterTank[Fermenter tank] YeastStorage[Yeast storage tank] --> FermenterTank FermenterTank --> Centrifuge[Centrifuge] Centrifuge --> TreatmentTank[Treatment tank] TreatmentTank --> Cooling[Cooling] Cooling --> Stabilizer[Stabilizer] Stabilizer --> Filter[Filter] Filter --> Carbonator[Carbonator] Carbonator --> BrightBeerTank[Bright beer tank] BrightBeerTank --> Packing[Packing] Packing --> Warehouse[Warehouse] </pre>	<p>Separation process to remove any precipitates or adulterants from wort.</p>
	<p>Cooling down process prior be transferred for further fermentation process.</p>
	<p>Yeast is added into the cold wort.</p>
	<p>Fermentation process to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.</p>
	<p>Yeast removal process from beer.</p>
	<p>Maturation process at low temperature to let yeast settling down to the bottom of treatment tank.</p>
	<p>Cooling down process to prepare the batch before filtration.</p>
	<p>Addition process of stabilizing agents.</p>
	<p>Filtration process for particle removal to clarify beer.</p>
	<p>Carbon dioxide adjusting process to appropriate carbon dioxide level.</p>
	<p>Storing bright beer prior be transferred to filling process.</p>
	<p>Filling process (bottle, can or keg containers) with pasteurization prior being packed in packaging and arranged on the pallet.</p>
	<p>Storing process of finished products in warehouse.</p>

A.5.3 Description of Possible Environmental Impacts and Cumulative Impacts

In this section, there are

- Necessary to minimized the negative impact and enhance the positive impacts
- Input and output of the process.



A.5.3.1 Environmental Impact Assessment

Emerald Brewery Myanmar Limited is going to manufacturing and distribute beer as bottles, cans and keg. Environmental impacts are classified on construction, operation and decommissioning phases.

A.5.3.1.1 Environmental Impact Assessment

Environmental impacts and main sources by Emerald Brewery Myanmar Limited for construction phase are summarized at section 5.3.1.1

A.5.3.1.2 Environmental Impacts and Sources during Operation Phase

Environmental impacts and main sources by **Emerald Brewery Myanmar Limited** for operation phases are summarized at section 5-3-1-2.

A.5.3.1.3 Environmental Impacts and Sources during Decommissioning Phase

Environmental impacts and main sources by Emerald Brewery Myanmar Limited for decommissioning phases are summarized at section 5-3-1-3.

A.5.3.2 Environmental Impacts Significance

Matrix method for evaluation of significance of the impact is shown at section 5-3-2 and it is follow.

$$\text{Significance} = (\text{Duration} + \text{Extent} + \text{Severity}) \times \text{Probability}$$

There are also rating for each particular and explanations.

Evaluation of impact significance from the three phases of proposed project before mitigation are shown at section 5-3-2-1.

A.5.3.3 Impacts and Mitigation Measure

Mitigation measures of environmental impacts for the proposed project three phases due to the Emerald Brewery Myanmar Limited are shown at section 5.3.3.1, 5.3.3.2 and 5.3.3.3.

A.5.3.4 Evaluation Residual Impact Significances

After mitigation measure impact significances are reduced and residual significances for proposed project three phases are evaluation at section 5.3.4.1, 5.3.4.2 and shown.

A.5.3.5 Comparison tables of impact significance before and after mitigation

Comparison tables of impact significance before and after mitigation (i.e residual impact significances) for proposed project three phases are shown at section 5.3.5.1, 5.3.5.2 and 5.3.5.3 and attached here.



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A.5.3.5.1 Comparison table of impact significance before and after mitigation for the construction phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Minor	-20	
6.	Ground water and surface water	48	Minor	32	Minor	-16	
7.	Waste water and solid wastes	48	Minor	32	Minor	-16	
8.	Socio economic	48	Minor	32	Minor	-16	

A.5.3.5.2 Comparison table of impact significance before and after mitigation for the operation phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	60	Minor	36	Minor	-24	
2.	Air pollution	66	Minor	54	Minor	-12	
3.	Noise	60	Minor	54	Minor	-6	
4.	Biodiversity	60	Minor	36	Minor	-24	
5.	Archaeology and Heritage	36	Minor	36	Minor	-	
6.	Ground water and surface water	60	Minor	36	Minor	-24	
7.	Waste water and solid wastes	60	Minor	54	Minor	-6	
8.	Socio economic	60	Minor	36	Minor	-24	

A.5.3.5.3 Comparison table of impact significance before and after mitigation for the decommissioning phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Negligible	-20	



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6.	Ground water and surface water	48	Minor	28	Negligible	-20	
7.	Waste water and solid wastes	48	Minor	28	Negligible	-20	
8.	Socio economic	48	Minor	28	Negligible	-20	

A.5.4 Key Issues to be addressed in the EIA Phase and Mitigation Measures

There key issues to be addressed ins(EIA) phase and mitigation measure are shown at section 5-4 and conculed traffic, air quality, noise level, biodiversity, archaeology and heritage, ground and surface water (hydrology), wastewater and solid wastes and socio-economic impact at 5-4-1, 5-4-2, 5-4-3, 5-4-4, 5-4-5, 5-4-6, and 5-4-8. Moreover mitigation measure upon ground and surface water, wastewater, solid wastes, socio-economic are shown at section 5.4.6.

A.5.5 Cumulative Impacts

there cumulative impact, assessment methodology for cumulative impacts and possible cumulative compare are shown at section 5.5.

A.6 Environmental Management Plan

A.6.1 Objectives of Environmental Management Plan

At that paragraph 6-1 states the six objectives and EMP as tool to ensure the impacts are properly managed.

A.6.2 The constitutional arrangement for EMP

Managing director is reponsible person of the constitutional arrangement and six branches of project are members and organization chart is shown.

A.6.3 Set up the oraganization of environmental and social management plan and monitoring team

There are six praticipants, are for leader and, five for members of environmental management team.

There are five praticipants, one for leader and four for member of monitoring team.

The two teams are shown at section 6-3.

A.6.3.1 Duties and Responsibilities

Duties and responsibilities of leader and members are explained at paragraph 6-3-1.

A.6.4 Environmental Management Plan and Monitoring Plan

A.6.4.1 Ambient Air Quality Management Plan and Monitoring Plan

Ambient air quality management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation**



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Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for ambient air quality; Estimated Budget and Responsible Team at the paragraph 6-4-1 and form of monitoring plan is attached here.

Form of Ambient Air Monitoring Plan

Emerald Brewry Myanmar Limited													
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget Allotment	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The particulate matters PM _{2.5} PM ₁₀	µg/m ³ µg/m ³	HAZ Scanner Model EPAS	October April	Form of administrative office N 17°1' 7.67", E 96°9' 25.01"	2000,000	Twice a year						10 – 1 year 25 – 24 hours 20 – 1 year 50 – 24 hours
2.	Sulfur Dioxide	µg/m ³											20 – 24 hours 500 – 10 minutes
3.	Nitrogen Oxide	µg/m ³											40 – 1 year 200 – 1 hour
4.	Ozone	µg/m ³											100 – 8 hours daily maximum

A.6.4.1.A Workplace Air Quality Management Plan and Monitoring Plan

Workplace air quality management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for workplace air quality; Estimated Budget and Responsible Team** at the paragraph 6-4-1-A and form of monitoring plan is attached here.

Report Form of Workplace Air Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM ₁₀	mg/N m ³	PM meter (Aeroqual 500)	October April	- filling area (starting point) -filling area (end point)	4200,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98		- co ₂ plant area -brewing area (up)								2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³			- brewing area (down) - malt milling area (up) - malt milling (down)								460 mg/Nm ³

A.6.4.1.B Boiler Stack Gas Quality Management Plan and Monitoring Plan

Boiler stack gas quality management and monitoring reporting is stated with the subheadings of **Objectives;Legal Requirement; Overview**



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maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for boiler stack gas quality; Estimated Budget and Responsible Team at the paragraph 6-4-1-B and form of monitoring plan is attached here.

Report Form of Boiler Stack Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquol 500)	October April	- boiler stack	600,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98										2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³											460 mg/Nm ³

A.6.4.1.C Electric Generator Exhaust Gas Quality Management Plan and Monitoring Plan

Electric generator exhaust gas quality management and monitoring reporting is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for generator exhaust gas quality; Estimated Budget and Responsible Team at the paragraph 6-4-1-C and form of monitoring plan is attached here.

Report Form of Electric Generator Exhaust Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquol 500)	October April	Electric generator exhaust pipe	600,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98		N17°1'5.79" E 96°9'18.61"								2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³											460 mg/Nm ³

A.6.4.2 Noise Level Management Plan and Monitoring Plan

A.6.4.2.A Noise Level at Baundaires

Noise level at boudaires management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation



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Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for noise leve at Baundaries; Estimated Budget and Responsible Team at the paragraph 6-4-1-A and form of monitoring plan is atached here.

Form of Noise Level Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The Noise	dBA	Noise meter	October April	-Near main entrance gate - Near reception area - Wastewater area - In front of main office - Treated wastewater pond	1000000	Twice a year						70

*NEQ(E)G – National Environmental Quality (Emission) Guidelines

A.6.4.2.B Workplace Noise Level Management Plan and Monitoring Plan

Warkplce noise level management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for workplace noise level; Estimated Budget and Responsible Team** at the paragraph 6-4-1-B and form of monitoring plan is atached here.

Report Form of Workplace Noise Level Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	The Noise	dBA	Noise meter	October April	- filling area (starting point) -filling area (end point) - co2 plant area -brewing area (up) - brewing area (down) - malt milling area (up) - malt milling (down)	1400,000	Twice a year						70

A.6.4.3 Vibration Management Plan and Monitoring Plan

Vibration management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for vibration level; Estimated Budget and Responsible Team** at the paragraph 6-4-3 and form of monitoring plan is atached here.



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Report Form of Vibration Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Vibration	mm/sec	Vibration meter	October April	- near wastewater area - monastery (Amayawatty) - main entrance gate	1800,000	Twice a year						3mm/sec

A.6.4.4 Underground Water Quality Management Plan and Monitoring Plan

Underground water quality management and monitoring is stated with the subheadings of **Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for under ground water quality; Estimated Budget and Responsible Team** at the paragraph 6-4-4 and form of monitoring plan is attached here.

Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health		
								Previous and Present Data Comparison Method							
								Previous Data		Present Data		More/ Less			
								Date	Value	Date	Value				
	Aluminum	mg/L	Spectrophotometer	October	- Kone Ta La	3000,000	Twice a year						0.02		
	Arsenic	mg/L	APHA-AWWA-WPCF	September	Baund										10
	Chloride	mg/L	APHA-AWWA-WPCF		- Yay Ta La										250
	Copper	mg/L	Spectrophotometer		Baund										2
	Cyanide	mg/L	Spectrophotometer		-Ta Kon Taing										0.07
	Manganese	mg/L	Spectrophotometer		- Nwel Khwe										0.4
	pH	-	pH meter		-Emerald Beer										6-9
	Sulfate	mg/L	APHA-AWWA-WPCF												250
	Total Alkalinity as CaCO ₃	mg/L	APHA-AWWA-WPCF												-
	Total Dissolved Solids	mg/L	APHA-AWWA-WPCF												600
	Total Hardness as CaCO ₃	mg/L	APHA-AWWA-WPCF												500
	Total Iron	mg/L	APHA-AWWA-WPCF												0.3
	Turbidity	NTU	Turbidity meter												5

A.6.4.5 Surface Water Quality Management Plan and Monitoring Plan

Surface water quality management and monitoring is stated with the subheadings of **Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for surface water quality; Estimated Budget and Responsible Team** at the paragraph 6-4-5 and form of monitoring plan is attached here.



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Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper stream -Middle Stream -Down Stream -Lateral Side	Twice a year	2400,000					50	
2	Active ingredients/ Antibiotics		Spectrophotometer									-	
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF									250	
4	Oil and grease	mg/l	APHA-AWWA-WPCF									10	
5	pH	-	pH meter									6-9	
6	Temperature increase	C	Thermometer									<3	
7	Total Coliform bacteria	100ml	Plate count									400	
8	Total phosphorus	mg/l	Spectrophotometer									5	
9	Total suspended solids	mg/l	APHA-AWWA-WPCF									50	
10	Total nitrogen	mg/l	APHA-AWWA-WPCF									10	

A.6.4.6 Wastewater Quality Management Plan and Monitoring Plan

Wastewater quality management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for wastewater quality; Estimated Budget and Responsible Team at the paragraph 6-4-6 and form of monitoring plan is attached here.

Report Form of Wastewater Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	January February	- wastewater treatment plant inlet	Every month	10800,000					50	
2	Active ingredients/ Antibiotics		Spectrophotometer	March April	- wastewater treatment outlet							-	
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF	May June	- treated final discharge wastewater							250	
4	Oil and grease	mg/l	APHA-AWWA-WPCF	July August								10	
5	pH	-	pH meter	September								6-9	
6	Temperature increase	C	Thermometer	October								<3	
7	Total Coliform bacteria	100ml	Plate count	November								400	
8	Total phosphorus	mg/l	Spectrophotometer	December								5	
9	Total suspended solids	mg/l	APHA-AWWA-WPCF									50	
10	Total nitrogen	mg/l	APHA-AWWA-WPCF									10	



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A.6.4.7 Soil Quality Management Plan and Monitoring Plan

Soil quality management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for soil quality; Estimated Budget and Responsible Team** at the paragraph 6-4-7 and form of monitoring plan is attached here.

Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More / Less	
								Date	Value	Date	Value		
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000						
၂။	Arsenic	mg/kg											
၃။	Chloride	mg/kg											
၄။	Copper	mg/kg											
၅။	Cyanide	mg/kg											
၆။	Extractable Acidity	cmol/kg											
၇။	Manganese	mg/kg											
၈။	P-Alkalinity	mmol/l.extract											
၉။	Total Alkalinity	mmol/l.extract											
၁၀။	pH	-											
၁၁။	Total Iron	mg/kg											

A.6.4.8 Odor Management Plan and Monitoring Plan

Odor management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for odor quality; Estimated Budget and Responsible Team** at the paragraph 6-4-8 and form of monitoring plan is attached here.

Report Form of odor Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Odor	5-10	Odor meter	April October	- near main entrance gate - near reception wastewater area, - in front of main office - treated wastewater pond.	600,000	Twice a year						5-10



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A.6.4.9 Traffic Management Plan and Monitoring Plan

Traffic management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for traffic affairial; Estimated Budget and Responsible Team at the paragraph 6-4-9 and form of monitoring plan is atached here.

Report Form of Traffic Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Accident and injury record	frequency and severity	Documentation of record	The whole month	- adminastration office	600,000	Every month						

A.6.4.10 Biodiversity Management Plan and Monitoring Plan

Biodiversity management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for invasion of alein species; Estimated Budget and Responsible Team at the paragraph 6-4-10 and form of monitoring plan is atached here.

Report Form of Invasion of Alein Species

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Invasion of alein species	frequency and severity	Document the record	every month	Hlegu and Mingalardon	600,000	The whole mont						

A.6.4.11 Cultural and Heritage Management Plan and Monitoring Plan

Cultural and heritage management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for cultural and heritage; Estimated Budget and Responsible Team at the paragraph 6-4-11 and form of monitoring plan is atached here.



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Report Form of Cultural and Heritage Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Information about antique object, ancient monument, cultural heritage	frequency and evidence	Collecting the information	The whole month	Hlegu and Mingalardon	100,000	monthly						

A.6.4.12 Waste Materials Management Plan and Monitoring Plan

Waste materials management and monitoring is stated with the subheadings of Objectives; Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for waste materials; Estimated Budget and Responsible Team at the paragraph 6-4-12 and form of monitoring plan is attached here.

Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper stream - Middle Stream - Down Stream - Lateral Side	Twice a year	2400,000						50
2	Active ingredients/ Antibiotics		Spectrophotometer										-
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF										250
4	Oil and grease	mg/l	APHA-AWWA-WPCF										10
5	pH	-	pH meter										6-9
6	Temperature increase	C	Thermometer										<3
7	Total Coliform bacteria	100ml	Plate count										400
8	Total phosphorus	mg/l	Spectrophotometer										5
9	Total suspended solids	mg/l	APHA-AWWA-WPCF										50
10	Total nitrogen	mg/l	APHA-AWWA-WPCF										10



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Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Aluminum	mg/L	Spectrophotometer	October	- Kone Ta La Baund	3000,000	Twice a year						0.02
	Arsenic	mg/L	APHA-AWWA-WPCF	September	- Yay Ta La Baund								10
	Chloride	mg/L	APHA-AWWA-WPCF		- Yay Ta La Baund								250
	Copper	mg/L	Spectrophotometer		-Ta Kon Taing								2
	Cyanide	mg/L	Spectrophotometer		- Nwel Khwe								0.07
	Manganese	mg/L	pH meter		-Emerald Beer								0.4
	pH	-											6-9
	Sulfate	mg/L	APHA-AWWA-WPCF										250
	Total Alkalinity as CaCO ₃	mg/L	APHA-AWWA-WPCF										-
	Total Dissolved Solids	mg/L	APHA-AWWA-WPCF										600
	Total Hardness as CaCO ₃	mg/L	APHA-AWWA-WPCF										500
	Total Iron	mg/L	APHA-AWWA-WPCF										0.3
	Turbidity	NTU	Turbidity meter										5

Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More /Less	
								Date	Value	Date	Value		
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000						
၂။	Arsenic	mg/kg											
၃။	Chloride	mg/kg											
၄။	Copper	mg/kg											
၅။	Cyanide	mg/kg											
၆။	Extractable Acidity	cmol/kg											
၇။	Manganese	mg/kg											
၈။	P-Alkalinity	mmol/l.extract											
၉။	Total Alkalinity	mmol/l.extract											
၁၀။	pH	-											
၁၁။	Total Iron	mg/kg											

A.6.4.13 Occupational Health and Safety Management Plan and Monitoring Plan

Occupational health and safety management and monitoring is stated with the subheadings of **Objectives;Legal Requirement; Overview maps and site layout maps, images, aerial photos, satellite image; Implementation Schedule; Management Action ; Monitoring plan; Methodology; Form of monitoring for occupational health and safety; Estimated Budget and Responsible Team** at the paragraph 6-4-13 and form of monitoring plan is attached here.



Report form of occupational health and safety

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	-sick leaves -average number of working hours for employee -occupational illness -days of absence caused by occupational illness -complaints and grievance information	No. No. No. No.	Data collection and comparison	every month	leave, record section of Administrative Department	every month	600,000						

A.7.0 RISK ASSESSMENT

A.7.1 Natural Disaster, Assessment Including Climate Change

In this heading there

- Natural disaster faced 1900 to 2014
- (earthquake, flood, landslide, storm, wildfire)
- Shortening of monsoons
- Increasing in sea surface temperature
- Increasing in heat and drought indices
- Increasing in clear sky days
- Increasing in risk of flooding
- Increasing in intensity of cyclone/strong winds/strong waves
- Rising sea level are shown at section 7.1.

A.7.2 Risk Assessment for Beer Manufacturing Plant

In this section, there

- **Impact to the air** by the manufacture and distribution of beer with such-headings as **Impacts; Risk assessment, The impacted areas, The impacted amount and duration, The mitigation measures.**
- **Impact to water** by the manufacture and distribution of beer with such-headings as **Impacts; Risk assessment, The impacted areas, The impacted amount and duration, The mitigation measures.**
- **Impact to the soil** by the manufacture and distribution of beer with such-headings as **Impacts; Risk assessment, The impacted areas, The impacted amount and duration, The mitigation measures.**



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- **Impact of the noise** by the manufacture and distribution of beer with such-headings as **Impacts; Risk assessment, The impacted areas, The impacted amount and duration, The mitigation measures.**
- **Impact of the odor** by the manufacture and distribution of beer with such-headings as **Impacts; Risk assessment, The impacted areas, The impacted amount and duration, The mitigation measures.**

was shown at section 7-2.

A.7.3 Natural Hazards and Industrial Hazards

Natural Hazards

In this section there six natural hazard groups and 21 natural hazards defined at 2014 are summarized in table.

Moreover, earthquake, flood, storm and lightning are assessed for the project at section 7-3.

A.7.4 Evaluation of Risk Assessment for Natural Hazard

There is Risk Matrix Calculation for hazard and it is shown at Appendix (11) and its equation is as follow.

Risk assessment = Probability x Severity
--

In this section calculations of risk assessment for , earthquake, flood, storm and lightning as before and after mitigation and comparison table is shown as follow.

Comparison of Risk Assessments of Natural Hazards (Earthquake, Flood, Storm and Lightning) before and after Mitigation/Enhancement Mitigation

SR. NO.	Natural Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	
1.	Earthquake	6	Medium	2	Low	-4
2.	Flood	6	Medium	2	Low	-4
3.	Storm	4	Medium	2	Low	-2
4.	Lightning	4	Medium	2	Low	-2

Industrial Hazards

In this section there are six general industrial hazards and shown in details and assesment upon Fire Hazards, Mechanical Hazards, Chemical Hazards are performed.



A.7.5 Evaluation of Risk Assessment for Industrial Hazards

There are calculations of risk assessment of fire hazards, mechanical hazards and chemical hazards before and after mitigation and comparison table are shown as follow.

Comparison of Risk Assessments on Industrial Hazards (Fire, Mechanical, and Chemical) before and after Mitigation/Enhancement Mitigation

SR. NO.	Industrial Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	
1.	Fire Hazards	4	Low	1	Low	-3
2.	Mechanical Hazards	4	Low	1	Low	-3
3.	Chemical Hazards	4	Low	1	Low	-3

A.8.0 Public Consultation and Development Program

In this chapter, there were three public meeting as 1st for during scoping report, second and third after scoping report had been approved.

Moreover, first public meeting was shown as Appendix (1) and second and third were shown as Appendix (13) respectively.

A.8.2 Development Program

In this section, there

- Employee's Social Welfare Plan
- Public Development and Donation and
- Collaboration with Government Department are shown.

A.8.2.3 Plan for CSR and Budget Allotment

In this section, there

- Plan for CSR budget as 2% of annual net profit and extra budget will be if insufficient and
- Continuing the CSR plan for employees, public and donation are shown.

A.8.3 Grievance Redress Mechanism (GRM)

In this section, there

- Purposes of GRM
- Basic Elements of GRM Design
- Principles of GRM
- Grievance Handling Form
- Set up the Grievance Handling Committee



- Collection, Solving and Replying the Complaints and Grievances and
- Estimated Time Duration to solving the Complaints and Grievances are shown.

A.9.0 Conclusion

Emerald Brewery Myanmar Limited established the beer production and distribution plant at field number 498 of Yay Ta La Baund Village by the permit number 071|2018 dated 27-3-2018 of Myanmar Investment Commission. There was a contract between Green Myanmar Environmental Services Company Limited and Emerald Brewery Myanmar Limited to prepare the Environmental Impact Assessment report for latter and starting to get permission, land leasing, soil test, land preparation since 2017. Green Myanmar Environmental Services Company Limited prepared the scoping reports that of initial stage of Environmental Impact Assessment report and there were three scoping reports from 2019 to 2021 and approved letter form ECD at November 2022 to carry on the EIA. At the project site installation of machineries and running for test run were performed and commercial run at September 2019.

One of the scoping areas as **Traffic**, from the data of Traffic Assessment showed that **‘the number of vehicles entering and exiting the project site was only one-tenth of the number travelling on the main road.’** Another scoping area as **Hydrology**, and from the assessment it, there were notices, **the amount of water at aquifer is sufficient for project site and environment and keep the wastewater quality in standards.** From the assessment **Biodiversity**, there were noticeable that **the dangerous of invasive species upon local species were at Barlar creek before the project construction phase and participation with the public when removing the Hyacinth, and emitted gases, wastes, noise and vibration of the project must be controlled not to impact upon flora and fauna species.** From the assessment of **Cultural Heritage**, there are thirteen edifices and **emitted gases, wastes, noise and vibration of the project must be keep in standards not to impact upon religious edifices.** From the **Health** assessment, there were normal and emissions from factory site should be in standards. From the **Socio-economic** assessment the three main desires of public are bad odor, nutrient increasing in Barlar creek and changing of livelihood condition. It should be minimized by planting the native species at the bank of creek, participating with public when removing the hyacinth and assigning the villagers as employees if possible.

There are monitorings and analyzing **the ambient air, workplace air, ambient noise levels, workplace noise levels, boiler stack emission, generator exhaust emission, surface waters ground waters, vibrations and wastewaters** and all measured parameters except PM₁₀ and PM_{2.5} of ambient air pH value and arsenic content in tube well water during the construction phase and workplace noise level during operation phase, are in standards of NEQ(E)G and drinking water standards of Ministry of Health. Although workplace noise levels are beyond the NEQ(E)G standards, they are in Occupational Health and Safety eight working hours standard. [i.e NEQ(E)G is 70 dBA and OHS 8 working hours is 90 dBA]. These facts show that biodiversity, cultural heritage, hydrology, health and socio-economic are minimum significant under adverse impacts. By controlling the existing conditions with



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environmental management plan, this proposed project be increasing the positive impacts and minimizing the negative impacts.



1.0 INTRODUCTION

1.1 General Overview

This report identifies the proposed of the **Environmental and Social Impact Assessment (ESIA)** that will be undertaken in connection with the “**Manufacturing and Distribution of Beer**” project in Union of Myanmar. **Emerald Brewery Myanmar Limited** is going to manufacture and distribute beer and the proposed project is located at Plot No.498, Yay Ta La Baung Village, Hlegu Township, Yangon District (Beside No.3 Main Road, Htauk Kyant, Mingalardon). The proposed site consists of Field No. 498, East field of Kone Ta La Baung, Yay Ta La Baung Village Tract with Holding number (2/1+2/2+2/4+N-2).

The annual brewing capacity is 4000000 hecto liters (400,000,000=400 million liter) and expanded quantity of beer to produce year 2019-2020 to 2023-2024 are as follow.

Annual Expected Amount of Beer in liter

SR.No	Commodity	Unit	Year				
			2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
1	Beer (5% alcohol v/v)	liter	50,000,000	140,000,000	200,000,000	280,000,000	400,000,000

The actual productions of beer from year 2019-2020 to 2021-2022

Sr.No	Product	A/U	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022
1	Chang 330ml can	HL	99680	131080	206370
2	Chang 500ml can	HL	63510	182830	302660
3	Chang 620ml Bot carton	HL	15260	39490	113860
4	Chang 320ml Bot carton	HL	1270	640	130
5	Chang 30l keg	HL	920	4330	20860
6	Spent grain	Ton	3800	6500	11400

1.2 EIA Process

The EIA process is controlled through Regulations published under Government Notification (2015). Three phases in the EIA process are typically recognized:

- 1) Application Phase,
- 2) Scoping Phase, and
- 3) EIA Phase.

1.2.1 Application Phase

The Application Phase consists of completing the appropriate application form by the proponent and the subsequent submission and registration of the project. An



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application form was completed and submitted to Environmental Conservation Department (ECD). The application has since been accepted and registered.

1.2.2 Scoping Phase

At 29 June, 2018 Green Myanmar Environmental Services Company Limited (GMES) was contracted by Emerald Brewery Myanmar Limited to conduct an **Environmental Impact Assessment** for the Manufacturing and Distribution of Beer.

Background of Scoping Reports

The Scoping Phase aims to identify the key environmental issues associated with the project, in part through public consultation, consider project alternatives, and provide focus for the EIA Phase. At the end of the Scoping Phase, a report is compiled, known as a Scoping Report.

The aim of the Scoping Report is to document the outcome of the Scoping Phase. The report includes:

- Details of the Environmental Assessment Team Member undertaking the EIA
- Details of the project proposal
- Details of alternatives considered in formulating the project proposal
- Description of the legislation and guideLines applicable to the proposed activity
- A description of the receiving environment
- Documentation of the process and outcome of the public participation
- An identification of environmental issues and impacts associated with the project proposal and alternatives
- A description of the issues that require further investigation
- A description of the methodology to be used in the assessment of impacts
- A Plan of Study for Environmental Impact Assessment that will include a description of the public participation process.

1.2.2.1 Scoping, Main Facts and Suggestion

Scoping area, main facts and suggestions are summarized as following table.

Scoping, Main Facts and Suggestion in Brief

Scope Area	Main Facts	Suggestion
Project Scope Area	1.5 km radius of site	-
Environmental Area	Hlegu Township	-
Topography	Wetland, plain stretch	-
Geological, Geography Soil	Bare land, meadow and meadow alluvial soil	-
Seismology	Cannot be affected by the earth quake	-
Hydrology	Flooding depends on the influence of the Barlar Creek	Prevention should be done



Climate	Warm and tropical region, maximum temperature 40°C in April 2014 and minimum temperature in 10°C within 10 years.	-
Primary Source Data for Environmental Quality		
Air Quality	Ambient air quality measuring were performed and show Particulate matter PM ₁₀ , PM _{2.5} were beyond the standards and remains in standards.	Additional measuring should be done in EIA.
Noise	Noise level in project site and Kone Ta La Baund village were in standards.	Additional measuring should be done in EIA.
Water (Tube Well)	Most parameters of tube well water were in standards, and except one Arsenic value	Additional measuring should be done in EIA.
Water (Barlar Creek)	Most parameters of Barlar Creek water were in standards.	Additional measuring should be done in EIA.
Soil	Cyanide 0.15 g/kg mol was obvious	Additional measuring should be done in EIA.
Biological Characteristic	Biodiversity within the project 1.5 km radius scope was performed	Additional study should be done in EIA.
Socio-economic	not obvious	-
Cultural Heritage Impact Assessment	13 potential places concerning the religious complexes	Additional study should be done in EIA.
Health Impact Assessment	not obvious	Additional study should be done in EIA.
Traffic	normal	Additional study should be done in EIA.
Waste Water and Solid Waste	Waste water treatment plant and solid waste management in normal.	Additional study should be done in EIA.
Public Consultation	Once public consultation was held in 2018 December 23 rd	Additional consultation must be done in EIA.

1.2.2.2 Potential Impacts and Mitigation Measure

Key potential environmental impacts and mitigation measure during scope of Emerald Brewery Myanmar Limited were summarized at following table.



Potential Impacts and Mitigation Measure in Brief

Impacts	Mitigation Measure
Traffic Impacts	-Appropriate traffic warning signs should be posted for road were indicating a 'Construction Site Ahead' -Flagman should assigned for assisting Entry, Exit of the site -Speed limit should be imposed at the project site. -Adequate parking facilities in factory premise.
Air Pollution	-Vehicles, generator, compressor are well maintained. -Vehicles entering or leaving the site, carrying loads are covered -Masks are provided to workers -Check whether workers comply or not in dusty area. -Check boiler stack emission and control -Develop green belt -Monitoring and control ambient air quality regularly. -Dust collection system should be efficient. -Air quality of workplace must be monitored, in regularly and managed. -Roads should be asphalted or sprinkled with water. -Brewing tanks are not opened unnecessarily. -Managed the odour emission from wastewater treatment plant.
Water Pollution	-Avoidance of Wastewater by reduction of water usage. -recycle in possible ways -Manage of sanitary wastewater discharge by YCDC. -Prevent leakage of fuel, engine oils, battery acid. -Manage the wastewater quality in guideline values of NEQ(E)G
Soil Pollution	-Solid waste from beer processing should be reduced, recycled and sold if possible. -Train all person on how to handle solid wastes.
Noise and Vibration	-Plantation as buffer zone -Not dutying the person in long term at noise position. -Regular maintenance of machinaries, vehicle, etc. -Regular noise level monitoring and management. -Supplying and wearing PPE -Avoid working from leisure time if possible.

1.2.2.3 Main Problems of EIA Procedure in Brief

There are six main problems of EIA procedure and they are shown as follows.

- Traffic
- Air Pollution
- Water Pollution
- Soil Pollution
- Noise and Vibration
- Socio Economic Problem



1.2.2.4 Risk Assessment and Prevention during EIA Procedure

Risk assessment and prevention during EIA procedure were summarized as following table.

Risk	Cause	Prevention
- Cryogenic (low temperature and high pressure)	Refrigerant is used as coolineg system in beer production and CO ₂ plant - explosion of Ammonia cylindeder - Ammonia poisoning - CO ₂ cylinder explosion	Trained persons must be on duty. - operate SOP - well maintainance - check and repair regularly
High pressure in keg plant	- keg beer under pressure - keg explosion	Trained persons must be on duty. - operate SOP - well maintainance - check and repair regularly
Bottle and can Beer production	- Beer bottles explode under production - Beer can explode under production	Trained persons must be on duty. - operate SOP

1.2.2.5 Structure of Scoping Report

In exercise of the power conferred under section 42-b of Myanmar Environmental Conservation law (law No.9, 2012), the Ministry of Environmental Conservation and Forestry has hereby issues the following administrative instruction of Environmental Impact Assessment Procedure. The structure is as below:

1. Executive Summary
2. Context of the Project
3. Overview of the Policy, Legal and Institutional Framework
4. Project Description and Alternatives
5. Description of the Environmental
6. Key Potential Environmental Impacts and Mitigation Measures
7. Public Consultation and Disclosure
8. Conclusions and Recommendations
9. Terms of Reference for the EIA study

1.2.2.6 Public Consultation for Scoping Report

The EIA Regulations specify that a public participation process must be conducted as an integral part of the EIA. The public consultation is a process that is designed to provide information of the project to all interested and affected parties (I&AP) and receive feedback from them. (I&AP) include all interested stakeholders, technical specialists and the vairous relevant



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organizations of state who work together to produce better decisions. That feedback is in turn fed into the EIA process. This provides organizations and individuals with the opportunity to raise concerns and make comments and suggestions regarding the proposed activity. By being part of the assessment process, stakeholders have the opportunity to influence the Project Layout, design and the Study Plan for the EIA.

Public meeting for scoping proposal was held in (23.12.2018). There were about 370 people from local authorities, communities, NGOs and INGOs, and those who are directly or indirectly affected by the proposed project are also attended in this meeting.

Attendance of public meeting for scoping proposal, key discussions during the meeting, G.M.E.S' Power Point in brief, comments suggestion letters and are attached in Appendix 1.

1.2.2.7 Background of Scoping Reports

There are three submissions of scoping report to be approved. The brief informations are as follows:

- The first scoping report of the proposed project, April 2019 was submitted and it was instructed by ECD to revise. The instruction letter and suggestion & compliance form were shown at Appendix 2
- The first revised of scoping report, June 2020 was submitted and it was instructed by ECD to revise. The instruction letter and suggestion & compliance form were shown at Appendix 3.
- The second revised of scoping report, September 2021 was submitted and it was approved by ECD. The approved letter was shown at Appendix 4.

1.2.3 EIA Phase

During the EIA phase, a draft Environmental Impact Assessment Report, describing consideration of all the key issues and associated impacts identified from the Scoping Phase, together with a draft Environmental Management Program for the proposed mitigation measures, is to be implemented. This draft report will be made available to proponent to review and verify. Then the final report will be submitted to ECD for consideration.

1.2.3.1 EIA Working Group

Details of the EIA team are presented in the Appendix (5).

1.2.3.2 Overall Context of the Project

Emerald Brewery Myanmar Limited is proposing to establish “Manufacturing and Distribution of Beer” project at Plot No. (498), East Field of Kone Ta La Baung, Yay Ta La Baund Village Tract with holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.



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The objectives of the project are:

- To manufacture and distribute international standard quality Beer
- To reduce the import of beer from foreign in local market.
- To distribute high quality beer, consisting of highest quality ingredients with reasonable price.

Emerald's Vision and Mission

OUR VISION IS:

TO BUILD A SOLID FOUNDATION FOR THE COMPANY, BASED ON THE FOLLOWING KEY PILLARS;

- BREWING TO PERFECTION,
- COMMERCIAL EXCELLENCE
- IMPROVEMENT IN THE QUALITY OF LIFE FOR OUR STAFF AND THE COMMUNITY.

So as to;

TO ACHIEVE SUSTAINABLE GROWTH AND TO BE A PROFITABLE NUMBER 2 IN THE BEER MARKET OF MYANMAR.

Our Mission

- Achieving breakeven position by 2023.
- Utilize the full capacity ,0.5 Million HL of the brewery by 2025.
- Create an environment to nurture the staff, reward for meritocracy and improving with the community.

1.2.3.3 Project Proponent

Table 1-1 Details of the Project Proponent

Project Proponent	Emerald Brewery Myanmar Limited
Office Address	No.151, Block A#01-L1, Yaw Gi Kyaung Road, Hlaing Township, Yangon, Myanmar.
Project Address	Plot No. (498), East Field of Kone Ta La Baund, Yay Ta La Baund Village Tract with holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.
Contact Person	Ma May Khin Zaw
Designation	Human Capital Director
Contact number	09-449607879
Email	maykhin.zaw@emeraldbrewery.com

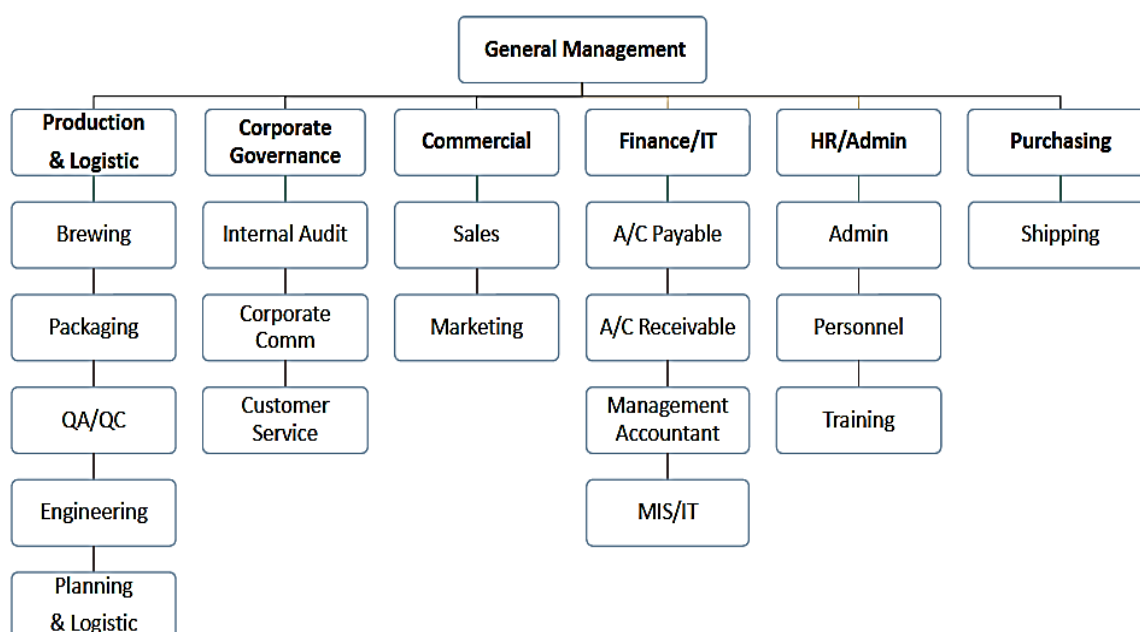


Table 1-2 Board of Directors List

No.	Name	NRC No./ Passport No.	Position	Address
1	HUI CHOON KIT	E 5805768 N	Director	Singapore
2	Myint Myint Win	12/Ka Tha Na (N) 006833	Director	No.I-2, Sabal St., Home Lan Sanchaung, Yangon.
3	Mr. Neo Kim Soon Edmond	E 4489605J	Director	Singapore

The Organization Chart is shown as follow.

Organization Chart



1.2.3.4 Salient Features of the Project

Table 1-3 Salient Features of the Project

1.	Project Name	Manufacturing and Distribution of Beer
2.	Project Proponent	EMERALD BREWERY MYANMAR LIMITED
3.	Office Address	No.151, Block A#01-L1, Yaw Gi Kyaung Road, Hlaing Township, Yangon, Myanmar.
4.	Company Registration Number	No. 104783007
5.	Exporter/Importer Registration No.	53801 (06-11-2018)
6.	Type of Proposed Business	Manufacturing and Distribution
7.	Geographical Information	Longitude - - - 96° 9' 18.41" E Latitude - - - 17° 1' 7.78" N
8.	Project Address	Plot No. (498), East Field of Kone Ta La Baund, Yay Ta La Baund Village Tract with Holding No. (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Region.



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

9.	Type of Land	Grant Land (for Industrial use)	
10.	Land Acquisition	Owner - U Aung Thu	
11.	Total Area	32.84 acres	
12.	Area for Buildings Construction	18 acres	
13.	Proposed Buildings in the Project	2-storeyed steel structure Office Building 1-storeyed Steel Structure Canteen (I) 1-storeyed Steel Structure Canteen (II) Beer Manufacturing Building Utility Building Wastewater Treatment Building	
14.	Construction or Preparatory of Period	2 years	
15.	Starting Time for Construction	June 2018	
16.	Estimated Time for Commercial Operation Date	August 2019	
17.	Investment Period	50 years (50+10+10)	
18.	Amount of Foreign Capital	US\$ 49.48 Million	
19.	Total Amount of Capital (Kyat)	Equivalent in kyat US\$ 61.85 million (Including US\$ 49.48 Million)	
20.	Form of Investment	Joint Venture	
21.	Surrounding Environment	East Side	Field
		West Side	Barlar Creek
		Left Side	Field
		Right Side	Field
22.	Nearest Residential Places	Yay Ta La Baund Village, Kone Ta La Baund Village	
23.	Nearest Water Bodies	Barlar Creek, Hlaw Kar Lake	
24.	Topography	Flat Field	
25.	Equipment and Auxiliary Plants used in the Project are- Process / Packaging Equipment (Brewing, Fermentation, Filtration, Packaging) Lab Equipment Air Compressor Boiler	Refrigeration Unit CO ₂ Plant Water Treatment Plant Wastewater Treatment plant	
26.	Water Source	From Tube Wells Numbers of units 8 Nos Diameter 8 Nos Depth Well No.1 = 110 m Well No.2 = 101.6 m Well No.3 = 99.6 m Well No.4 = 97.6 m Well No.5 = 101.6 m	



		Well No.6 = 93.6 m Well No.7 = 120 m Well No.8 = 120 m
27.	Total water demand	Approximately 170 - 850 m ³ / day
28.	Source of electrical power	From National Grid Solar Energy (From 2023 July 24 th)
29.	Power Supply	Transformers and generators Transformer One unit, 3,760 KVA Generators Four units 4 set of 1,250 KVA,
30.	Boiler	Type of Fuel Diesel Fuel consumption Approximately 700,000~800,000 gal/year
31.	Raw materials	Rice Crown cap Keg Barley Body label Keg closure Malt Neck label Outer carton Hop Cold glue Fuel oil Yeast Hot melt Beer concentrated Water Empty crate Hop bitter pellet in alpha acid Cans Pallet Hop aroma pellet in alpha acid Can lids Glass bottles Hop extract in alpha acid
32.	Product	Beer bottle, Beer Keg, Beer Can (with 5 % alcohol v/v)
33.	By- product	Spent Grain
34.	Workforce	Local Employees 165 Foreign technicians 5 Total 170
35.	Factory Operation Hours	8 hours per day with three shifts Working day 6 days per week
36.	Working Hours of Management Office	9.5 hrs. per day (8:00 AM ~ 5:30 PM) 5 days per week (Monday ~ Friday)
37.	CSR percent	2 % of net profit
38.	Contact Person Designation Mobile Phone: Email:	Ma May Khin Zaw Human Capital Director 09- 449607879 maykhin.zaw@emeraldbrewery.com

2.0 OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Overview of Environmental and Social Related Laws Applicable to the Project

The EIA Regulations require that any development proposal will be required to be the subject of EIA, where such development is likely to have “significant” effects on the environment, by virtue of factors such as its nature, size or location. An EIA of this proposed project is considered to be necessary, which is likely to have some “significant” environmental effects.

The EIA study will cover for only the development of the “Manufacturing and Distribution of Beer” Project. The Overview of the environmental and social related laws applicable to the construction and operation of the factory are followed.

2.2 Myanmar Regulatory Framework for Environmental Assessment

Myanmar Government issued an Environmental Policy in 1994, Myanmar Agenda 21 in 1997, and National Sustainable Development Strategy in 2009, the Environmental Conservation Law in 2012, Environmental Conservation Rules in 2014, Environmental Impact Assessment Procedure and National Environmental Quality (Emission) GuideLines in 2015.

2.3 Legal Compliance

Emerald Brewery Myanmar Limited must comply with the following Myanmar Legislation and Relevance to the Project.

2.3.1 Myanmar Legislation and Relevance to the Project

Administrative Sector
The Penal Code of Offences Affecting the Public Health, Safety, Convenience, Decency and Morals (1861) Provisions related to prohibitions against contaminating public springs or reservoirs and “making atmosphere noxious to health”.
The Myanmar Fire Brigade Law (2015) Provisions to protect and to prevent from fire disaster and natural disaster which insures losses and endanger.
The Ward or Village Tract Administration Law (2012) Provisions on offences which affect the human environment.
City Development Sector
The Water Power Act (1927) Prohibitions on the pollution of public water.
The Underground Water Act (1930) This Act provides the requirement for systematic use of ground water toward sustainable purpose.
The Yangon City Development Law (2018) Provisions relating to environmental sanitation, pollution of air and water, and public health.
Myanmar Insurance Law, 1993



<p>The Ministry may determine from time to time the entrepreneurs or organizations which are to effect compulsory general liability insurances.</p>
<p style="text-align: center;">Environmental Conservation Sector</p>
<p>The Environmental Conservation Law (2012) Provisions relating to waste disposal, pollution and controlling the environmental pollution.</p>
<p>The Environmental Conservation Rules (2014) The Rules reinforce the obligation for project developers to submit an EIA or an IEE. It aims to establish and adopt the necessary programs for the conservation and enhancement of environment, protection, control and reduction of pollution in environment, and conservation.</p>
<p>The Environmental Impact Assessment Procedure (2015) To establish types of project that needed to submit an EIA or an IEE or an EMP. Also to establish the environmental assessment process and to issue the environmental compliance certificate.</p>
<p>National Environmental Quality (Emission) GuideLines (2015) To provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.</p>
<p style="text-align: center;">Finance and Revenue Sector</p>
<p>The Income Tax Law (1974) Income gained from the economic business shall be levied under the heading of economic business.</p>
<p>The Money Laundering Law, 2014 Whoever commits the money laundering offence shall, on conviction, be punished with imprisonment for a term which may extend to 10 years or with a fine or with both.</p>
<p>The Import Export Law, 2012 Provisions relating to import and export the prohibited goods.</p>
<p>The Assistance and Treatment of Injured Emergency Patient, 2014 Person who found the injured emergency patient shall give emergency assistance by himself or taking help of other persons.</p>
<p style="text-align: center;">Industrial Sector</p>
<p>The Electricity Law (2014) The law elaborates- No electrical business shall be operated other than the business contained in the permit by any permit holder and No one shall connect, waste, and utilize the electric power without the permission of the permit holder. The Inspector also is responsible for determining cause of any injury or death caused by electricity, issuing electrician registration certificates, and establishing standards.</p>
<p>The Boiler Law (2015) Provisions are to be cautious in operating the project.</p>
<p>The Petroleum and Petroleum Product Law (2017) Provisions to regulate production, transport, storage, and usage of oil so as not to cause pollution or the outbreak of fires.</p>
<p>The Prevention of Hazard from Chemical and Related Substances Law (2013) Provisions relating with Producing, using, possessing, storing, distributing, sellLineg, transporting, importing, exporting the chemical or related substances to avoid environmental pollution.</p>
<p>The Factories Act (1951) Amendment (2016)</p>



Provision for working hours, overtime, calculation of overtime wages, worksite safety and health measures, welfare, and the prevention of hazards.
Food and Beverage Sector
The Excise Act, 1917 The Law Amending the Excise Act 2016 Provisions on offences which affect the human environment.
The National Food Law (1997) Provisions to protect production, import, export, storage, distribution or sellLineg the food that may be poisonous, dangerous or injurious to the health of the consumer and food differing from standards.
The Consumer Protection Law (2014) Provision to cause fulfillment of goods or services that enable to ensure the high quality for safety, health, satisfaction of the consumer.
The Standardization Law, 2014 Provision to protect producing, distributing and importing the goods detrimental to environment, goods not reaching the prescribed standards and quality, unsafe products.
National Planning and Economic Development Sector
The Myanmar Investment Law (2016) To enable to protect producing, distributing and importing the goods detrimental to environment, goods not reaching the prescribed standards and quality, unsafe products.
The Import Export Law (2012) Provision to cause to be streamLined and speedy in carrying out the matters relating to export and import.
Transportation Sector
The Motor Vehicle Law (2015) and The Motor Vehicle Rules (1989) Provisions to control vehicle engine emissions and the leakage of fuel or oil.
The Highway Law (2000) Prohibition to protect the damage of highway shall be punished with imprisonment or with a fine.
Workforce Sector
The Workmen's Compensation Act (1923) To make payments out-of-pocket to employees who become injured or who die in any accidents airing during and in consequence of their employment. Such compensation also must be made for diseases which airse as a direct consequence of employment, such as carpal tunnel syndrome.
The Leave and Holiday Act (1951) To allow worker for leave and holiday allowances, religious or social activities with earn allowance, and benefits for Health allowances. Concerned workers: Daily wage workers/temporary workers/permanent workers
The Minimum Wages Law (2013) and The Minimum Wages Rules (2013) Describe the duties of the employer and to fulfill the basic needs of the workers and their families who are working in commercial establishments, production and servicing establishments, agriculture and livestock. To develop the work performance and competitiveness of workers.

Employment and Skill Development Law (2013)

The main objectives of this law are:

- To facilitate employment that is appropriate to the age and ability of the job seeker
- To help workers obtain employment and to provide stability of employment and skills development for employees
- To help employers obtain appropriate employees.

The Labor Organization Law (2011) and The Labor Organization Rules (2012)

The objectives of this law are:

- To protect the rights of the workers in accordance with section 24 of the Constitution
- To promote good relations between the employer and the worker
- To enable to workers to form and carry out the labor organizations systematically and independently

The Settlement of Labor Disputes Law, 2012

The objectives of this law are:

- To safeguard the rights of workers
- To promote a good relationship between employer and workers and creating a peaceful workplace
- To obtain the rights fairly, rightfully and quickly by settling disputes between employer and worker justly.

The Social Security Law (2012) and The Social Security Rules (2014)

The objective of this law is to get benefit for sickness, maternity, death, employment injury, invalidity benefit, superannuation benefit by: giving medical treatment, providing cash benefit or granting a right to residency.

Legislative Requirements

The proponent will abide by the Laws and Rules. Legal requirements applicable to the Project related to the environmental and social according to the ECD's instruction will be summarized as follows.

1. Environmental Conservation Law (30th March 2012)
2. Environmental Conservation Rules (5th June 2014)
3. Environmental Impact Assessment Procedure (2015)
4. National Environmental Quality (Emission) GuideLines, 2015
5. The Ethnic Rights Protection Law, 2015
6. The Myanmar Investment Law, 2016
7. The Myanmar Investment Rules, 2017
8. The Myanmar Insurance Law, 1993
9. Prevention of Hazard from Chemical and Related Substances Law, 26th, August 2013
10. The Myanmar Fire Brigade Law, 2015
11. Petroleum and Petroleum Products Law, 2017
12. The Motor Vehicle Law, 2015 and The Motor Vehicle Rules, 1989
13. The Standardization Law, 2014
14. Protection and Preservation of Cultural Heritage Regions Law (1998)
15. The Protection and Preservation of Antique Objects Law, 2015
16. The Protection and Preservation of Ancient Monuments Law, 2015
17. Myanmar Engineering Council Law, 2013



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18. The Import Export Law, 17th September 2012
 19. The Labor Organization Law, 2011
 20. The Settlement of Labor Disputes Law, 2012
 21. The Employment and Skill Development Law, 2013
 22. The Minimum Wages Law, 2013 and The Minimum Wages Rules, 2013
 23. The Payment of Wage Law, 2016
 24. The Social Security Law, 2012 and The Social Security Rules, 2014
 25. The Workmen's Compensation Act, 1923 (Amendment, 2005)
 26. The Factory Act, 1951
 27. The Leave and Holiday Act, 1951
 28. The Union of Myanmar Public Health Law (1972)
 29. The Prevention and Control of Communicable Disease Law, 1995 (Amendment, 2011)
 30. The Consumer Protection Law (14th March 2014)
- The brief descriptions of these legislations are stated as below.

1. Environmental Conservation Law (30th March 2012)

Managing to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works. (Section 7(o))

A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards. (Section 14)

The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods. (Section 15)

The Ministry may, in issuing the prior permission, stipulate terms and conditions relating to environmental conservation. It may conduct inspection whether or not it is performed in conformity with such terms and conditions or inform the relevant Government departments, Government organizations to carry out inspections. (Section 24)

No one shall violate any prohibition contained in the rules, notifications, orders, directives and procedures issued under this Law. (Section 29)

The project will manage to align with the law.

2. Environmental Conservation Rules (5th June 2014)

Any person shall not emit, ask to emit, dispose, ask to dispose, pile and ask to pile, by any means, hazardous waste or hazardous substances stipulated by notification according to any rules in this rules at any place which may affect the public directly or indirectly. (Section 69 (a))



Nobody shall carry out any activity which can damage the ecosystem and the natural environment which is affected due to such system, except for the permission of the Ministry for the interests of the people. (Section 69 (b))

The project will manage to align with the law.

3. Environmental Impact Assessment Procedure (2015)

Environmental Impact Assessment Procedure stated that:

“All Projects and Project expansions undertaken by any ministry, government department, organization, corporation, board, development committee and organization, local government or authority, company, cooperative, institution, enterprise, firm, partnership or individual (and/or all Projects, field sites, factories and businesses including expansions of such Projects, field sites, factories and businesses identified by the Ministry, which may cause impact on environmental quality are required to obtain Prior Permission in accordance with Section 21 of the Law, and Article 62 of the Rules) having the potential to cause Adverse Impacts, are required to undertake IEE or EIA or to develop an EMP, and to obtain an ECC in accordance with this Procedure.”

The Project Proponent shall bear full legal and financial responsibility for: a) all of the Project Proponent's actions and omissions and those of its contractors, subcontractors, officers, employees, agents, representatives, and consultants employed, hired, or authorized by the Project acting for or on behalf of the Project, in carrying out work on the Project; and b) PAPs until they have achieved socio-economic stability at a level not lower than that in effect prior to the commencement of the Project, and shall support programs for livelihood restoration and resettlement in consultation with the PAPs, related government agencies, and organizations and other concerned persons for all Adverse Impacts. (Section 102)

The Project Proponent shall fully implement the EMP, all Project commitments, and conditions, and is liable to ensure that all contractors and subcontractors of the Project comply fully with all applicable Laws, the Rules, this Procedure, the EMP, Project commitments and conditions when providing services to the Project. (Section 103)

The Project Proponent shall be responsible for, and shall fully and effectively implement, all requirements set forth in the ECC, applicable Laws, the Rules, this Procedure and standards. (Section 104)

The Project Proponent shall timely notify and identify in writing to the Ministry, providing detailed information as to the proposed Project's potential Adverse Impacts. (Section 105)

The Project Proponent shall, during all phases of the Project (pre-construction, construction, operation, decommissioning, closure and post-closure), engage in continuous, proactive and comprehensive self-monitoring of the Project and activities related thereto, all Adverse Impacts, and compliance with applicable laws, the Rules, this Procedure, standards, the ECC, and the EMP. (Section 106)

The Project Proponent shall notify and identify in writing to the Ministry any breaches of its obligations or other performance failures or violations of the ECC and the EMP as soon as reasonably possible and in any event, in respect of any breach which would have a serious impact or where the urgent attention of the Ministry is or may be required,



Environmental Impact Assessment Report.

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within not later than twenty-four (24) hours, and in all other cases within seven (7) days of the Project Proponent becoming aware of such incident. (Section 107)

The Project Proponent shall submit monitoring reports to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP, or periodically as prescribed by the Ministry. (Section 108)

The monitoring reports shall include: a) documentation of compliance with all conditions; b) progress made to date on implementation of the EMP against the submitted implementation schedule; 29 c) difficulties encountered in implementing the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties; d) number and type of non-compliance with the EMP and proposed remedial measures and timeLines for completion of remediation; e) accidents or incidents relating to the occupational and community health and safety, and the environment; and f) monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required. (Section 109)

Within ten (10) days of completing a monitoring report as contemplated in Article 108 and Article 109 in accordance with the EMP schedule, the Project Proponent shall make such report (except as may relate to National Security concerns) publicly available on the Project's website, at public meeting places (e.g. libraires, community halls) and at the Project offices. Any organization or person may request a digital copy of a monitoring report and the Project shall, within ten (10) days of receiving such request, submit a digital copy via email or as may otherwise be agreed upon with the requestor. (Section 110,113,115,117)

The project will manage to align with the law.

4. National Environmental Quality (Emission) GuideLines, 2015

These national Environmental Quality (Emission) GuideLines (hereafter referred to as GuideLines) provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from vairous sources in order to prevent pollution for purposes of protection of human and ecosystem health.

Description

This law provides the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from vairous sources in order to prevent pollution for purposes of protection of human and ecosystem health.

Relevance to the Project

The project shall carry out to align with the guideLine.

5. The Ethnic Rights Protection Law, 2015

The matters of projects shall completely be informed, coordinated and performed with the relevant local ethnic groups in the case of development works, major projects, businesses and extraction of natural resources will be implemented within the area of ethnic groups. (Section 5)

The project will manage to align with the law.



6. The Myanmar Investment Law, 2016

Description

- The objectives are to protect the investors and their business in accord with Law, to give opportunities of work for the people, to promote the production, service, trade of high capacity. (Sections 3(b), (c) + (e))
- The investor shall have the right to lease the land or building for long term from the owner if it is private or from the relevant government department organization if it is state-owned or entitled to administer by the government. (Section 50(a))
- The investor shall register the land lease contract at the Office of Registry of Deeds in accordance with the Registration Act. (Section 50(d))
- May appoint of any citizen who is a qualified person as senior manager, technical and operational expert, or advisor in his investment within the Union in accordance with the laws; (Section 51)
- The investments are ensured not to centralize. (Section 52)
- Shall not make any significant alteration of topography or elevation of the land on which he is entitled to lease or to use, without the approval of the Commission; (Section 65(f))
- Shall abide by the applicable laws, rules, procedures and best standards practiced internationally for this investment so as not to cause damage, pollution, and loss to the natural and social environment and not to cause damage to cultural heritage; (Section 65(g))
- Shall list and keep proper records in books of accounting and annual financial statements, and necessary financial matters relating to the investments performed by a Permit or an Endorsement in accordance with internationally and locally recognized accounting standards; (Section 65(h))
- Shall close and discontinue the investment only after payment of compensation to employees in accordance with applicable laws for any breach of employment contracts, closure of investment, or reduction of workforce; (Section 65(i))
- Shall pay wages and salaries to employees in accordance with applicable laws, rules, procedures, directives and so forth during the period of suspension of investment for a credible reason; (Section 65(j))
- Shall pay compensation and indemnification in accordance with applicable laws to the relevant employee or his successor for injury, disability, disease and death due to the work; (Section 65(k))
- Shall supervise foreign experts, supervisors and their families, who employ in its investment, to abide by the applicable laws, rules, orders and directives, and the culture and traditions of Myanmar; (Section 65(l))
- Shall respect and comply with the labor laws; (Section 65(m))
- Shall have the right of sue and to be sued in accordance with the laws; (Section 65(n))
- Shall pay effective compensation for loss incurred to the victim, if there is damage to the natural environment and socioeconomic losses caused by logging or



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extraction of natural resources which are not related to the scope of the permissible investment, except from carrying out the activities required to conduct investment in a Permit or an Endorsement; (Section 65 (o))

- Shall allow the Commission to inspect in any places, when the Commission informs the prior notice to inspect the investment; (Section 65 (p))
- Shall take in advance a Permit or an Endorsement of the Commission for the investments which need to obtain prior approval under the Environmental Conservation Law and the procedures of environmental impact assessment, before undertaking the assessment. Such investments shall be submitted the situation of environmental and social impact assessment to the Commission during the permitted investment period. (Section 65 (q))
- The investor shall insure the types of insurance stipulated in the provision of the rules at any insurance enterprise which is entitled to carry out insurance businesses within the Union. (Section 73)

Relevance to the Project

- The project will manage to align with the law.

7. The Myanmar Investment Rules, 2017

Description

- The investor shall, after obtaining the permit, submit the status of performing throughout the course of business of environment impact and social impact assessment to the Investment Commission. (Rule 189)
- The investor must comply with the conditions of the Permit and other applicable laws when making an Investment. (Rule 202)
- The investor shall fully assist while negotiating with the Authority for settling the grievances of the local community that have been effected due to Investments. (Rule 203)
- If the investor is desirous to appoint a foreigner as senior management, technician expert or consultant according to section 51 (a) of the Law, it shall submit such foreigner's passport, expertise evidence or degree and profile to the Commission Office for approval. (Rule 206)
- Every investor that holds the Permit or Tax Incentives must have taken out the relevant insurance out of the following types of insurance at any insurance business that holds the license in the Union based on the nature of the business. (Rule 212)

Relevance to the Project

- The project will manage to align with the rule.

8. The Myanmar Insurance Law, 1993

Description

- An entrepreneur or an organization operating an enterprise which may cause damage to the life and property of the public or which may cause pollution to the



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environmental shall affect compulsory general liability insurances with the Myanmar Insurance. (section 15, 16)

- The Ministry may determine from time to time the entrepreneurs or organizations which are to effect compulsory general liability insurances. (section 17)

Relevance to the Project

- The project shall carry out to align with the guideLine.

9. Prevention of Hazard from Chemical and Related Substances Law, 26th, August 2013

Description

- A person who has obtained a licence, before starting the respective chemical and related substances business: (a) shall be inspected for the safety and the power of resistance of the machinery and equipments by the respective Supervisory Board and Board of Inspection; (b) shall be attended the person who serve in the work to the respective foreign trainings or the trainings and the expert trainings on prevention of hazard from the chemical and related substances opened by the government department and the government organizations. (Section 15(a,b))
- A person who has obtained a licence: (a) shall abide the licence regulations; (b) shall perform to abide strictly the instructions for being safety in using the chemical and related substances by himself and also the persons who serve the work; (c) shall keep the required safety equipment enough in the chemical and related substances businesses, furthermore shall grant the personal protection equipment and dresses free of charge to the working persons; (d) shall make the course of training and study and instruction if necessary to the working persons for using the occupational safety equipment, the personal protection equipment and the dresses systematically in the chemical and related substances business; (e) shall be inspected by the respective Supervisory Board and Boards of Inspection in respect of whether or not the hazard may impact on the Human Being and Animals' health and the environment; (f) shall make medical checkup the working persons who will work in the chemical and related substances business and shall permit to serve in that work after obtaining the recommendation that his health is suitable for that work. This medical checkup records shall be kept systematically; (g) (Section 16)
- A person who has obtained a licence, shall put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation, if the impact and damage is occurred on the Human Being and Animals or the environment in respect of the chemical and related substances businesses. (Section 17, 22, 27)
- Educing, using, possessing, storing, distributing, selLineg, transporting, importing, exporting the chemical or related substances prohibited by the Control Body, and Operating without licenses is prohibited. (Section 33, 34)
- Chemicals and related substances which are not registered, cancelled from the registration list has not reached the standard and quality shall be used in the business. (Section 35)



Relevance to the Project

- The project will manage to align with the law

10. The Myanmar Fire Brigade Law, 2015

Description

- Factory, industry, the business owner or manager of endangered from fire safety shall form the reserved fire brigade and shall keep the equipment related to fire safety. (section 25)

Relevance to the Project

- The project will manage to align with the law.

11. Petroleum and Petroleum Products Law, 2017

Description

The Ministry of Transport and Communications shall carry out the following functions relating to any petroleum and petroleum product; (Section 9 (a)(e))

- issuing licence to vehicles, vessels and barges that carry any petroleum and petroleum product;
- determining procedures and conditions to be abided by in carrying out transport business except transport by pipeLine.

The Ministry of Natural Resources and Environmental Conservation shall carry out the following functions relating to any petroleum and petroleum product; (Section 10 (b))

- issuing transport permit for the vehicles, vessels and barges that shall carry any petroleum and petroleum product;

On all receptacles containing any dangerous petroleum and petroleum product, the warning sign of danger by stamping, embossing, painting, printing or any other means shall be expressed. If it is impossible to express as such, similar warning signs of the nature of danger of gasoline, spirit or petroleum shall be expressed in writing at the ostensible place in salient words or signs near the receptacle. (Section 11)

Relevance to the Project

This is relevant to the transport, storage and usage of oil by the project. The project will manage to align with the law.

12. The Motor Vehicle Law, 2015 and The Motor Vehicle Rules, 1989

Description

- Unregistered motor vehicle, motor vehicles of terminated, expired or cancelled motor vehicle registration are not allowed to drive in the public place. (Section 45)
- Motor vehicle without insurance for injury shall not be used in the public place. (Section 46)
- No one shall drive without license in the public place. (Section 47)



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- No vehicles shall carry more than the number or weight of goods which is permitted according to registration. (Rule 138)

Relevance to the Project

- The project will manage to align with the law.

13. The Standardization Law, 2014

Description

The aims of this Law are also related to this project.

- To enable to protect the consumers assuring that the export goods and import goods are not lower than the prescribed standards and secure. (Section 3 (c))
- To enable to protect producing, distributing and importing the goods detrimental to environment, goods not reaching the prescribed standards and quality, unsafe products. (Section 3 (e))
- The holder of quality approval his agent and successor of business shall comply with the compulsory standards. (Section 29)

Relevance to the Project

- The project will manage to align with the law.

14. Protection and Preservation of Cultural Heritage Regions Law (1998)

Cultural heritage regions and the cultural heritage are protected and preserved by implementing this protection and preservation policy with respect to the perpetuation of cultural heritage that has existed for many years.

There are Archive Properties Act (Amendment) (1962), the Protection and Preservation of Cultural Heritage Regions Law (Amendment) 1998, (2009), the Protection and Preservation of Ancient Monuments Law 2015 to protect and preserve the cultural heritage and to protect ancient sites and regions and cultural heritage areas from any adverse impacts due to industrialization, tourism and urbanization.

A person desirous of carrying out one of the following shall abide by the provisions of other existing laws and also apply to the Department in accordance with stipulations to obtain prior permission under this Law: (a) within the ancient monumental zone or the ancient site zone: (1) constructing or extending a building; (2) renovating the ancient monument or extending the Boundary of its enclosure. (Section 13)

A person desirous of carrying out one of the following shall abide by the provisions of other existing laws and also apply in accordance with the stipulations to the Department to obtain prior permission under this Law: (a) renovation of a building other than an ancient monument or extension of the Boundary of its enclosure in the ancient monumental zone or the ancient site zone; (b) within the protected and preserved zone, constructing, extending, renovating a building other than a hotel, motel, guest house, lodging house or industrial building or extending the Boundary of its enclosure; (c) digging well, pond and fish-breeding pond or extending the same within the cultural heritage region. (Section 15).

Relevance to the Project

The project will manage to align with the law.



15. The Archive Properties (Amendment) Act, 1962 and the Protection and Preservation of Cultural Heritage Region Law, 1998 (Amendment, 2009)

Description

To implement the protection and preservation policy with respect to perpetuation of cultural heritage that has existed for many years. Provisions to protect ancient sites and regions and cultural heritage areas from any adverse impacts due to industrialization, tourism and urbanization.

Relevance to the Project

The project will manage to align with the law.

16. The Protection and Preservation of Antique Objects Law, 2015

The person who finds any object which has no owner or custodian, he shall promptly inform the relevant Ward or Village-Tract Administrator if he knows or it seems reasonable to assume that the said object is an antique object. (Section 12)

Relevance to the Project

The project will manage to align with the law.

17. The Protection and Preservation of Ancient Monuments Law, 2015

Description

This law states to protect and preserve the cultural heritage and new project in such sensitive areas is required to get prior approval from the Ministry of Culture.

If a person who finds an ancient monument of over one hundred years old and above or under the ground or above or under the water which has no owner or custodian knows or it seems reasonable to assume that the said monument is an ancient monument, he shall promptly inform the relevant Ward or Village-Tract Administrative Office. (Section 12)

A person desirous of any of the followings within the specified area of an ancient monument shall apply to get prior permission to the Department: (a) extending towns, wards and villages; 7 My Computer/ Data (D;)/ 2015 Law/ The Protection and Preservation of Ancient Building Law (b) constructing or extending or repairing new buildings including hotels, factories and residential buildings or fencing or extending a fence. (Section 15)

No one shall carry out any of the following acts which is assumed to cause damage to an ancient monument within the specified area of an ancient monument or of a listed ancient monument without a written prior permission, using machines which causes vibration within the specified place of an ancient monument and running various types of vehicles. (Section 20(b))

Relevance to the Project

The project will manage to align with the law.



18. Myanmar Engineering Council Law, 2013

Whoever has received a registration certificate, is found to have breached any rules contained in the registration certificate or violated any prohibition contained in a rule, order or directive enacted under this law or in any stipulation of this law, the executive committee may take the following administrative actions (a) giving a warning; (b) assessing a suitable fine; (c) suspending the registration certificate; (d) cancelling the registration certificate. (Section 34)

No one shall perform any engineering work and technological work which are specified as being dangerous to the public by a rule enacted under this law without having received a registration certificate issued by the council, except for engineers appointed in a government department or an organization in the performance of their duties. (Section 37)

19. The Import Export Law, 17th September 2012

Description

- No one shall import or export the prohibited goods. (Section 5)
- No one shall import or export the goods without permit which are prescribed to obtain permit. (Section 6)
- A person who obtained any license shall not violate the conditions contained in the license. (Section 7)

Relevance to the Project

- The project will manage to align with the law

20. The Labor Organization Law, 2011

Provisions related for promoting and safeguarding public health and to take necessary measures in respect of environmental health.

Relevance to the Project

The project will manage to align with the law.

21. The Settlement of Labor Disputes Law, 2012

Description

As to the preamble of this law, the objectives are:

- To safeguard the rights of workers
- To promote a good relationship between employer and workers and creating a peaceful workplace.
- To obtain the rights fairly, rightfully and quickly by settling disputes between employer and worker justly.

Forming Workplace Coordinating Committee

The employer shall, in an establishment which has 30 employees and above and if there is a labor organization.

- Allow 2 nominated workers for each labor organization.



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- Assign employer representatives who are the same number as the representatives of the workers.

If there is no labor organization,

- Organize election of 2 representatives of the workers.
- Appoint 2 representatives of the employer

The term of such committees is one year.

Settlement of Dispute

- A party, employer or worker, may complain to the Conciliation Body.
- If he is not satisfied with the conciliation of the Conciliation Body, may apply to the court. [section 23]
- The Conciliation Body shall refer the collective dispute which does not reach settlement to the relevant Arbitration Body. [section 25]
- No party shall be barred to proceed with the right to institute criminal or civil proceedings in respect of such dispute during conciliation or arbitration. [section 52]
- As a strike suspends the employment agreement temporarily, the employer shall not be liable to pay salary or allowance during such period to the workers who go on strike. [section 54]

Relevance to the Project

- The project will manage to align with the law.

22. The Employment and Skill Development Law, 2013

Description

The main objectives of this law are:

- To facilitate employment which is appropriate to the age and ability of the job seeker
- To help workers obtain employment and to provide stability of employment and skills development for employees
- To help employers obtain appropriate employees

Relevance to the Project

The project will manage to align with the law.

23. The Minimum Wages Law, 2013 and The Minimum Wages Rules, 2013

As to the preamble of this law, the objectives are:

- To fulfill the basic needs of the workers and their families who are working in commercial establishments, production and servicing establishments, agriculture and livestock.
- And, to develop the work performance and competitiveness of workers.

The minimum wages law was passed by parliament in late 2013 and amounts were specified/ finalized by a national tripartite committee in mid-2015. Implementation of the new wage rates was required to start on 1 September 2015.



Duties of the Employer

- 3,600 Kyats per 8-hour working day (450 Kyat/hour) shall be the minimum wage paid to skilled employees of companies with more than 15 employees in all industries, throughout all of Myanmar.
- 50% of the minimum – 1,800 Kyats per 8-hour working day (225 Kyats/hour) – may be paid to completely unskilled newly hired workers engaged in a training/induction program up to a maximum of 3 months.
- 75% of the minimum – 2,700 Kyats per 8-hour working day (338 Kyats/hour) – may be paid to newly hired employees during their 3 months of employment, regarded as a ‘probationary period’.
- The project will manage to align with the law.

24. The Payment of Wage Law, 2016

- The employer shall pay the wage when the work is completed or the time of agreed period for any daily, hourly, weekly, or other part time job or for work charge. [section 4 (a)]
- The agreed period shall not be more than one month. [section 4 (b)]
- Permanent job shall be paid monthly. [section 4 (c)]
- Resignation or own volition, dismiss or decrease of the employee shall be paid according to the provisions of section 4.
- The project will manage to align with the law.

25. The Social Security Law, 2012 and The Social Security Rules, 2014

- The objective is benefit for sickness, maternity, death, employment injury, invalidity benefit, superannuation benefit by: giving medical treatment, providing cash benefit or granting a right to residency. [section 3]
- All establishments shall contribute to the social security fund from the salary of insured workers as follows:
 - (a) Health and social care fund: 2% from employer, 2% from employee
 - (b) Injury fund: 1% from employer
 - (c) The accepted maximum salary per month to qualify for participation in the social security fund is currently set at 300,000 kyats.
- kinds of social security funds are:
 - (a) Health and social care fund
 - (b) Family assistance fund
 - (c) Injury fund
 - (d) Invalidity benefit, superannuation benefit, and survivors’ benefit fund
 - (e) Unemployment benefit fund
 - (f) Other social security fund (e.g. housing fund).

For medical treatment and cash benefit for sickness;

- Beneficiaries have the right to take medical treatment at the permitted hospital or clinic for a period up to 26 weeks. [section 22 (a)]



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- When the insured person/beneficiary is retired, 50% payment of medical treatments is entitled if social security contributions have been paid for more than 180 months. [section 29]
- Beneficiaries have the right to enjoy 60 percent of average wages, calculated against the most recent four-month working period, as a cash benefit, during a period of illness lasting up to maximum 26 weeks. [section 23]

For maternity benefits: [section 25, 26, and 27]

- (a) Benefits are allowed to be taken if the prior working period of an employee has been a minimum of one year and if there have been paid social security contributions by the worker for a minimum of six months.
- (b) Maternity leave may total six weeks before confinement and eight weeks after confinement, up to 14 weeks in total.
- (c) An additional four weeks are allowed for maternity leave if twins have been delivered
- (d) Up to a maximum of six weeks total leave is allowed to be taken in cases of miscarriage
- (e) Full wages may be taken for prenatal examination at the rate one day per time and up to a maximum of seven times
- (f) 70% of average wages of the previous year can be taken as maternity leave compensation before the birth
- (g) An additional 50% of wages which can be taken once the child is born (additional 75% for twins, 100% for triplets). Hence, 120% of average wages will be administered for the eight weeks of maternity leave which may be taken after birth
- (h) Has the right to take leave for medical treatment for a child up until one year after birth
- (i) A father is entitled to take up to 15-days unpaid leave for infant care upon confinement of his wife.

For funeral expenses

- If a Social Security insured person passes away, his or her beneficiary is entitled to receive five times their average month's wage. This is determined as the average wage of the last four working months of the deceased person.
- The obligations of employers are:
 - (a) To inform immediately to the Social Security Office when an injury has happened to an employee. [section 54 (a)]
 - (b) To register their business in the Social Security Office within 30 days from the day of first business operations. [Rules]
 - (c) To register every newly appointed employee with the Social Security Office. [Rules]
- The employer who registered in accord with the Social Security Law has the right to be exempted from the Workmen's Compensation Act.

26. The Workmen's Compensation Act, 1923 (Amendment, 2005)

Description

To make payments out-of-pocket to employees who become injured or who die in any accidents arising during and in consequence of their employment.



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Such compensation also must be made for diseases which arise as a direct consequence of employment, such as carpal tunnel syndrome.

Relevance to the Project

The project will manage to align with the law.

27. The Factory Act, 1951

Factory Act 1951 is enacted in Burma Gazette as 1951 Act 65 dated 1st January, 1952. In this act, factory owner reports the facts about the factory such as name, address, type of product, process, etc., before start the work or using the building, time duration of reports, report for rerunning, report of new manager; owner or manager when necessary; reporting the stoppage and are known and conducted by person of project.

States that every factory compound must be cleaned and especially drainage, lavatory and then off-smell places and floor of every workplace was washed once a week at least, painting (once 3 years). (Section 13)

Ventilation, fumes and dust, humidification, crowding in workplace, lighting, drinking water, lavatories, spittoon conducted by person of project.

Guarding the machineries, working near running machines and equipment, working by young person at dangerous places, energy stop and breakers using, minimum distance for reciprocating parts and other materials, path of walkway, safe guarding for running machines, not be duty ladies and children at cotton ginning machine, lay down the hoists and lifts using touch and good machines, for cranes and others, under control of safe speed of machine, working at under safe pressure, floors, walkway, ladder for safe, covering the vessel, sump, tank, and pit, not work for lift, carry, transport the heavy materials, etc., are conducted by project person.

28. The Leave and Holiday Act, 1951

The objectives are:

- To allow worker for leave and holiday allowances, religious or social activities with earn allowance, and benefits for Health allowances.
- Concerned workers: Daily wage workers/temporary workers/permanent workers.
- Causal Leave (6) days [section 5]
 - (a) Casual leave of 6 days with wages is to be provided
 - (b) Causal leave can be taken a maximum of 3 days at a time except in special cases
 - (c) Causal leave cannot be joined with any other leave
 - (d) Leave will be cancelled if it has not been used within a year.
- Earned Leave (10) days [section 4]
 - (a) For continuous service of 12 months and above, 10 days of 'earned leave' shall be entitled
 - (b) If the service day is not 24 days, 1 day deduction from earned Leave is made,
 - (c) Can be accumulated for up to 3 years.



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- Medical Leave (30) days [section 6]
 - (a) Workers are entitled to 30 days of medical leave with full pay if 6 months service has been completed
 - (b) If 6 months service has not been completed, ‘leave without pay’ can be granted for medical needs
 - (c) If not taken within a year, medical leave is void or cancelled.
- Maternity Leave [section 7-A]
 - (a) 6 weeks maternity leave before confinement and at least (8) weeks after confinement
 - (b) Entitled jointly with medical leave.
- Public Holidays (21) days [section 3]
 - (a) Workers can enjoy time off with full pay
 - (b) If work is given on a public holiday, twice the rate of regular wages is required.

The Leave and Public Holidays Act, 1951 (Amendment, 2014)

Description

Provisions related to allow worker for leave and holiday allowances, religious or social activities with earn allowance, and benefits for Health allowances.

Concerned workers: Daily wage workers/temporary workers / permanent workers.

Relevance to the Project

The project will manage to align with the law.

29. The Union of Myanmar Public Health Law (1972)

This law is to promote and safeguard public health by taking necessary measures in respect of environmental health. The EMP study has followed the provisions of above laws of Government of Myanmar to ensure conservation of environment during proposal implementation and operation.

Requirements in making effective arrangements for the disposal and cleansing of wastes generated by a factory or provision of its own treatment plant to remove or reduce potential pollutants from its wastewater before disposing its effluent and regulations for health and cleanliness in factories, and the prevention of hazards. (Section 3, 5)

The project will manage to align with the law.

30. The Prevention and Control of Communicable Disease Law, 1995 (Amendment, 2011)

Description

The law also authorizes the Ministry of Health to issue rules and procedures when necessary with approval of the government. To protect from the danger which affects public health adversely by creating tobacco smoke-free environment; To uplift



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the health, economy and social standard of the public through control of smoking and consumption of tobacco product. (Section 3, 4)

In order to prevent and control the spread of a Principal Epidemic Disease, the Health Officer may undertake the following measures: (a) investigation of a patient or any other person required: (b) medical examination; (c) causing laboratory investigation of stool, urine, sputum and blood samples to be carried out: (d) causing investigation by injection to be carried out; (e) carrying out other necessary investigations. (Section 11)

Relevance to the Project

The project will manage to align with the law.

31. The Consumer Protection Law (14th March 2014)

(a) “Consumer” means person who takes or uses goods or services not for trading.

(b) “Consumer Protection” means giving legal protection, giving guaranteeing in health and safety to the consumers in respect of goods or services.

(c) “Goods” means object tangible or insufficiently tangible, movable or immovable, consumable or inconsumable which is enable to trade for use and consume by general public.

(d) “Services” means an action which fulfills the need of consumer in the form of work or performance in the society.

(e) “Trade” means buying and selling goods or services determined the value and aiming to obtain interest.

(f) “Advertisement” means the activity that publicizes the goods produced and services provided by and individual, any organization or any business. The activity by media also includes in this expression.

(g) “Entrepreneur” means an individual person or organization conducting production, distribution, storage, transportation, sale, reproduction, exportation, importation, resale of goods, providing services or advertisement.

(h) “Fraud” means the act which is not in good faith of wrong statement or incorrect advertisement with the intention to mislead the consumer related to goods or services and the act done dishonestly to believe wrongfully by public of natural quality, manufacturing process, activity process, characteristic, specified standard, intention of quantity relating to goods or services.

(i) “Damage” means death, injury and loss to a person, and injury and loss to any property movable or immovable.

(j) “Sale Promotion” means activity aiming at to buy or use more widely the goods or services by the consumer.

(k) “Consumer Dispute Settlement Body” means a body formed under this Law to coordinate and settle the dispute arising relating to goods or services between entrepreneur and consumer.

(l) “Ministry” means the Ministry of Commerce of the Union Government.



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(m) “Central Committee” means the Central Committee of Consumer Protection formed under this Law.

(n) “Department” means the Department of Commerce and Consumer Affairs. (Section 2)

(a) The Government shall form the Consumer Protection Central Committee comprising the Union Minister of the Ministry of Commerce as Chairman, the Deputy Ministers from the respective Ministries, the Heads from respective government departments and organizations, the representatives from the non-government organizations and experts as members and persons assigned duty by the chairman as secretary and joint-secretary;

(b) The Central Committee formed under sub-section (a) may amend and form as may be necessary. (Section 4)

(i) The consumer complying with the information and guideLine related to goods or services intended and expressed to cause safety;

(ii) The consumer complying with the decisions of the Consumer Dispute Settlement which settle properly in consumer disputes;

(iii) The consumer avoiding false accusation intended to detriment on entrepreneurs;

(iv) The consumer avoiding the saying, writing and acting in order to detriment on relevant entrepreneurs by mean of media or by other mean while relevant persons is settLineg the consumer dispute. (Section 6)

(i) The entrepreneurs acting the business accord with business ethics;

(ii) The entrepreneurs giving clear and proper information on goods or services;

(iii) The entrepreneurs treating honestly and properly with non-discrimination to the consumers;

(iv) The entrepreneurs guaranteeing the goods or services traded or produced based on stipulated standard and quality;

(v) The entrepreneurs providing opportunity to test on goods or services which require to test quality before purchasing;

(vi) The entrepreneurs taking responsibility as guaranteed in respect of damage due to consuming goods or using services during the warranty period;

(vii) The entrepreneurs taking responsibility as agreed terms and conditions if received or used goods by consumer are inconsistent with the agreement;

(viii) The entrepreneurs complying exactly with the agreed agreement or promise in the agreement in doing service business;

(ix) The entrepreneurs avoiding the saying, writing and acting to cause detriment on the relevant consumer by means of media or by other means while relevant person is settLineg the consumer dispute. (Section 7(b))

The project will manage to align with the law.

32. Conservation of Water Resources and Rivers Law (2006)

This policy emphasizes on a conservation and protection of water resources and river system for proper utilization of the public by preventing environmental impact so as to attain



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overall social and economic development. Under this policy water resources should be protected from pollution by putting appropriate measures in place so as to ensure proper health and safety for all users. This policy as well requires all developments to ensure there are proper wastewater and other wastes disposition system in place to cater for any wastes generated by the developments' undertakings.

Any government department and organization or any person desirous of constructing drainage, utilizing river water intake, constructing bridges spanning rivers, connecting underground pipe, connecting underground electric power cable, connecting underground telecom cable or digging in rivers and creeks, bank Boundary and waterfront Boundary, under the requirement of work, shall in order not to adversely affect the water resources and rivers and creeks, carry out only after obtaining the approval of the Ministry of Transport.

The project will manage to align with the law.

33. The Control of Smoking and Consumption of Tobacco Product Law, 2006

The person-in-charge shall: (a) keep the caption and mark referring that it is a non-smoking area at the place mentioned in section 6 in accordance with the stipulations. (b) arrange the specific place where smoking is allowed as mentioned in section 7, and keep the caption and mark also referring that it is a specific place where smoking is allowed, in accordance with the stipulations. (c) supervise and carry out measures so that no one shall smoke at the non-smoking area. (d) accept the inspection when the supervisory body comes to the place for which he is responsible. (Section 9)

The project will manage to align with the law.

34. The City of Yangon Development Law, 28th June 2018

The committee shall, in respect of the following duties and responsibilities, lay down the policy, give guidance, supervise or implement.

Setting up the department and officer and up are planning the town plan, noting gone and management, management of land and garden and gymnasium, building, etc., and prohibition about town plan and land management, prohibition about garden and gymnasium about buildings, about ancient Monuments taxation, sheet, budge and drainage, water supply, sewage system, health, bagger, animal breeding and slaughter, environmental conservation, administration, especially about environmental conservation states 32 rule headings are conducted by person of factory. Offenses and penalty states as rule 324 attached as annex informing fine and imprisonment are also implied by employees of factory.

The Committee shall apply the following existing laws, rules, bye-laws and orders in so far as they are not contrary to the spirit and concepts of this Law: (a) The City Development Law and orders issued hereunder; (b) The City of Yangon Municipal Act, rules, bye-laws and orders. The factory will manage to comply.

35. The Occupational Safety and Health Law, 15th March 2019

Description

The employer shall



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(a) Arrange as may be necessary to assess the condition of danger to the environment of work place and arrange until it is safe and good for health. [sections 26(a)+(d)]

(b) Make necessary arrangement for enable to report immediately to the person-in-charge that a worker is likely to face occupational accident. [section 26 (i)]

(c) Arrange to be safe and not to injure health due to materials, machineries or wastes used in work place or processing. [section 26 (j)]

Whoever operating or developing any business related to this law shall not fail to register to the Department. [section 48 (a)]

Relevance to the Project

The project will manage to align with the law.

2.3 Legal Compliance

2.3-1 Environmental Commitment

To meet environmental, legal and other requirements, Emerald Brewery Myanmar Limited shall-

- Comply with all Myanmar laws, rules and regulations, including The City of Yangon Development Law and Clauses 14 and 15 of the Environmental Conservation Law (2012).
- Ensure that legal and other obligations are incorporated in the designs, procedures and project controls.
- Communicate legal and other requirements to personnel and contractors accountable for compliance.
- Ensure all relevant legal and other requirements and associated documentation (e.g. licenses, permits, approval applications) are readily available on site to the responsible personnel, contractors, subcontractors and consultants.
- Conduct a compliance audit at least annually and ensure there is a process in place to monitor on-going compliance with all legal and other requirements. Where work or construction activities are less than two years in duration at least one compliance audit will occur.

2.3.2 The Laws Suggested by Environmental Conservation Department to Fulfill in Additional upon EIA Scoping Report Revised 0-1 Prepared at June, 2020

2.3.2.1 Environmental Impact Assessment Procedure

The Government of Republic of Union of Myanmar, Ministry of Environmental Conservation and Forestry issued Notification No. 616/ 2015 at 29 December, 2015 as ‘**Environmental Impact Assessment Procedure**’. In this notification **Chapter I, Title and Definition** includes rule 1 title and rule 2, 34 numbers definitions. **Chapter II ‘Establishment of Environmental**



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Impact Assessment Process’ as rule 3 to obtain an ECC for any expansion of projects; rule 4 requirement of Prior Permission; rule 5 to apply for a permit or licence; rule 6 – reflection of ECC on Prior Permission; rule 7 – procedure for Involuntary Resettlement, rule 8 – to develop an EIA or IEE or EMP, obtain ECC, mitigate Adverse Impacts by any Project; rule 9 – requirements of extension projects; rule 10 – IEE or EIA type project funded with external aid shall obtain the relevant ECC prior to the submission to the Cabinet; rule 11 – Any expansion not required IEE or EIA shall be required revised EMP, rule 12 – ensuring that do not cause Environmental impacts for the project that, IEE or EIA not yet obligate as rule 13 – arranging the appropriate public consultation for IEE and EIA by project proponent; rule 14, 15, 16 – noting responsible, power and exclusive authority of Ministry and EIA Review Body. Under the title of Requirements concerning Third Person Organization undertaking IEE and EIA, rule 17, 18, 19, 20, 21, 22 show registration procedures for Third Party Organization; authority of Department for registration, referring, re-application; validity period of registration; Suspending or terminating power of Department; Submission to the Ministry for registration by person or organization; publish of list of all person and organization have been registered by the Department, **Chapter III**, title ‘**Screening**’ including rule 23, Submission by Proponent for screening, rule 24, 25, 26, 27, 28, 29, 30 for determination of Ministry, requirements facts for EIA such as foreseeable adverse effects noting EIA or IEE factors by addition to provisions, information to the Proponent as EIA, IEE or none; periodically reviewing by Ministry, **Chapter IV**, title ‘**Initial Environmental Examination**’ include rule 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43 as outLine of IEE, reporting by proponent that carry out itself or appoint third party, Confirmation by Department; undertaking public consultation submission IEE report; facts containing in IEE report; ways of submission; disclosing to other societies; performance of Department on IEE report, amendments for not satisfy requirements of IEE, issuing ECC, costs bearing by Project Proponent; **Chapter 5** title as ‘**Environmental Impact Assessment**’ include rule 44 to 70 include EIA process diagram, appointing Third Person or Organization by Proponent; confirmation Third Party from Department; Scoping (facts required, public consultation; content of scoping, TOR, submission EIA scoping report and TOR.) **EIA Investigation**, ensuring all adverse impacts considering all sectors such as biological, social, economic, etc., data collection, technical studies etc., analysis of alternatives, standard guideLines (national and international) undertaking result of consultation; all information to societies; **EIA Report Requirements**; issuing a letter to Ministry, facts contain in Report such as Executive Summary, Introduction, etc., **Submission of EIA Report**; reporting in both digital form and paper copies, disclosing to other societies, **Review and Approval Process for EIA Report**. Process of Department; amendment upon not satisfied requirements of EIA report,



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bearing the all costs by proponent and issuing ECC, or rejecting EIA report by Ministry. **Chapter VI**, title **Appeal Porcess** as rule 71 to 75; **Chapter VII**, title **Environmental Management Plan**, include 76 to 82; **Chapter VIII** title **Environmental Consideration in Project Approval** include rule 83 to 105, **Chapter IX** title **Monitoring** include rule 106 to 122; **Chapter X** title **‘Strategic Environmental Assessment’** include rule 123, 124, **Chapter XI**, **Administrative Punishment** include rule 125 to 131 and **Annex 1**, title **Categorization of Economic Activities for Assessment Purposes**.

Emerald Brewer Myanmar Limited, Project Proponent conducts the rules among ‘Environmental Impact Assessment (EIA) Procedure’ and they are summarzied as following table.

Rules conducted by Proponent from EIA Procedure

Rules	Description in Brief
Rule 3	- To obtain Prior Permission having the potential to cause Adverse Impacts, are required to undertake IEE, or EIA or to develop an EMP, and to obtain an ECC in accordance with this procedure
Rule 13	- Arrangement of appropriate public consultation
Rule 23	- Submission the Project Proposal for screening
Rule 47 to 54	- Preparation of scoping report conducted rule 47 to 54.
Rule 62	- Submission EIA report to Department
Rule 63	- Facts about EIA report (Contents of EIA)
Rule 69	- Bearng the all costs by Proponent
Rule 102	- Responsibility for all connected societies and supporting, restoration and resettlement in consultation.
Rule 103	- Fully implementation the EMP, commitments and conditions, and liable to ensure that all contractors and subcontractors of the Project.
Rule 104	- Responsibility for implement, all requirements set forth in the ECC applicable laws, the Rules, EIA Procedure and standards.
Rule 106	- Writing to the Ministry providing detailed information as to the proposed Projects potential Adverse Impacts.
Rule 107	- Reporting not later than 24 hours and in all their cases within seven (7) days of awairng of such incident, to Ministry when violation of the ECC and the EMP.
Rule 108	- Submission monitoring report to the Ministry not less frequently the every six months.
Rule 109	- Informing monitoring report to public by the ways of Project website, public meeting places at project office.
Rule 113	- Granting to the Ministry and/or its representatives at any times during normal working hours, assess to the Project’s Officers and to the Project site and any other location at which the Project activities or activities related to the Project are performed; - Granting from time to time as and when the Ministry may reasonably require, the Ministry access to the Project’s officers and to the Project site and any other location at which the Project activities or activities related to the Project are performed.
Rule 115	- Granting fully and immediate access to the Ministry at any time as may



	be required by the Ministry, in the event of an emergency, or where, in the opinion of the Ministry, there is or may exist a violation
Rule 117	- Further ensuring that the Ministry's rights of access hereunder shall extend to access by the Ministry to the project's contractors and subcontractors.
Rule 121	- Taking care that where, in the opinion of the Ministry, the Project Proponent is not in compliance with, or is likely not to comply with, its environmental and social obligations, the Ministry may take such enforcement actions as the Ministry thinks appropriate as are not out in any applicable law, including without limitation the right to suspend the Project operation, and the right of the Ministry to employ any qualified third party to connect such non-compliance at the Project Proponent's role expense.

2.3.2.2 The Myanmar Insurance Law

The State Law and Order Restoration Council enacts the law namely **The Myanmar Insurance Law** as the State Law and Order Restoration Council Law No.10/93 at 23rd July 1993. In that law, **Chapter 1, Title and Definition** include rule 1 to 2. **Chapter II, Establishment and Aim** include rule 3 to 4. **Chapter III, Formation of Board of Directors and Management** include rule 5 to 10, **Chapter IV, Insurance Business** include rule 11; **Chapter V 'Powers of Myanmar Insurance'** include rule 12, **Chapter VI, Effecting Insurance and Granting of Benefits** include rule 13 to 20, **Chapter VII, Capital and Profit Allocation** include rule 21 to 31. **Chapter VIII, Accounts and Audit** include rule 32 to 34. **Chapter IX, Miscellaneous** include rule 35 to 42.

Emerald Brewery Myanmar Limited, Project Proponent conducts the rules among '**The Myanmar Insurance Law**' and they are summarized as following table.

Rules conducted by Proponent from 'The Myanmar Insurance Law'

Rule 13	- Government servants shall affect compulsory life assurance with the Myanmar Insurance in accordance with the prescribed age and scale of pay.
Rule 14	- A person who has attained majority may affect life assurance for a minor.
Rule 15	- Owners of motor vehicles shall affect compulsory Third Party Liability Insurance with the Myanmar Insurance.
Rule 16	An entrepreneur or an organization operating an enterprise which may cause loss to State-owned property or which may cause damage to the life and property of the public or which may cause pollution to the environment shall effect compulsory General Liability Insurance with the



	Myanmar Insurance.
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2.3.2.3 Law on Standardization

The Pyidaungsu Hluttaw enacts the ‘**Law on Standardization**’ as the Pyidaungsu Hluttaw Law No.28/2014 at 3rd July, 2014. In this law **Chapter 1, Title and Definition** include rule 1 to 2; **Chapter II, Objectives** include rule 3; **Chapter III, Formation of National Standard Council and Functions and Duties Thereof**, include rule 4, 5, **Chapter IV, Formation of the Standard Working Committee and Functions and Duties Thereof** include rule 6 to 8; **Chapter V, Application for and issue of Accreditation Certificate** include rule 9 to 16; **Chapter VI, Application for and issue of Certification** include rule 17 & 18, **Chapter VII, Taking Action by Committee** include rule 19 & 20, **Chapter VIII, Appeal** include rule 21 to 23, **Chapter IX, Offences and Penalties** include rule 24 to 26, **Chapter X, Financing** include rule 27 & 28; **Chapter XI, General Provisions** include rule 29 to 33.

Emerald Brewery Myanmar Limited, Project Proponent conducts the rule naming ‘**The Law on Standardization**’ and they are summarized as following table.

Rules Conducted by Proponent from ‘The Law on Standardization’

Rule 19	- The Committee may, if it is found out that holder of certificate of certification violates any term or condition contained in the relevant recommendation, pass any of the following administrative orders: (a) warning (b) suspending the certificate of certification for limited period (c) cancelLineg the certificate of certification
Rule 24	- Any person who issues quality recommendation without accreditation certificate, on conviction, shall be punished with imprisonment for a term not exceeding three years or with fine not more than three million Kyats or with both.
Rule 25	- Any person who commits any of the following acts shall, on conviction, be punished with imprisonment for a term not exceeding three years or with fine not more than three million Kyats or with both: (a) counterfeiting any standardization mark (b) using standardization mark that is not allowed to use or not confirmed by the Council (c) advertising, selLineg or possessing in order to sell any product or advertising or carrying out any service that is not in conformity with mandatory standard prescribed by the Council knowingly or likely to know.
Rule 26	- If any person who obtained certificate of certification uses standardization mark on the product which is not in conformity with the relevant standard or relating to service shall be punished with imprisonment for a term not exceeding one year or with fine not more than one million Kyats or with both.



Rule 29	- The person who obtains the certificate of certification whose representative and successors shall oblige the mandatory standards.
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2.3.2.4 International Conventions, Treaties and Agreements by Myanmar Government

Myanmar has signed a number of international treaties related to the environment which may have implications for the project. These include:

- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Montreal Protocol on Substances that Deplete the Ozone Layer & all amendments
- Stockholm Convention on Persistent Organic Pollutants
- Convention on Biological Diversity
- Cartagena Protocol on Biosafety
- International Tropical Timber Agreement
- Ramsar Convention on Wetlands
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- ASEAN Agreement on the Conservation of Nature and Natural Resources
- United Nations Convention to Combat Desertification
- United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol
- ASEAN Agreement on Trans-Boundary Haze
- Global Tiger Forum, India in August 1994.

2.3.3 Standards Comply by Proponent about Beer Production Industry

GuideLines cover the production of beer, wine and spirits from raw material storage to dispatch of the finished product.

- General GuideLines

a.1. Air Emissions

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that: (i) emissions do not result in concentrations that reach or exceed national ambient quality guideLines and standards, or in their absence current World Health Organization (WHO) Air Quality GuideLines¹ for the most common pollutants as summarized below; and (ii) emissions do not contribute a significant portion to the attainment of relevant ambient air quality guideLines or standards (i.e. not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same air shed. Industry-specific guideLines summarized hereinafter shall be applied by all projects to ensure that air emissions conform to good



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industry practice. Reference should be made to WHO's Air Quality GuideLines for Europe² for air pollutants not included in the following table.

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

^aParticulate matter 10 micrometers or less in diameter

^bParticulate matter 2.5 micrometers or less in diameter

The following small-combustion facilities emission guideLine applies to project systems designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of fuel type, with a total, rated heat input capacity of 3-50 megawatt thermal. The industry-specific Thermal Power guideLine applies to larger facilities exceeding 50 megawatt generation.

Combustion Technology / Fuel	Particulate matter PM_{10} ^a	Sulfur Dioxide	Nitrogen Oxides
Gas	-	-	200 ^b mg/Nm^3 ^c 400 ^d mg/Nm^3 1,600 ^e mg/Nm^3
Liquid	100	3 %	1,600-1,850 ^f mg/Nm^3
Natural gas (3-<15 MW ^g)	-	-	90 ^h mg/Nm^3 210 ⁱ mg/Nm^3
Natural gas (15-<50 MW)	-	-	50 mg/Nm^3
Fuels other than natural gas (3-<15 MW)	-	0.5 % sulfur	200 ^h mg/Nm^3 310 ^j mg/Nm^3
Fuels other than natural gas (15-<15 MW)	-	0.5 % sulfur	150 mg/Nm^3
Gas	-	-	320 mg/Nm^3
Liquid	150 mg/Nm^3	2,000 mg/Nm^3	460 mg/Nm^3
Solid ^j	150 mg/Nm^3	2,000 mg/Nm^3	650 mg/Nm^3

a Particulate matter 10 micrometers or less in diameter

b Spark ignition; d dual fuel; e compression ignition

c Milligrams per normal cubic meter at specified temperature and pressure



f Higher value applies if bore size >400 mm

g Megawatt

h Electric generation; j mechanical drive

j Includes biomass

a.2. Effluent Levels

**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
Sulfide	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

Effluent Levels (Breweries and Distilleries)

Parameter	Unit	GuideLine Value
5-day Biochemical oxygen demand	mg/l	50
Active ingredients / Antibiotics	To be determined on a case specific basis	
Chemical oxygen demand	mg/l	250
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Temperature increase	°C	<3 ^b
Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

^a Standard unit

^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

a.3. Noise Levels

Noise prevention and mitigation measure should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most – point of reception. Noise impacts should not exceed the levels shown level, or result in



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a maximum increase in background levels of three decibel at the nearest reception location off site.

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

a.4. Odor

Project should control odors to ensure that odors that are offensive or unacceptable to neighbours do not occur. Generally, odor level, should not exceed five to ten odorant units at the edge of populated areas in the vicinity of a project.

a.5. Drinking Water Standards by Ministry of Health
Drinking Water Quality Standards 2014, Ministry of Health


SR.No	Parameter	Unit	Value	Remark
1	Turbidity	NTU	5	
2	Arsenic	mg/l	0.05	
3	Aluminum	mg/l	0.2	
4	Chloride	mg/l	250	
5	Copper	mg/l	2-0	
6	Cyanide	mg/l	0.07	
7	Manganese	mg/l	0.4	
8	pH	-	6.5~8.5	
9	Sulphate	mg/l	250	
10	Total Alkalinity as CaCO ₃	-	-	
11	Total Dissolved Solid	mg/l	1000	
12	Total Hardness as CaCO ₃	mg/l	500	
13	Total Iron	mg/l	1	



a.6. Soil Standards of Industrial GuideLine

By literature surveys environmental quality standards for soil pollutions issued by Japan Government was shown as attached here.

Soil Quality GuideLines



Ministry of the Environment
Government of Japan

Environmental Quality Standards for Soil Pollution

Environmental Quality Standards (EQS) for soil pollution were issued in August 1991. As a result of additions made in February 1994, the EQS now regulate 25 substances. Guidelines for Investigation and Countermeasures for Soil and Groundwater Pollution were established in November 1994, to ensure smooth implementation of surveys and countermeasures based on the EQS and Evaluation Standards Relevant to Soil and Groundwater. Administrative guidance is provided to polluters to urge them to clean up polluted soil voluntarily under these guidelines.

Environmental Quality Standards for Soil Pollution

Substance	Target level of soil quality examined through leaching and content tests
cadmium	0.01 mg/l in sample solution and less than 0.4mg/kg in rice for agricultural land
total cyanide	not detectable in sample solution
organic phosphorus	not detectable in sample solution
lead	0.01 mg/l or less in sample solution
chromium (VI)	0.05 mg/l or less in sample solution
arsenic	0.01 mg/l or less in sample solution, and less than 15 mg/kg in soil for agricultural land (paddy fields only)
total mercury	0.0005 mg/l or less in sample solution
alkyl mercury	not detectable in sample solution
PCBs	not detectable in sample solution
copper	less than 125 mg/kg in soil for agricultural land (paddy fields only)
dichloromethane	0.02 mg/l or less in sample solution
carbon tetrachloride	0.002 mg/l or less in sample solution
1,2-dichloroethane	0.004 mg/l or less in sample solution
1,1-dichloroethylene	0.02 mg/l or less in sample solution
cis-1,2-dichloroethylene	0.04 mg/l or less in sample solution
1,1,1-trichloroethane	1 mg/l or less in sample solution

1,1,2-trichloroethane	0.006 mg/l or less in sample solution
trichloroethylene	0.03 mg/l or less in sample solution
tetrachloroethylene	0.01 mg/l or less in sample solution
1,3-dichloropropene	0.002 mg/l or less in sample solution
thiuram	0.006 mg/l or less in sample solution
simazine	0.003 mg/l or less in sample solution
thiobencarb	0.02 mg/l or less in sample solution
benzene	0.01 mg/l or less in sample solution
selenium	0.01 mg/l or less in sample solution

The above standards are not applicable to:

- 1) Places where natural toxic substances exist such as near mineral veins, and
- 2) Places designated for storage of toxic materials such as waste disposal sites.

The soil quality standard mentioned above is for the polluted soil and the soil from Emerald Beer project site is urbanized soil. So, the analysis results of soil quality would not be compared with soil quality standards and should be compared with latter with current value as base Line data. There is submission to report ECD to allow this comparison.

a.9. Environmental, Health and Safety GuideLines for Food and Beverages Processing



Environmental, Health, and Safety Guidelines
FOOD AND BEVERAGE PROCESSING



**Environmental, Health, and Safety Guidelines for
Food and Beverage Processing**

Introduction

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP)¹. When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. These industry sector EHS guidelines are designed to be used together with the **General EHS Guidelines** document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. For complex projects, use of multiple industry-sector guidelines may be necessary. A complete list of industry-sector guidelines can be found at: www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the

¹ Defined as the exercise of professional skill, diligence, prudence and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of financial and technical feasibility.

environment, and other project factors, are taken into account. The applicability of specific technical recommendations should be based on the professional opinion of qualified and experienced persons. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHS Guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

Applicability

These guidelines cover the processing of meat², vegetable, and fruit raw materials into value-added food and beverage³ products for human consumption. Meat and poultry slaughtering and processing activities, from reception of the animals until the carcasses are ready for sale or further processing, are covered in the EHS Guidelines for Meat Processing and the EHS Guidelines for Poultry Processing. This document is organized according to the following sections:

- Section 1.0 — Industry-Specific Impacts and Management
- Section 2.0 — Performance Indicators and Monitoring
- Section 3.0 — References
- Annex A — General Description of Industry Activities

² Meat includes beef, pig, and poultry.

³ Includes only the manufacturing of non-fermented beverages. Beer manufacturing is addressed in the EHS Guidelines for Breweries.





1.0 Industry Specific Impacts and Management

The following section provides a summary of EHS issues associated with food and beverage processing, which occur during the operational phase, along with recommendations for their management. Recommendations for the management of EHS issues common to most large industrial facilities during the construction and decommissioning phases are provided in the **General EHS Guidelines**.

1.1 Environment

Essential tools for managing impacts while optimizing water, energy, and resource use and improving working practices involve the adoption of industry-specific good-manufacturing practice, quality management systems (including ISO 9000 series, ISO 22000), risk management systems (e.g., Hazard Analysis Critical Control Points, HACCP), and environmental management standards (e.g., ISO 14000).⁴

Environmental issues in food and beverage processing facilities primarily include the following:

- Solid waste
- Wastewater
- Energy consumption
- Emissions to air

Solid Waste

Depending on the raw materials, food and beverage processing activities may generate significant volumes of organic,

⁴ HACCP is for the systematic identification and management of risks associated with the production and distribution of foodstuffs. ISO 22000:2005 covers requirements for a food safety management system in which an organization in the food chain demonstrates its ability to control food safety impacts to ensure that food is safe at the time of human consumption. ISO 9000 series is an international standard for the certification of manufacturing and quality management systems; ISO 14001 is an international standard for the certification of environmental management systems.

putrescible solid waste in the form of inedible materials and rejected products from sorting, grading and other production processes.⁵ Where meat products are the raw material, solid waste generated during processing may include organic materials that have the potential to significantly impact food safety due to the proliferation of pathogenic microorganisms.⁶

Recommended measures to prevent and control solid waste generation include the following:

- Minimize inventory storage time for raw materials to reduce losses from putrefaction;
- Monitor and regulate refrigeration and cooling systems during storage and processing activities to minimize product loss, optimize energy consumption, and prevent odors;
- Consider use of enclosure techniques to minimize damage to raw materials stored outdoors;
- Monitor and optimize process yields, e.g. during manual grading or cutting activities, and encourage the most productive employees to train others in efficient processing.
- Clean, sort, and grade raw foodstuffs at an early stage (e.g. at the farm site), in order to reduce organic waste and substandard products at the processing facility;
- Contain solid waste in dry form and consider disposal through composting and / or use for soil amendment;
- Organic and non-organic debris / soil, solid organic matter, and liquid effluents, including sludge from wastewater

⁵ For example, mushrooms have a low wastage factor (around 3 – 5 percent) whereas the wastage factor for sweet corn kernel processing is much higher (around 50-60 percent). United Nations Environment Programme (UNEP), 2004. Working Group for Cleaner Production in the Food Industry. Fact Sheet 3: Food Manufacturing Series. Food and Beverage Processing.

⁶ The proportion of animal by-products in food processing activities in relation to their carcass weight ranges from approximately 8 to 16.5 percent for pig, 7 to 8 percent for poultry, and 12 percent for beef. European Union (EU) Commission, 2006. Directorate General Joint Research Council (JRC) Institute for Prospective Technological Studies. Integrated Pollution Prevention and Control Reference Document on Best Available Techniques in the Food, Drink and Milk Industries.





treatment, which remain after the implementation of waste prevention strategies should be recycled as a soil amendment (based on an assessment of potential impacts to soil and water resources) or other beneficial uses such as energy production;

- Collect and reuse rejected raw materials for manufacturing other products;⁷
- Provide leak-proof containers for collected solid and liquid waste;
- Segregating individual by-products from each other and from waste to maximize their use and minimize waste.

Wastewater

Industrial Process Wastewater

Effluent streams from food and beverage processing may have a high biochemical and chemical oxygen demand (BOD and COD) resulting from organic wastes entering into the wastewater stream, and from the use of chemicals and detergents in various processes including cleaning (discussed below). In addition, effluent may contain pathogenic bacteria, pesticide residues, suspended and dissolved solids such as fibers and soil particles, nutrients and microbes, and variable pH. The effluent load should be reduced by preventing raw materials, intermediates, product, by-product and wastes from unnecessarily entering the wastewater system, as discussed in the solid waste section above.

Process Wastewater Treatment

Techniques for treating industrial process wastewater in this sector include grease traps, skimmers or oil water separators for

⁷ Secondary products may include jams and cut products, such as coleslaws; sauerkraut; orange peels for use in dietary fiber supplements; potato pulp for production of biofuel; onion material for onion oil production, fructooligosaccharides, pectic polysaccharides, and low-lignin dietary fiber; animal waste for production of animal feeds with strict recognition of biosafety considerations; and use of bones, fat, and other by-products from meat as raw material for glue, detergents, gelatin, and other materials.

separation of floatable solids; flow and load equalization; sedimentation for suspended solids reduction using clarifiers; biological treatment, typically anaerobic followed by aerobic treatment, for reduction of soluble organic matter (BOD); biological nutrient removal for reduction in nitrogen and phosphorus; chlorination of effluent when disinfection is required; dewatering and disposal of residuals; in some instances composting or land application of wastewater treatment residuals of acceptable quality may be possible. Additional engineering controls may be required to contain and neutralize nuisance odors.

Management of industrial wastewater and examples of treatment approaches are discussed in the **General EHS Guidelines**. Through use of these technologies and good practice techniques for wastewater management, facilities should meet the Guideline Values for wastewater discharge as indicated in the relevant table of Section 2 of this industry sector document.

Other Wastewater Streams & Water Consumption

Guidance on the management of non-contaminated wastewater from utility operations, non-contaminated stormwater, and sanitary sewage is provided in the **General EHS Guidelines**. Contaminated streams should be routed to the treatment system for industrial process wastewater. Food and beverage processing activities (e.g. washing, internal transport of raw materials using water, cooling of blanched foods, and general equipment cleansing) may consume large quantities of water.⁸ In addition to the recommendations on water conservation included in the **General EHS Guidelines**, industry specific measures include the following:

⁸ Water demands in meat processing are diverse and may, depending upon the specific operation, include thawing of frozen materials, continuous equipment, boot, apron and clothing washing and disinfection as well as generation of steam and process heat, and cooling processes.





Environmental, Health, and Safety Guidelines
FOOD AND BEVERAGE PROCESSING



- Minimize water consumed during production processes:
 - Optimize product conveying systems to reduce contact of raw material and product with water, for example by using dry instead of wet conveying systems. Optimize process line operations to avoid spills of raw materials and water, reducing the need to wastewater treatment and associated energy consumption;
 - Use dry methods, such as air classifiers, magnetic separators and vibration over sieving and screening devices, for the primary cleaning of robust raw materials with low moisture content;
 - Where feasible, use a continuous / batch steam or a dry caustic process for peeling activities, or alternatively, consider dry caustic peeling;
 - Minimize rate of make-up supply to continuously overflowing tanks, flumes etc.
 - Use taps with automatic shut-off valves and use high water pressure and optimized nozzles,
 - Use counter-current wash techniques for primary wash of raw materials;
 - Implement dry clean of equipment with scraper or broom before cleaning with water
 - Minimize wet transport (pumping) of waste
- Reuse water streams in the production processes to the maximum extent possible while avoiding water contamination or compromising food safety:
 - Separate and recirculate cooling water from process and waste water streams. Recirculate and reuse thawing water in a closed circuit provided this practice does not compromise food safety
 - Recirculate fluming water used in vegetable transfer provided this practice does not compromise food safety
- Return condensate for use as boiler feed water. Alternative uses for condensate include as a sprinkling agent for dust suppression or in general factory wash down (e.g. cleaning the floor)
- Where feasible, recycle low grade wash water and reusing it for the primary wash of raw materials or for wet transport
- Explore opportunities collection and use of storm water consistent with food safety requirements
- Review process lines and operations to identify opportunities to reduce the effluent load by minimizing contact with water at every stage of the process, to avoid contamination of the water and the need for consequent treatment, including:
 - Use dry methods (e.g. vibration or air jet) to clean raw materials
 - Install grids to reduce or avoid the introduction of solid materials into the wastewater drainage system. Install trays to catch waste from trimming operations and juice / product on conveyors
 - Ensure regular integrity testing of bulk storage tanks for product and waste
 - Provide secondary containment for storage and process vessels to contain spills
 - Adopt best-practice methods for plant cleaning, which can be manual or automated Clean In Place (CIP)⁹ systems, using approved chemicals and (or) detergents with minimal environmental impact and compatibility with subsequent wastewater treatment processes.

⁹ Automated CIP systems reduce chemical, water, and energy consumption and facilitate rinse recovery but may not be appropriate for all applications.





Energy Consumption

Food and beverage processing activities may require high levels of thermal energy consumption in process heating, cooling, and refrigeration. In addition to the recommendations on energy conservation included in the **General EHS Guidelines**, industry specific measures include the following¹⁰:

- Implement operational, maintenance and housekeeping measures:
 - Insulate refrigeration room/areas and use of automatically closing doors and airlocks
 - Insulate refrigeration rooms / areas
- Optimize plant processes for energy efficiency:
 - Use Combined Heat and Power (CHP) particularly in plants which have high heat and power demand for more than 5000 hours/year
 - Reduce the size of refrigeration rooms where feasible, but still taking food safety into consideration
 - Design plant layout to reduce pumping and conveyor belt transportation distances
 - Ensure that fouling on heat transfer surfaces, for example in the sterilization process, is regularly cleaned to ensure optimum efficiency
 - Avoid refrigeration of fruits, vegetables and by-products intended for animal feed by storing outside in clean covered areas or in containers, when climate conditions and plant design allow
 - Use high temperature pre-cooling before refrigerated cooling and freezing, for example, after blanching pre-chill products by passing them cold water before freezing. This is particularly cost-effective when liquid nitrogen freezing is used.

¹⁰ EC (2006)

- Recover energy from thermal processes where possible. Heat recovery opportunities may include, for example¹¹:
 - Recovering heat from ovens, dryers, evaporators, pasteurizers and sterilizers.
 - Maximizing regeneration efficiency in plate heat exchanger pasteurizers (regeneration efficiency up to 94 percent is possible)
 - Recovering heat from condensed steam for blanching and steam peeling operations before it is discharged
 - Using multi-effect evaporators in large scale evaporator applications.

Emissions to Air

The main air pollutants from food and beverage processing operations consist of particulate matter (PM) and odor. PM may arise from solids handling, solid reduction and drying. Odor may be released by thermal processing steps such as steam peeling, blanching and dehydrating and by microbial action in stored solid waste. In meat processing, odor may also be emitted from cooking and smoking activities.¹²

Management of emissions to air from combustion sources for electricity generation is addressed in the **General EHS Guidelines**.

Particulate Matter

Recommended techniques to prevent and control particulate matter emissions include¹³:

- Cover skips and vessels, and stockpiles, especially outdoors;
- Enclose silos and containers used for bulk storage of powders and fine materials;

¹¹ EC (2006)

¹² EC (2006)

¹³ Based on Environment Agency. 2003. Environment and Heritage Service. Guidance for the Food and Drink Sector. Sector Guidance Note IPPC S6.20.





- Where enclosure is not feasible, use sprays, windbreaks, sweeping, sprinkling, and other stockpile management techniques to suppress dust ;
- Use closed conveyors equipped with filters to clean transport air prior to release;
- Use cyclones and, if necessary, and fabric filters to remove dust from exhaust air;
- Remove particulate matter from the gas stream using dry cyclones, venturi scrubbers, electrostatic precipitators (ESPs) or dry filter systems, as necessary.

Odor

Recommended techniques to prevent and control point source odor emissions include:

- Use exhaust stack heights that are consistent with Good Engineering Practice (GEP) as described in the **General EHS Guidelines**;
- If the plant is in close proximity to residential areas consider the use of wet scrubbers to remove odor emissions. Wet scrubbers are used to remove odors with a high affinity to water, such as ammonia emitted during the rendering process; and
- During the procurement of air emission systems for smoking units, it is best practice to install integrated systems that combine air cleaning, incineration, and heat recovery. Such systems are highly effective with regard to the reduction of odor emissions, production / energy efficiency;
- Recirculate exhaust gas from frying and other cooking operations to the burner.

Recommended techniques to prevent and control fugitive emissions of odor include:

- Minimize storage duration for solid waste to avoid putrefaction;
- Operate facilities under partial vacuum to prevent fugitive odor emission;
- Regular inspection of chilling and freezing equipment to monitor loss of refrigerants.

1.2 Occupational Health and Safety

Occupational health and safety issues associated with the operation of food and beverage processing during the construction and decommissioning phases are discussed in the **General EHS Guidelines**. Hazards during the operational phase include the following:

- Physical hazards
- Exposure to noise
- Biological hazards
- Chemical hazards
- Exposure to heat and cold

Physical Hazards

Physical hazards include exposure to same-level fall hazards due to slippery conditions, the use of machines and tools, and collisions with internal transport equipment, such as forklift trucks and containers. Guidance on general workplace conditions, including design and maintenance of working and walking surfaces to prevent slips and falls, is presented in the **General EHS Guidelines**. Additional, industry-specific recommendations are presented below.

- Maintain walking and working surfaces clean and dry by preventing spillages through equipment design and operation, providing workers with anti slip footwear where still necessary;



- Control of occupational risks at their source through implementation of engineering controls. Address residual risks based on hygiene and safety surveys and by providing workers with training in the proper use and maintenance of safety devices (including the proper use of machine safety devices) and personal protective equipment (PPE), such as hearing protection, and gloves, aprons etc. to avoid cuts, amputations, and other sharp instrument traumas;
- Ensure that the process layout reduces opportunities for process activities to cross paths, thus avoiding collisions and falls;
- Demarcate transport corridors and working areas and ensure the proper placement of handrails on platforms, ladders, and stairs;
- Prevent ingress of water;
- Ground all electrical equipment and installations;
- Prepare emergency plans and train staff for emergency situations.

Lifting, Repetitive Work, and Work Posture Injuries

Food and beverage processing activities may include a variety of situations in which workers can be exposed to lifting, carrying, repetitive work, and work-posture injuries. Such injuries may result from heavy manual lifting and repetitive work, including the operation of slicing and vacuum-packing machines and poor working postures caused by inadequate workstation and process activity design. Recommended management approaches to reduce these injuries are discussed in the **General EHS Guidelines**.

Exposure to Noise

A variety of operations in food and beverage processing units generate substantial noise levels, for example the canning plant, bottling machines, conveyors and blanching applications.

Recommended measures to prevent and control worker exposure to noise are discussed in the **General EHS Guidelines**.

Biological Hazards

Exposure to biological and microbiological agents may be associated with inhalation and ingestion of dust and aerosols. Dust from the ingredients used in food and beverage processing and high levels of humidity may cause skin irritation or other allergic reactions.

Recommendations for the prevention and control of exposures to biological hazards specific to food and beverage processing include the following:

- Avoid dust- and aerosol-generating activities (such as use of compressed air or high-pressure water for cleaning) and, where they cannot be avoided, provide proper ventilation of enclosed or semi-enclosed areas to reduce or eliminate exposure to dust and aerosols;
- Install exhaust ventilation equipped with filters, cyclones, etc., at sources of dust;
- Provide workers with PPE that is appropriate for the process activity, e.g. masks and gloves;
- Ensure physical segregation of work and welfare facilities to maintain worker personal hygiene.

Chemical Hazards

Exposure to chemicals (including gases and vapors) typically involves chemical-handling activities related to cleaning operations, disinfection of process areas and use of preservatives in long-term food storage, in addition to the maintenance of heating (thermal oils) and cooling systems (ammonia). Recommended measures to prevent and control exposure to chemicals are discussed in the **General EHS Guidelines**.



Food and beverage processing sites usually have large refrigeration systems, which often use ammonia as a primary refrigerant, and may have secondary refrigerants such as glycols or brines. Ammonia is a toxic substance and can form explosive mixtures with air. Guidance on the safe use of ammonia and other refrigerants is readily available from professional refrigeration institution¹⁴ and should be considered.

Heat and Cold

Food and beverage processing may create changing temperature conditions due to activities such as heat treatment, chilling and freezing. Workers may be exposed to heat from steam peeling, pasteurization, and canning processes and exposed to low temperatures in refrigerated areas / rooms. Irradiation dosing to extend the shelf-life of fruits and vegetables should be monitored for occupational exposure to radiation. Recommended measures to prevent and control exposure to heat, cold, and radiation are discussed in the **General EHS Guidelines**.

1.3 Community Health and Safety

Community health and safety impacts during the construction and decommissioning of food and beverage processing facilities are common to those of most industrial facilities and are discussed in the **General EHS Guidelines**. Industry-specific issues with the potential to impact the community are those associated with hygiene and food safety.

Process, Equipment, and Staff Hygiene

The design of the processing plant should be organized to ensure that products move from "dirty" to "clean" areas to avoid recontamination. Employee movement within the facility should

be opposite to the flow direction of products (i.e. from "clean" towards "dirty" zones). Cleaning activities during processing will depend on the particular production and processing systems. Daily cleaning and disinfection should comprise:

- Ensuring proper equipment clearance for cleaning
- Removal of solid waste
- Pre-rinsing with water
- Application of detergent(s)
- Rinsing
- Disinfection
- Post rinsing
- Post treatment

Staff should be trained in food safety issues and should follow established procedures for hand washing, working attire (clothes, shoes, gloves and hair coverage), and how to handle injuries and diseases.

Food Safety Impacts and Management

A food product recall caused by contaminated or adulterated food products can devastate a viable business. If a company can trace its products to specific lot numbers, then recall is a matter of removing all foods associated with those numbers. With a robust food safety program in place, a company can protect itself from product adulteration, contamination, and the impacts of food recalls.

Food and beverage processing should therefore be performed according to internationally recognized food safety standards consistent with the principles and practices of Hazard Analysis Critical Control Points (HACCP)¹⁵; and Codex Alimentarius¹⁶.

¹⁴ See the Institute of Refrigeration (IOR) for guidelines on the safe design of ammonia and other refrigeration systems, as well as safe handling of ammonia. Also, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

¹⁵ International Organization for Standardization (ISO) (2005)

¹⁶ Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO) (1962-2005)





The Codex Alimentarius provides Current Official Standards for a range of specific products from the food and beverage processing sector including canned, quick frozen, and whole fresh food products. In addition the Codex Alimentarius provides Current Official Standards for general and specific manufacturing steps in the production process, for example General Principles of Food Hygiene, Recommended International Code of Hygienic Practice for Canned Food and Beverage Products and the Recommended International Code of Practice for the Packaging and Transport of Tropical Fresh Food and beverages. In general, recommended food safety principles include:

- Strictly maintain cold chains and other preservation processes;
- Full institutionalization of HACCP prerequisites as well as Standard Operational Procedures, including:
 - Sanitation
 - Good Manufacturing Practice (GMP)
 - Pest control
 - Chemical control
 - Allergen control
 - Staff hygiene and education
 - Customer complaints mechanism
 - Traceability and reuse

2.0 Performance Indicators and Monitoring

2.1 Environment

Emissions and Effluent Guidelines

Table 1 presents effluent guidelines for this sector. Guideline values for process emissions and effluents in this sector are indicative of good international industry practice as reflected in relevant standards of countries with recognized regulatory

frameworks. These guidelines are achievable under normal operating conditions in appropriately designed and operated facilities through the application of pollution prevention and control techniques discussed in the preceding sections of this document. These levels should be achieved, without dilution, at least 95 percent of the time that the plant or unit is operating, to be calculated as a proportion of annual operating hours. Deviation from these levels in consideration of specific, local project conditions should be justified in the environmental assessment.

Effluent guidelines are applicable for direct discharges of treated effluents to surface waters for general use. Site-specific discharge levels may be established based on the availability and requirements of publicly operated sewage collection and treatment systems or, if discharged directly to surface waters, on the receiving water use classification as described in the **General EHS Guidelines**.

Emissions from food processing activities are principally associated with particulate matter (PM) and odor. PM and odor emissions from point sources such as ventilation exhaust systems and smoking units should be released through GEP-designed stacks. Smoking unit emissions of PM should typically not exceed 50 mg/Nm³. Combustion source emissions guidelines associated with steam- and power-generation activities from sources with a capacity equal to or lower than 50 MWth are addressed in the **General EHS Guidelines** with larger power source emissions addressed in the Thermal Power EHS Guidelines. Guidance on ambient considerations based on the total load of emissions is provided in the **General EHS Guidelines**.



Table 1. Effluent levels for food and beverage processing		
Pollutants	Units	Guideline Value
pH	pH	6 – 9
BOD ₅	mg/l	50
COD	mg/l	250
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Oil and grease	mg/l	10
Total suspended solids	mg/l	50
Temperature increase	°C	<3 ^b
Total coliform bacteria	MPN ^a / 100 ml	400
Active Ingredients / Antibiotics	To be determined on a case specific basis	
Notes:		
^a MPN = Most Probable Number		
^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		

Table 2: Waste Generation in the Food and Beverage Processing Sector		
Solid waste produced per tonne of product	Unit	Industry Benchmark
Maize	Kg	40
Peas	Kg	40
Potatoes	Kg	40
Broccoli	Kg	200
Carrots	Kg	200
Strawberries	Kg	60
Apples	Kg	90
Peaches	Kg	180

Resource Use and Waste Generation

Tables 2 and 3 provide examples of resource consumption indicators for energy, water, materials, and waste in this sector. Industry benchmark values are provided for comparative purposes only and individual projects should target continual improvement in these areas.

Environmental Monitoring

Environmental monitoring programs for this sector should be implemented to address all activities that have been identified to have potentially significant impacts on the environment, during normal operations and upset conditions. Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the particular project.

Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Monitoring should be conducted by trained individuals following monitoring and record-keeping procedures and using properly calibrated and maintained equipment. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken. Additional guidance on applicable sampling and analytical methods for emissions and effluents is provided in the **General EHS Guidelines**.





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FOOD AND BEVERAGE PROCESSING



WORLD BANK GROUP

2.2 Occupational Health and Safety

Occupational Health and Safety Guidelines

Occupational health and safety performance should be evaluated against internationally published exposure guidelines, of which examples include the Threshold Limit Value (TLV®) occupational exposure guidelines and Biological Exposure Indices (BEIs®) published by American Conference of Governmental Industrial Hygienists (ACGIH),¹⁷ the Pocket Guide to Chemical Hazards published by the United States National Institute for Occupational Health and Safety (NIOSH),¹⁸ Permissible Exposure Limits (PELs) published by the Occupational Safety and Health Administration of the United States (OSHA),¹⁹ Indicative Occupational Exposure Limit Values published by European Union member states,²⁰ or other similar sources.

Accident and Fatality Rates

Projects should try to reduce the number of accidents among project workers (whether directly employed or subcontracted) to a rate of zero, especially accidents that could result in lost work time, different levels of disability, or even fatalities. Facility rates may be benchmarked against the performance of facilities in this sector in developed countries through consultation with published sources (e.g. US Bureau of Labor Statistics and UK Health and Safety Executive)²¹.

Occupational Health and Safety Monitoring

The working environment should be monitored for occupational hazards relevant to the specific project. Monitoring should be

¹⁷ Available at: <http://www.acgih.org/TLV/> and <http://www.acgih.org/store/>

¹⁸ Available at: <http://www.cdc.gov/niosh/npg/>

¹⁹ Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDAR DS&p_id=9992

²⁰ Available at: http://europe.osha.eu.int/good_practice/risks/ds/oel/

²¹ Available at: <http://www.bls.gov/iif/> and <http://www.hse.gov.uk/statistics/index.htm>

Table 3: Resource and Energy Consumption in Food and Beverage Processing

Outputs per unit of product	Unit	Industry Benchmark
Electricity Consumption ^a		
Sorting of vegetables (carrots)	kWh./t frozen vegetables	8
Caustic peeling of vegetables		2
Steam peeling of vegetables		3.5
Washing of vegetables (carrots)		2.5
Mechanical processing prior to freezing (diced carrots)		2.5
Drum blanching in deep freezing of vegetables		0.5 - 1.3
Countercurrent water cooling of vegetable		0.5 - 1.3
Belt blancher with water cooler		2 - 9
Belt blancher with air cooling		7 - 30
Water Consumption		
Canned fruit	m ³ /ton	2.5-4.0
Canned vegetables		3.5-6.0
Frozen vegetables		5.0 - 8.5
Fruit juices		6.5
Jams		6.0
Potato processing: ^b Range Well managed		4.5 - 9.0 5.1
Cooked Ham ^b		4 - 18
Cured Ham ^b		2 - 20
Sausages, ham, bacon, etc. ^b		10 - 20

NOTES

^a Tables 3.31 - 3.39. European Commission. IPPC. Reference Document on BAT in the Food Drink and Milk Industries. P. 169 - 177.

^b Table 3.20: Water consumption for some processes in the food and beverage sector. European Commission. IPPC. Reference Document on BAT in the Food Drink and Milk Industries. P. 162.

designed and implemented by accredited professionals²² as part of an occupational health and safety monitoring program.

²² Accredited professionals may include Certified Industrial Hygienists, Registered Occupational Hygienists, or Certified Safety Professionals or their equivalent.





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Facilities should also maintain a record of occupational accidents and diseases and dangerous occurrences and accidents. Additional guidance on occupational health and safety monitoring programs is provided in the **General EHS Guidelines**.





3.0 References and Additional Sources

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Annex A: General Description of Industry Activities

The food and beverage processing sector covers a wide range of products. Many process steps are common to the manufacture activities of different products. Food and beverage processing plants vary in size and location, and are ideally located in close proximity to fresh water resources. Plant operation is often seasonal reflecting the harvesting of the raw materials, however product lines are unaffected by seasonal variations and take place throughout the year.

Figure 1.0 summarizes the major processes for most food and beverage products from fruit and vegetable sources, though the actual process flow will vary depending on the product and the plant set-up. Figure 2.0 summarizes the major steps for processing of meat products, specifically applicable to cooked ham manufacturing.

Fruit and Vegetable Processing²³

Fruit and vegetable production begins with the preparation of the raw food and beverages through a variety of methods including cleaning, trimming and peeling to reduce the product to a uniform size before cooking, canning, drying or freezing, as well as pulping and filtration to make soft drinks. The process culminates with the packaging and transport of the final product.

There are two major sub-sectors including fresh packed products and processed products. Processed products involve other unit operations such as cooking, evaporating and drying to provide product diversity and increase shelf-life. Common examples of processed fruit products are canned peaches and pears, dried fruits, jams and jellies, and fruit purees for use in the food industry. Examples of processed vegetable products include canned beans and frozen peas, as well as vacuum

²³ This section briefly describes the major manufacturing steps in the food and beverage processing sector and has been adapted from text in the British Environment Agency's Guidance for the Food and Drink Sector, Environmental Agency (2003).

packed beetroot. Typical examples of soft drinks are food and beverage juices and concentrated fruit extracts for dilution with water.

Receipt of Raw Materials

Raw materials are typically delivered in bulk on trucks and are off-loaded directly for processing or for storage (e. g. in silos). Other solid material ingredients may be delivered in bags on pallets. Liquid raw materials and ingredients may be transported in bulk tankers and pumped to storage tanks or delivered in containers on pallets. Solid raw materials are conveyed by belts and elevators.

Primary Grading / Screening

This process stage often covers grading and sorting but its main objective is the assessment of the overall quality of the food using a number of criteria. Solid raw materials should preferably be sorted and graded on the farm in order to minimize the quantity of waste material, organic and non-organic debris, and off-specification product that is transported to the processing plant.

Intermediary Storage

Storage of food and beverages can be required at various stages of the manufacturing process and the storage conditions will be dependent on the product. In general the parameters to be controlled for storage include humidity, temperature, atmospheric conditions, and hygiene.

Primary Cleaning

Primary cleaning removes and separates off-specification material, organic and non-organic debris, metals, and pesticide residues, among other contaminants, from the raw material prior





to further processing. The method used depends on the type of materials to be removed and may include the use of water although dry methods are favored for water conservations and wastewater prevention reasons.

When water is used, the raw materials may be sprayed, and then immersed for organic and non-organic debris removal using brushes, shaking, and stirring. The spray water may be chlorinated and detergents may be added to the wash water, which may also be heated to increase cleaning efficiency.

Sorting, Grading and Inspection

The washed material may be sorted, graded and inspected prior to further processing to ensure uniformity. Sorting is the separation of materials into categories and the main factors are size, shape, weight, and color. Size sorting is typically done using screens and sieves. Shape sorting may be done manually or mechanically and weight sorting is typically used for valuable material such as tropical fruits. Color sorting is performed manually or by use of computer technology whereby the material passes the control point on conveyor belts at high rates and rejected items are blasted away using compressed air.

Product Preparation

Most raw materials have parts that are inedible and need to be removed in order to make the raw materials uniform and suitable for further processing. In the product preparation phase, the sorted and graded materials are subjected to a variety of processes including trimming (manual or by rotating knives), peeling, and size reduction, as well as mixing, forming, separation and concentration of the food components. Various peeling methods are available including flash steam, flame, knife, abrasion, and caustic.

Product Processing

Food and beverages can be processed as a single operation or in a combination of several operations. The most common processing methods are through heat application and heat removal. The heat application methods include blanching, pasteurization, heat sterilization, evaporation, and dehydration including heat processing by baking or cooking in oils. Heat removal processing includes chilling, controlled or modified storage and packaging (to reduce the rate of respiration), freezing, and freeze-drying. Other preservation and processing methods include the use of sodium chloride and sugar, food additives, and irradiation.

Packaging

Products are packed to provide containment, protection, communication, and convenience. Packaging materials typically used in the food and beverage processing sector include flexible polymer materials (e.g. single films and laminates), paper, cardboard and corrugated cardboard, glass, cans, and wooden or polymer boxes.

Meat Processing

If beef, poultry and pork are received frozen, processing involves thawing after arrival to the processing plant using air, water showers, or water immersion techniques. The first two techniques generally require less water consumption than immersion thawing methods. Thawed meat is then cut into retail portions using electric cutting systems. Excess fat and bones can be reprocessed into commercial products such as gelatin, glues, etc. Fresh cuts are refrigerated prior to further processing into preserved meat products, such as sausage, ham, and bacon. Cuts may be ground down and reconstituted into different product shapes using various processing machinery. Preservation techniques include heat, such as cooking (e.g. in water bath, shower, steam, and hot air ovens) and smoking,



dehydration, fermentation, brining, curing, pickling, and canning. These activities are performed to increase the shelf life of the product. Brining, curing and pickling typically involve injection of a saline solution, followed by a massaging process to ensure mixing of ingredients and product additives. Meats are then inserted into casings to define their shape and size.

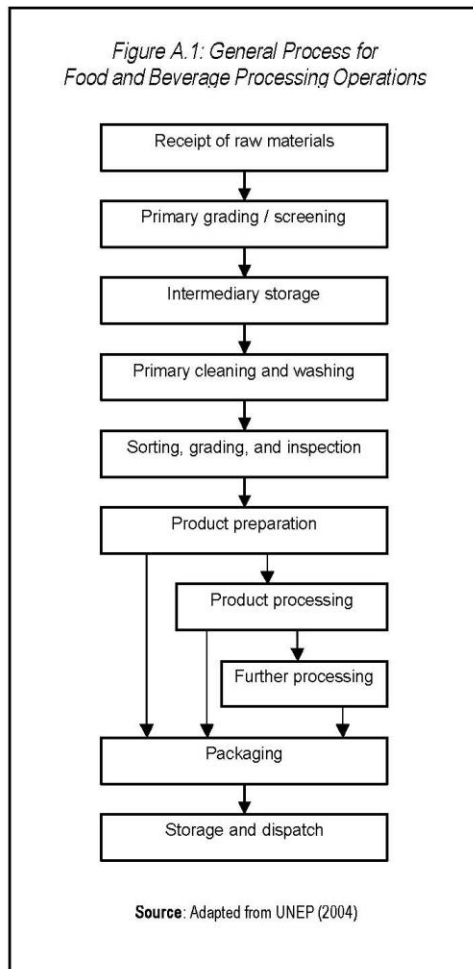
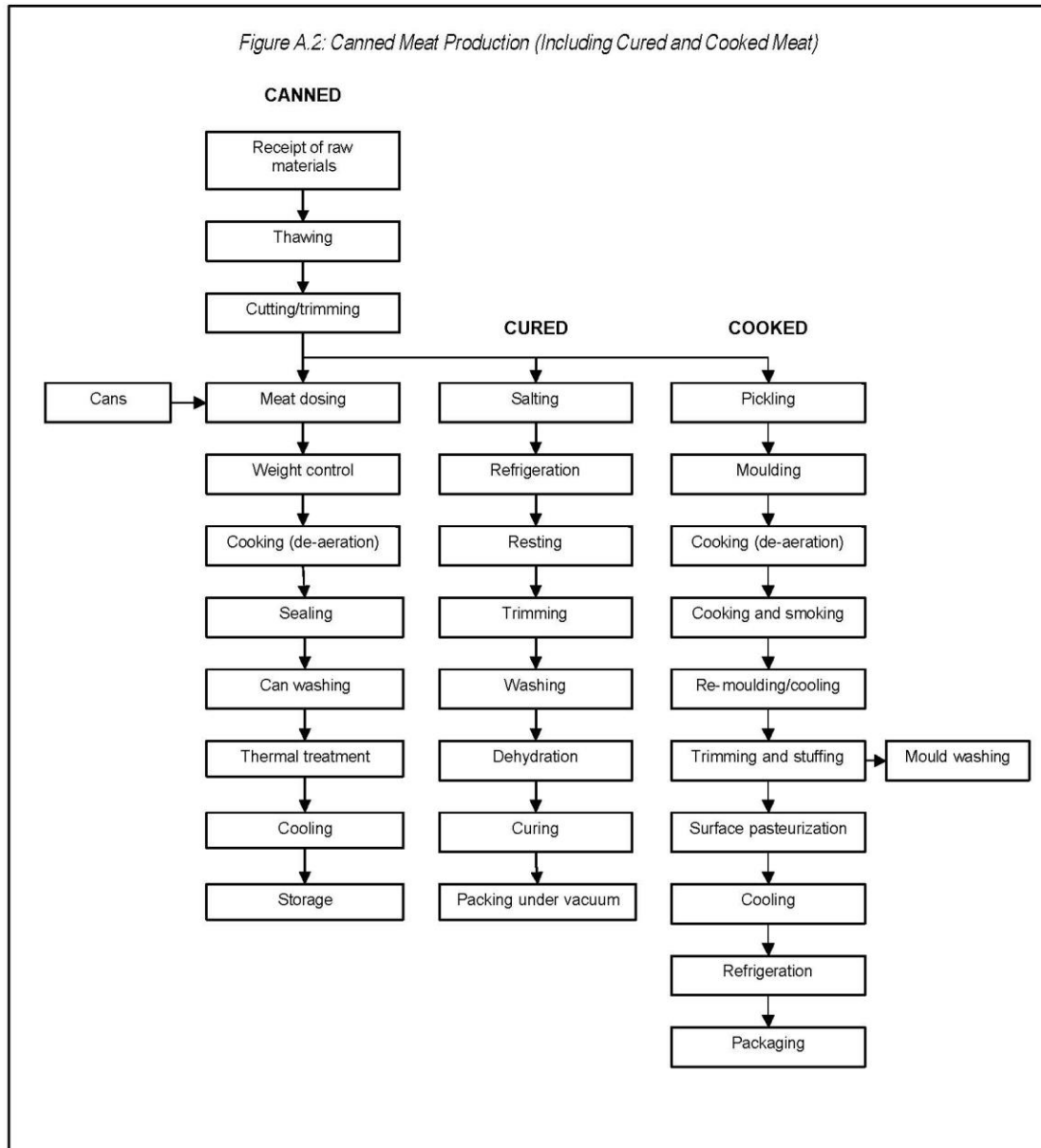


Figure A.2: Canned Meat Production (Including Cured and Cooked Meat)



3.0 PROJECT DESCRIPTION AND ALTERNATIVES

3.1 Project Objectives

The overall objectives of the project are towards the socio-economic improvement. The Environmental Assessment has been undertaken to identify and highlight what concerns are represented for the environmental sustainability and to manufacture the beer products by using modern technology and distribute to local and foreign with great quality.

3.2 Financial Information and Investment Plan

The financial information and investment plan are shown as follow.

Particulars of Company incorporation

Authorized Capital	USD 100 Millions
Type of Share	Common Share
Number of Shares	100,000,000 shares (1 share = 1 USD)

$$1\text{USD} = 1350\text{ Ks}$$

Table 3-1 Particulars of Paid-up Capital of The Investment

	Kyats	USD
Amount / percentage of local capital to be contributed (51%)	44,752,500,000	33,150,000
Amount/ percentage of foreign capital to be brought in (49 %)	42,997,500,000	31,850,000
Total	87,750,000,000	65,000,000

3.2.1 Investment Plan

This project is “Manufacturing and Distribution of Beer” and the proposed amount of the investment is USD-65,000,000 / Kyats 87,750,000,000. The proponent has submitted an investment proposal of the proposed project to Myanmar Investment Commission (MIC) in 2018. The investment type of *Emerald Brewery Myanmar Limited* is joint venture.

Annually or period of proposed capital to be brought in	Within 2 years of the permission granted by MIC
Value/ amount of investment	USD 65 millions
Investment period	(50+10+10) years
Construction/ preparation period	2 years
Commercial Operation Date	September 2019



Table 3-2 Investment Plan

Particulars	Total Amount (USD)
Land	USD 12.370 Millions
Machinery and Equipment	USD 30.884 Millions
Raw Materials	USD 0.966 Millions
Working Capital (for Building)	USD 8.430 Millions
Total Investment	USD 52.650 Millions

3.2.2 List of Shareholders

Table 3-3 List of Shareholders

No.	Name of Shareholder	Citizenship	Share Percentage
1.	Than Lwin Aye Yar Industrial Production & Construction Co., Ltd. (Represented by : Myint Myint Win)	469/1999-2000 12/La Tha Na (N) 006833	20%
2.	F & N Investments Pte. Ltd. (Represented by Mr. Hui Choon Kit)	198502513G E 5805768 N	80%

3.3 Project Location and Connectivity

3.3.1 Project Location

Emerald Brewery Myanmar Limited is proposing to establish “Manufacturing and Distribution of Beer” project at Plot No.498, Yay Ta La Baund Village with Holdings number (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Northern District, Yangon Region. It is northeast of the city Yangon and is largely rural.

Mingalardon Township also includes within the 1.5 km radius (3 km diameter) scope of the proposed project and is located in the northernmost part of Yangon, Myanmar. The proposed project site occupies 32.84 acres of land and, which lies beside the No.3 Main Road. This is grant land for industrial use and the owner of the land is U Aung Thu.

The project area lies in the north latitude of 17° 01' 7.78"N and east longitude of 96° 9' 18.41" E.

The surrounding highlight features of proposed project site is given below.

Table 3-4 Surrounding Highlight Features

Project Location	Plot No.498, Yay Ta La Baund Village with Holdings number (2/1+2/2+2/4+N-2), Hlegu Township, Yangon Northern District, Yangon Region, Republic of the Union of Myanmar
Topography	Plain
Water Bodies/Rivers	Barlar Creek exits beside the project site.



Archaeologically important places / Reserved/ Forests within scope area	Non existent
Assess Road	No (3) Main Road and Project's inner road

3.3.2 Existing Road Connectivity

No.3 Main Road (also called Yangon-Hlegu Express Highway) exists in front of the project site and another access way of the project site is very simple. People can also be reaching to the project site through the village lane. There is 8-meter-wide inner road in the project area, which has approximately 1.2 km distance to No.3 Main Road. The chosen site is located beside No. 3 Main Road and surrounded by fields.



Figure 3-1 Surroundings of the Project Site in Four Directions

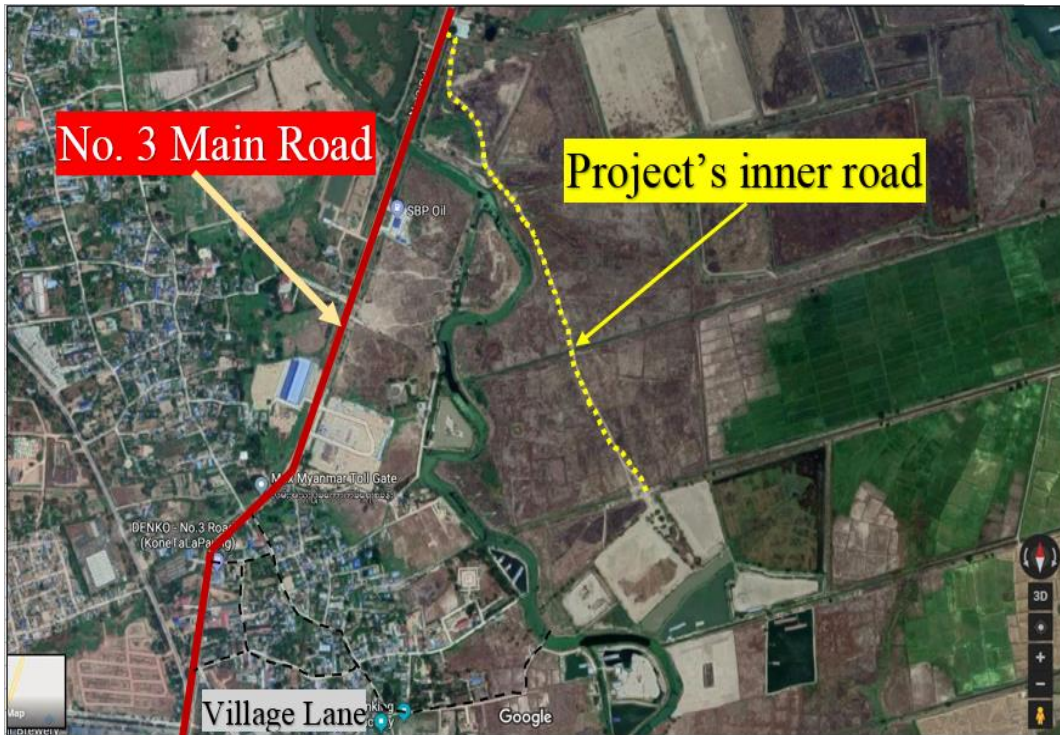


Figure 3-2 Existing Roads Condition



Figure 3-3 On-Site Existing Roads Condition



Figure 3-4 Overview Map of the Project with Natural Features



Figure 3-5 Assess Road to Project Site

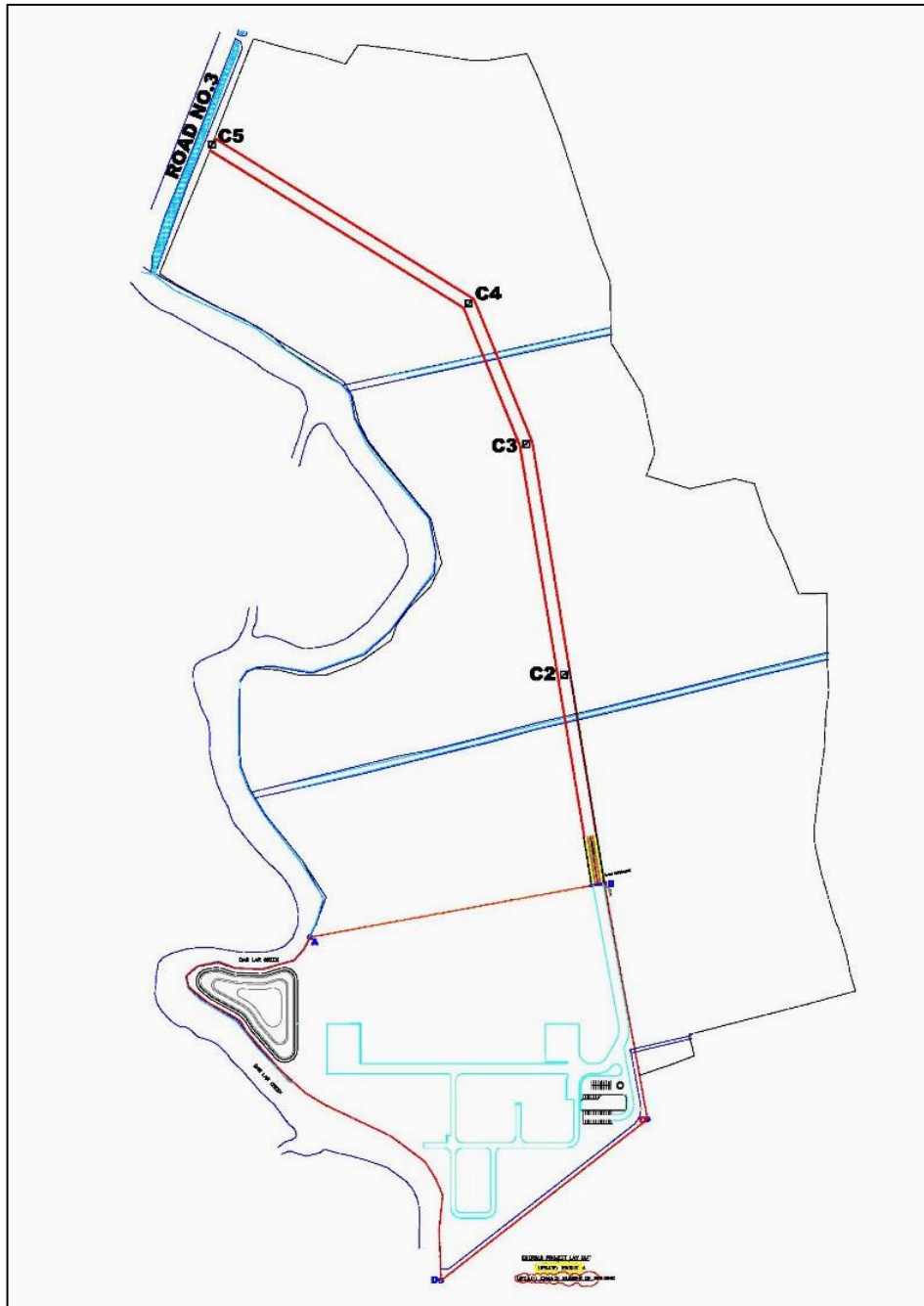


Figure 3-6 Road Model for Inner Road to Project Site



Figure 3-7 Current Condition of Project Site

3.3.3 Surrounding Villages

The villages within the 1.5 km radius around the project site are: (See Figure 3-8)

North-west	Ta Kon Taing Village and Nwel Khwe San Pya Village
South	Yay Ta La Baung Village
West	Kone Ta La Baung Village

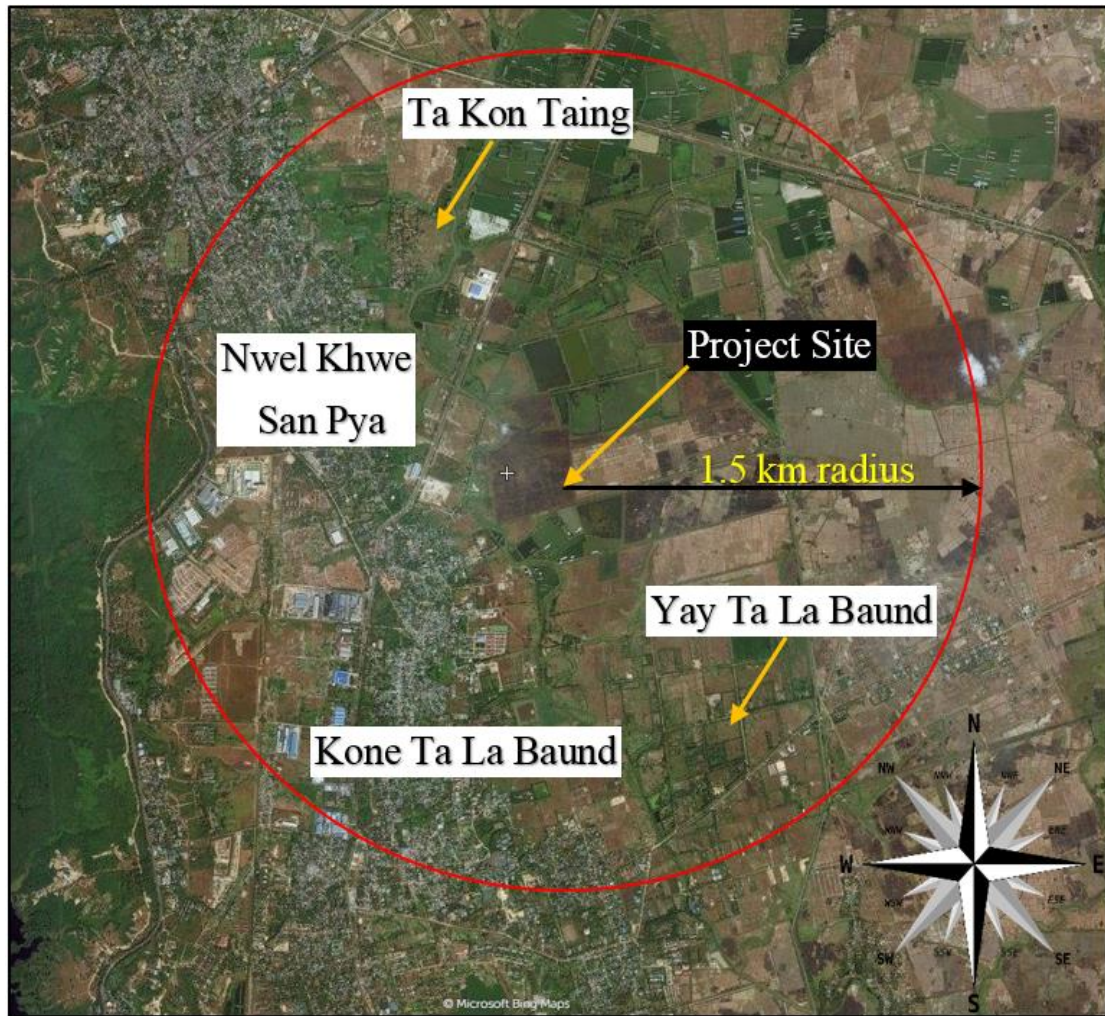


Figure 3-8 Surrounding Villages within 1.5 km Radius Scope



Figure 3-9 Ta Kon Taing Village and Nwel Khwe San Pya Village



Figure 3-10 Kone Ta La Baund Village and Yay Ta La Baund Village

3.4 Scope of the Project Area

It is necessary to understand the characteristics of the site and the surrounding area of the project in order to identify the scope of the issue, which will need to be addressed by EIA. The following section describes the location of the proposed development and summarizes the existing environmental features / conditions of the site and the surrounding area. For this project, 1.5 km radius of scope from the project site is selected to study.



Figure 3-11 Project Site with 1.5 km Radius Scope on Google Earth Map

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Emerald Brewery Myanmar Limited started to soil test at 2017, November 17, performed the test run at 2019, August and commercial run at September 2019.

3.7 Raw Materials

The main ingredients needed for brewing are usually barley malt, rice, hops bitter pellet and (aroma pellet) and hop extract, pure water, and brewer's yeast. Each ingredient can affect flavor, color, carbonation, alcohol content, and other subtle changes in the beer.

The process also requires various acids and cleaning chemicals to maintain and sterilize the brewing equipment. For the finished product, cardboard for boxes and cans, bottles, and kegs are also needed. In this proposed project, raw materials and their import countries are also described at Table 3-6.

3.7.1 Source of Raw Materials

Some of the raw materials are imported from Thailand, Singapore, China, Europe, Japan, Vietnam, Spain and Germany. The main raw material, rice, and the rest are obtained from local.

Table 3-6 Raw Material Imported Countries

item	Description	Imported From
Direct Raw Materials		
1	Barley Malt	Australia,USA,China,Germany, England, Denmark
2	Malt extract	Thailand, England
3	Hop Bitter pellet in alpha acid	Germany, USA, Australia
4	Hop Aroma pellet in alpha acid	Germany
5	Hop Extract in alpha acid	Germany, USA
6	Beta-glucanase enzyme	Thailand, China, Denmark
7	Phosphoric acid	Thailand, China
8	Alpha-amalyse enzyme	Thailand, China, Denmark
9	Yeast	Thailand
10	Black Malt	Australia
11	Beer Concentrated	Thailand
12	Sodium Metabisulphite	Thailand, Singapore
Indirect Materials		
1	PVPP (Single use)	Thailand, Singapore, Germany
2	Std Supercel/Celite	Thailand,China, USA
3	Hyflo Supercel/Celite	Thailand,China, USA
4	Acid Cleaning Chemical Beer process	Thailand
5	Acid Cleaning Chemical Brewhouse	Thailand
6	Caustic Cleaning Chemical	Thailand
7	Sanitation Chemical	Thailand
8	Caustic additive Chemical	Thailand
9	Filter bag/Cartridge/Element	Thailand
10	Silica Hydrogel	Thailand, Germany, Brazil
Packaging Materials		
1	320 ml Glass Bottle	Thailand, China
2	620 ml Glass Bottle	Thailand, China
3	Crown cap	Thailand
4	Body label	Vietnam,Malaysia,Germany,China,Belgium
5	Neck label	Vietnam,Malaysia,Germany,China,Belgium
6	Cold Glue	Thailand
7	Hot melt	Thailand
8	Empty Crate	Thailand
9	Pallet	Thailand
10	Keg	Spain, Germany
11	Keg Closure	Thailand



3.7.2 Transportation System

Transport by sea, air and roads; direct transport from Airport or Harbor to factory's warehouse. There vehicles used for transportation are rented from logistics company and no factory's vehicles used for transportation of raw materials and finished products.

3.7.3 Raw Materials Requirement, Consumption, Available, Storage Condition

Requirements of Raw Materials for daily and monthly, consumption, available and storage condition are shown as follows.

Table 3-7 Raw Materials Requirement (Local Purchase) Available, Consumption and Storage Condition

Sr. No	Commodities	A/U	Quantity		Manufacture	Available From	Storage Condition
			Daily	Monthly			
1.	Rice	Kg	227	5428	local	Bayint Naung Market	50 kg rice in plastic bags and stored at ware house and cylos
2.	Calcium Chloride	Kg	1.8	43	China	Chemical Market	plastic bags 50kg stored at ware house
3.	Zinc Sulphate	Kg	0.16	4	China	Chemical Market	50 kg rice in plastic bags and stored at ware house
4.	Calcium Sulphate	Kg	0.98	23.6	China	Chemical Market	50 kg rice in plastic bags and stored at ware house
5.	Can	Pcs	937	22400	local	Can Factory	Plastic Crate
6.	Can Lid	Pcs	312	7467	local	Can Factory	Plastic bag
7.	Outer Carton 24*320 ml	Pcs	167	3999	local	Market	packd in plastic rope and stored at ware house
8.	Outer Carton 24*320 can	Pcs	44	1063	local	Market	packd in plastic rope and stored at ware house

Table 3-8 Raw Materials Requirement (Import) Consumption, Available, Storage Condition

Sr. No	Commodities	A/U	Quantity		Manufacture	Available From	Storage Condition
			Daily	Monthly			
1.	Malt	kg	7224.08	173,378	Australia	import	plastic bags 50kg and stored at ware house and cylos



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2.	Bitter hop	kg	1.24	29.83	Germany	import	Can and stored at ware house
3.	CO ₂ extract hop	KAI	1.56	37.6	Germany	import	Can and stored at ware house
4.	Termamyl SC/Amlex 2T/4T	kg	0.56	13.58	Denmark	import	30 liter plastic bucket
5.	Calcium chloride granule	kg	15.68	376.5	China	import	plastic bags and stored at ware house
6.	Calcium Sulphate powder	kg	25.11	602.8	China	import	plastic bags and stored at ware house
7.	Phosphoric acid 85 % Food grade	kg	3.13	75.3	Thailand	import	plastic bucket
8.	Zinc Sulfate 7 hydrate	kg	0.037	0.91	Thailand	import	plastic bucket
9.	Yeast slant	EA	0.037	0.91	Thailand	import	In test tube and stored in refrigerator
10.	Black malt	kg	9.4	225.6	Australia	import	plastic bags and stored at ware house
11.	Beer concentrate	tin	3.375	81	Thailand	import	Tin and stored at ware house
12.	Sodium metabisulphite	kg	1.12	27.1	Thailand	import	plastic bag and stored at ware house

Photos of some raw materials storing conditions are shown as follow.

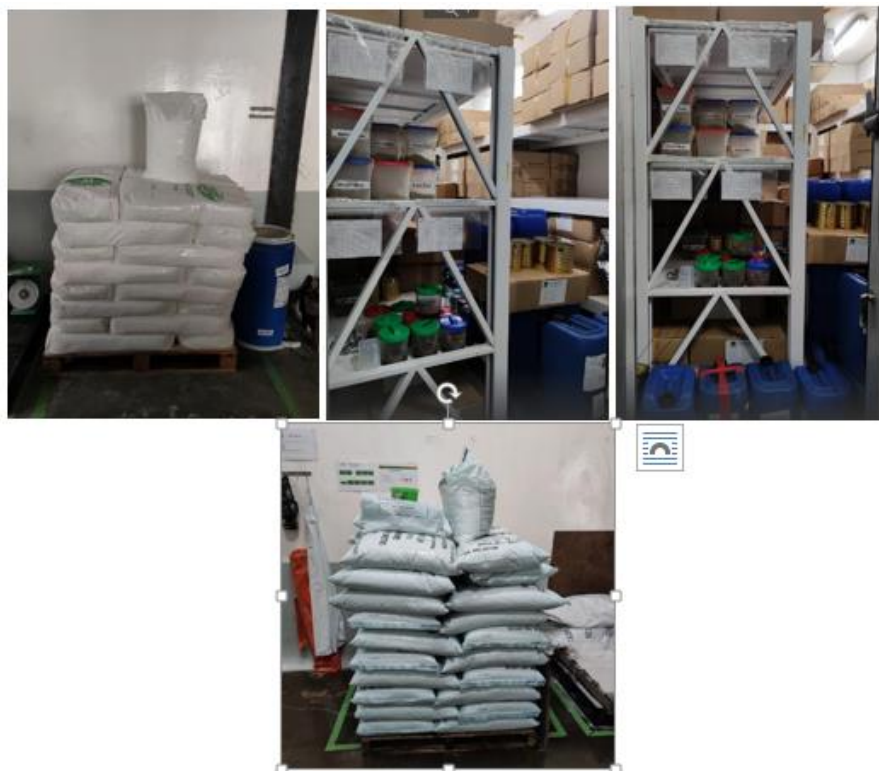


Figure 3-12 Photos of some raw materials storing condition

3.7.3.1 Management of Hazardous Raw Material (Caustic Soda)

There should be management plan for moderately hazardous raw material as **caustic soda at Emerald Brewery**. The management plan is shown at following.

Introduction

Among the raw materials used at Emerald Brewery, **caustic soda (flake) is moderately hazardous** and there the necessary the management plan along from purchasing, storing, handling and disposing to be safe upon environment.


Objective

There intends to the least adverse effect upon human and environments where perform the purchasing, storing, handling and disposing of caustic soda (flake).

Facts about Caustic Soda in brief

Some properties of caustic are shown as following.

Properties	Caustic Sods (Falkes)
Chemical name	Caustic Soda (flake) Sodium Hydroxide (flake)
Other name	Lye, Sodium Hydrate white Caustic, Soda Lye
Chemical Group	Inorganic Base
Chemical formula	NaOH
Molecular wt	40
Physical Properties	
Colour	White colour, solid
Odor	N-D
pH	14(5% aqueous solution)
Boiling Point	1390 °c
Melting Point	310 °c
Solubility	420g/L (20 °c)
Specific gravity	2.13
Incompatible Substance	Water, Metal, Acid, Aluminun, Zince, Tin, Nitromethane, Leather, Flammable Liquid, Organic Halogen, Wool.
Effect of descomposed Substances	Poisonous substances of sodium oxide

Pictogram	
Danger	<p>Causes eye and skin burns causes digestive and respiratory tract burns.</p> <p>Ingestion; May cause severe and permanent damage to the digestion tract.</p> <p>Cause gastrointestinal tract burns. Cause severe pain nausea, vomiting, diarrhea and shock.</p> <p>1350mg/kg skin-rabbit LD 50</p>
Fire Fighting Measure	Regular Dry Chemical, Carbon dioxide, water, regular foam
Spills/Leaks	<p>Avoid runoff into storm sewers and ditches that lead to waterways.</p> <p>Clean up spills immediately.</p> <p>Avoid generating dusty conditions.</p> <p>Provide ventilation</p> <p>Do not get water on spilled substances or inside container</p>

Management Plan

Management plan for mitigation measure of effect by caustic soda (flake) is carried out as following.

Purchasing - purchase at least quantity depend on consumption and storing.

Transportation - Avoid generating dusty conditions when handling and transportation. If there are damaged packings, remove into seal container and not moisten.

- wearing the PPE, to avoid contacting with eyes, skin, gastrointestinal tract.

- Prevent changing NaOH to Na₂CO₃ due to environmental CO₂

- Duties the person who has knowledge about Caustic Soda thoroughly.

- Duties skilled driver

- Using good conditioned vehicle (body, engine, suspension)

Storing - store at good ventilation



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- store at cool and dry
- avoid moistening
- first in first out
- explain the duties of the person with MSDS.
- Using as SOP
- use appropriate instrument for weighing and handling
- wearing the PPE
- opened bags are stored in seal container. (corrosion resist)
- avoid using the sharp and pointed materials.

Usage

Disposing

- avoid runoff into municipal drainage.
- If there is using the empty bags for other purposes, washes thoroughly.
- empty bags are disposed by guideline of Development Committee

Conclusion

At Emerald Brewery, management plan along the purchasing to disposing for moderately hazardous caustic soda is conducted to be least impact upon human and environment.

3.8 Production Capacity, Products and Sale Plan

The main product is Beer with 5 % alcohol v/v (Bottles, Cans, and Kegs) and by-products (spent grain) will be sold to poultry food manufacturers. The production capacity is presented in Table 3.9 below.

Table 3-9 Production Capacity (five year)

Product	Annual Production	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022	2022 ~ 2023	2023 ~ 2024
Beer	,000 Hundred liters /Year	500	1,400	2,000	2,800	4,000

3.8.1 Products, Daily, Monthly, Yearly Production

Table 3-10 Production Capacity

Product Name	A/U	Daily Production	Monthly Production	Yearly Production
Beer	Liters	174,216	4,166,666	50,000,000
Spent Grain	tons	8	192	4608



3.8.2 Actual Productions of Beer Year form 2019-2020 to 2021-2022

Table 3-11 The actual productions of beer from year 2019-2020 to 2021-2022

Sr.No	Product	A/U	2019 ~ 2020	2020 ~ 2021	2021 ~ 2022
1	Chang 330ml can	HL	99680	131080	206370
2	Chang 500ml can	HL	63510	182830	302660
3	Chang 620ml Bot carton	HL	15260	39490	113860
4	Chang 320ml Bot carton	HL	1270	640	130
5	Chang 30l keg	HL	920	4330	20860
6	Spent grain	Ton	3800	6500	11400

The photo of products are shown as follow.



3.9 Auxiliary Items

The following sections are intentionally included for the proposed project.

Table 3-12 Auxiliary Items

No.	Item	Size / Capacity	No. of units	Technology
1	Water Treatment Section	1,400 m ³ /day		
2	Boiler Section	2 tons /hr 10 tons /hr	8 Units 1 Unit	
3	Boiler Stack	diameter-1.5 m, Stack height-15 m		
4	CO ₂ Recovery Section	250 kg/hr 1000 kg/hr		
5	CO ₂ Storage	40 tons 60 tons	2 foam catcher	
6	Compressed Air Section			
7	Air Compressors	5 m ³ /min 3 Units 8.8 m ³ /min 1Unit 6.3 m ³ /min 2 Units		

8	Refrigeration Section			
9	Industrial Refrigeration System	375 kW 4 Units 875 kW 4 Units		
10	Wastewater Treatment Section			
11	Wastewater Treatment Plant	2500 m ³ /day		

There are photos of boiler, CO₂ recovery section compressed air section, refrigeration section as attached.



Figure 3-13 photos of boiler section



Figure 3-14 photos of boiler chimney-stack

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	Type	Fuel	Fuel usage	Registration no	Pressure	Capacity	Water usage	Stack height
Boiler No.1	once-through boiler	Diesel	133 lit/hr	masa 6283	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.2	once-through boiler	Diesel	133 lit/hr	masa 6284	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.3	once-through boiler	Diesel	133 lit/hr	masa 6285	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.4	once-through boiler	Diesel	133 lit/hr	masa 6361	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.5	once-through boiler	Diesel	133 lit/hr	masa 6362	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.6	once-through boiler	Diesel	133 lit/hr	under registration	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.7	once-through boiler	Diesel	133 lit/hr	under registration	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.8	once-through boiler	Diesel	133 lit/hr	under registration	10 bar	2 tons/hr	1 m ³ /hr	16 Meter
Boiler No.9	Fire tube Boiler	Diesel /Bio Gas		under registration	10 bar	10 tons/hr	5 m ³ /hr	16 Meter

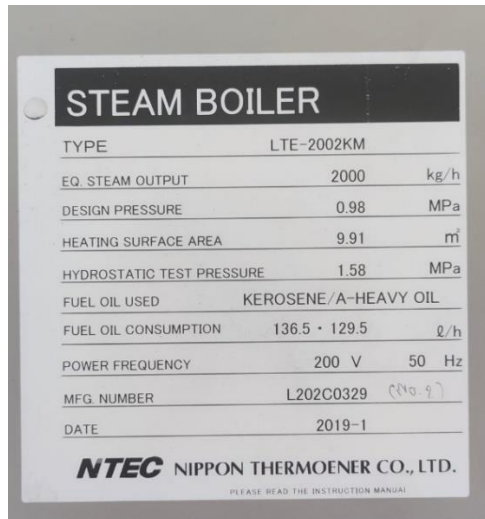


Figure 3-15 Photos of Boiler Specification



Figure 3-16 photos of CO₂ recovery plant

CO ₂ Plant	CO ₂ recovery rate	Storage capacity	Tons		
			Daily	Monthly	Yearly
Compressor 1	250kg/hr	40	6	180	2160
Compressor 2	1000kg/hr	60	18	540	6480
	Total	100	24	720	8640

Figure 3-17 CO₂ Plant Specification



Figure 3-18 photos of air plant

Location	Name	Type	Compressed Air Capacity
Compressed air plant	Air compressor No.1	Oil free screw type air compressor	5Nm ³ /min
	Air compressor No.2	Oil free screw type air compressor	5Nm ³ /min
	Air compressor No.3	Oil free screw type air compressor	5Nm ³ /min
	Air compressor No.4	Oil free screw type air compressor	8.8Nm ³ /min
	Air compressor No.5	Oil free screw type air compressor	6.3Nm ³ /min
	Air compressor No.6	Oil free screw type air compressor	6.3Nm ³ /min

Figure 3-19 Air Compressors Specification



Figure 20 photos of compressors

Location	Name	Type	Cooling Capacity
Cooling plant	NH3 compressor No.1	MYCOM Reciprocating compressor	375KW
	NH3 compressor No.2	MYCOM Reciprocating compressor	375KW
	NH3 compressor No.3	MYCOM Reciprocating compressor	375KW
	NH3 compressor No.4	MYCOM Reciprocating compressor	375KW
	NH3 compressor No.5	GEA Reciprocating compressor	875KW
	NH3 compressor No.6	GEA Reciprocating compressor	875KW
	NH3 compressor No.7	GEA Reciprocating compressor	875KW
	NH3 compressor No.8	GEA Reciprocating compressor	875KW

Figure 3-21 NH₃ compressors Specification

3.9.1 Height of Boiler Stack Calculation

There are eight boiler using diesel as fuel and 133 l/hr consumptions at Emerald Brewery Plant. To calculate the height of boiler stack, there are following assumptions.

1. Specific gravity of diesel is 0.85 kg/l.
2. Sulphur content in diesel is 0.05%
3. Formula of stack height calculation base on sulphur content as

$$H = 14 Q^{0.3}$$

Where H = stack height in meter

$$Q = \frac{\text{Quantity of fuel (kg/hr)} \times \text{Sulphur Content \%} \times 2}{100}$$

Diesel fuel consumption 133 l/hr

$$H = 14 \times Q^{0.3}$$
$$= 14 \times \left[\frac{133 \times 0.85 \times 0.05 \times 2}{100} \right]^{0.3}$$

$$= 14 \times [0.11305]^{0.3}$$

$$= 14 \times 0.519$$

$$= 7.27 \text{ m}$$

Actual stack height is 16

Therefore stack height of boiler of Emerald Brewery Plant is in standard.

3.9.2 Management Plan for Ammonia (Refrigerant)

Introduction

1. There is the industrial refrigeration plant, capacity of 1232 kw and ammonia is used as refrigerant. Refrigeration section is one of the important section for the brewery and cooling for beer fermentation, chilling for beer storing, maturation and carbon dioxide content in beer is depend on beer temperature. Refrigerant ammonia is moderately hazardous and there be necessary to carry out management plan in order to be safe upon human and environment.

Objectives

2. During the purchasing, transportation, storing, handling and operation of hazardous refrigerant ammonia, there should be safety and impact in least condition upon the human and environment.

Brief Description of Refrigerant Ammonia

3. Some properties of refrigerant ammonia is as follows.
 - Product name Ammonia
 - Chemical name Ammonia
 - Chemical Formula NH₃
 - Type gas under pressure



(liquefied gas)

99.5 – 100 %

- Physical and Chemical Properties
 - Physical state Gas
 - Apperance Colourless gas
Liquid under pressure
 - Molecular mass 17 g/mole
 - Colour Colourless
 - Odour Ammoniacal
 - Melting point -77.7°C
 - Boiling point -33.4°C
 - Critical temperature 132.4°C
 - Auto ignition temperature 650°C
 - Solubility 517000 mg/L
 - Lower and upper Explosive limits
lower 16%
Upper 25%
- Hazards flammable gases
skin corrosion
serious eye damage
aquatic hazard
may form explosive mixtures with air
contains gas under pressure; may explode if heated
may displace oxygen and cause rapid suffocation
harmful if inhaled.

- **Hazard Pictograms**



- Incompatible materials gold; silver; mercury; oxidizing agents; halogens; halogenated compounds; acids; copper; zinc; copper/zinc alloys (Brass); chlorates;
- Conditions to avoid Avoid moisture in installation system
- Hazardous decomposition products The normal products of combustion are

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- nitrogen and water. Hydrogen may be formed at temperatures above 1544°F (840°C)
- Storage
Store locked up. Protect from sunlight.
 - Handling
in well-ventilation place.
Do not breath gas/vapour.
Avoid all contact with skin, eyes or clothing.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion proof equipment.

Management Plan for Purchasing

4. The least amount of refrigerant ammonia cylinder should be purchased balancing between maximum consumption and time duration of arrival. Connects the retail and whole suppliers if emergency requirements.

Management Plan for Transportation of Refrigerant

5. Management plans for transportation of refrigerant ammonia cylinders are as follows.
 - The nearest sources and shortest route should be planed.
 - Avoid the traffic jam route, time, day
 - Avoid transport on vehicles where the load space is not separated from the driver's compartment.
 - Ensure vehicle driver in aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. (i.e. spillage or leakage)
 - Before transporting product containers;
 - Ensure there is adequate ventilation
 - Ensure that containers are firmly secured
 - Ensure cylinder valve is closed and not leaking
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.
 - Always transport in close containers that are upright and secure.

Management Plan for Storage and Handling

6. Management plan for storage and handling of refrigerant ammonia cylinders are as follows.
 - Put on appropriate personal protection equipment.



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- Store in accordance with local regulation. (Hanging MSDS in noticeable conditions, sticking of pictogram in accordance with stipulation; etc.)
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. [Heat of fire can build pressure in cylinder and cause it to rupture. No part of a cylinder should be subjected to a temperature higher than 125°F (52°C)]
- Store in a cool, well ventilated place
- Store and use with adequate ventilation.
- Store only where temperature will not exceed 125°F (52°C)
- Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap firmly in place by hand.
- Store full or empty containers separately.
- Use a first-in, first-out inventorying system to prevent storing full containers for long periods.
- No smoking. Use only non-sparking tools. Use only explosion proof equipment.
- Do not breathe gas/vapour.
- Avoid all contact with skin, eyes, or clothing.
- Emergency eye wash fountains and face showers should be available in the immediate vicinity of any potential exposure.
- Wear leather safety gloves and safety shoes when handling cylinders.
- Protect cylinders from physical damage, do not drag, roll, slide or drop.
- While moving cylinder, always keep in place removable valve cover.
- Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve.
- When moving cylinder, even for short distances, use a cart (trolley, hand truck, etc..) designed to transport cylinders.
- Never insert an object (eg. wrench, screwdriver, pry bar) into the cap openings; doing so may damage the valve and cause a leak.
- Use an adjustable strap wrench to remove over-tight or rusted caps.
- Slowly open the valve.
- Close the container valve after each use; keep closed even when empty.

Management Plan for Operation

7. Management plan during operation with refrigerant ammonia are as follows.
 - Use piping and equipment adequately designed to withstand the pressures to be encountered.
 - Use a back flow preventive device in the piping.
 - Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation.
 - Never place a container where it may become part of an electrical circuit.
 - Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed.



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- Wear appropriate chemical gloves during cylinder changing or wherever contact with product is possible.
- Wear safety gloves when handling cylinders; vapor proof goggles and face shield during cylinder change out in whenever contact with product is possible.
- Check the machinaires parts; are there incompatible materials and replace at once. (i.e. gold, silver, mercury, oxidizing agents, halogens, halogenated compounds, acids, copper, zinc, copper/zinc alloys (Brass), chlorates, etc.)
- Conduct under S.O.P for refrigeration unit.

Management Plan for Empty Containers

8. Management plan for empty containers of refrigerant ammonia are as follows;
 - Separate the full and empty cylinders.
 - Close the empty container's valve and fit cap for by hand.
 - Do not attempt to dispose of residual or unused quantities. Return container to supplier.

Conclusion

9. By compiLineg and conducting the “**Management Plan of Hazardous Raw Refrigerant, Ammonia**” at Emerald Brewery, there will be least adverse impact upon employee and environments.

3.10 Utilities Requirement

3.10.1 Electricity

Sources

The project proponent will use electricity form National Grid Line (electricity for main Line of Electrical and Power Communities) through (11/33 KV) distribution transformer which capacity is 3,760 KVA and 400 V main distribution boards.

For the emergency cases, the project proponent prepares to use 4 numbers of generators;

1,250 kVA 4 set,

The necessary guideLines and precautionary measures relating to the use of electricity shall be adhered to. The necessary layouts and cable sizes are also determined for the projected electrical demand. The project proponent has digital documents for the power supply and energy.

Emerald Brewery Myanmar Limited installed the solar energy system on the roof of office since 2019 and it cover 50% of office electricity consumption. At 2023 July 24th 2 MW solar energy system was installed and it cover the totally electricity requirement.

Requirement

Electricity, fuel and water consumptions are shown in Table 3.13 below.



Table 3-13 Utilities Consumption

Sr. No.	Name of Power	A/U	Consumption		
			Daily	Monthly	Yearly
1.	Electricity	kWh	1,742	41,666	500,000
2.	Fuel Oil (Diesel) for Boiler	Liters	819	19,584	235,008
3.	Fuel Oil (Diesel) for Generator	Liters	205	4,896	58,752
4.	Water	m ³	1,568	37,500	450,000

Photos of generator are attached here.



Figure 3-22 photos of generator section

	Brand	Engine	Alternator	Capacity(output)	Rated fuel consumption (lit/hr)
Genset 1	CAT	CAT	CAT	1500kVA Prime	238.6
Genset 2	CAT	CAT	CAT	1500kVA Prime	238.6
Genset 3	CAT	CAT	CAT	1500kVA Prime	238.6
Genset 4	CAT	CAT	CAT	1500kVA Prime	238.6

Figure 3-23 Specification of electric generators

3.10.2 Fuel Requirement

Main used fuel for this project is diesel and used as fuel for boiler. The average yearly used amount of diesel is approximately 500,000 gallons per year. The estimated yearly amount of fuel oil (liter) for 5 years is described in Table 3-14.

Table 3-14 Annual Utilities Requirement

Consumption Year	Electricity	Fuel	Water
	,000 kW/hr.	Liter/yr.	0000 m3/yr.
2019 ~ 2020	500	293,760	45
2020 ~ 2021	1,400	806,400	126
2021~ 2022	2,000	1,152,000	180
2022~ 2023	2,800	1,635,840	252
2023~ 2024	4,000	2,322,893	360





Figure 3-24 Three Diesel Tanks (Capacity - 15000 Gallons) with containment

3.10.3 Water Requirement

The project proponent has planned to use water from 8 numbers of 6 inches diameter tube wells in the project site. Total water demand is approximately about 501,464 m³/ year. The table 3-14 shows the approximate annual utilities requirement for the project.

The depths of tube wells are,

1. 110m
2. 101m
3. 99.6m
4. 97.6m
5. 101.6m
6. 93.6m
7. 120m
8. 120m

3.10.4 Carbondioxide Recovery Plant

In the production of quality beer, many direct raw materials including, malt, rice, yeast, water, hop and indirect raw materials as fuel, refrigerant and clairfying materials. The carbon dioxide not obvious as important raw has a large influence on not only the beer's quality, but also the customer acceptance of the product. It is the reason of existing the carbon dioxide recovery plant. Carbon dioxide is co-product with alcohol during converting of sugar to alcohol and carbon dioxide. Principal steps of carbon dioxide recovery are

- Collection from beer fermenter
- Washing
- Compression
- Drying
- Liquifying and Storing

The process diagram in brief is shown as Figure 3-25 and detailed drawings are shown at **Appendix (7)**.

The capacity of CO₂ plant is 1250 kg/hr

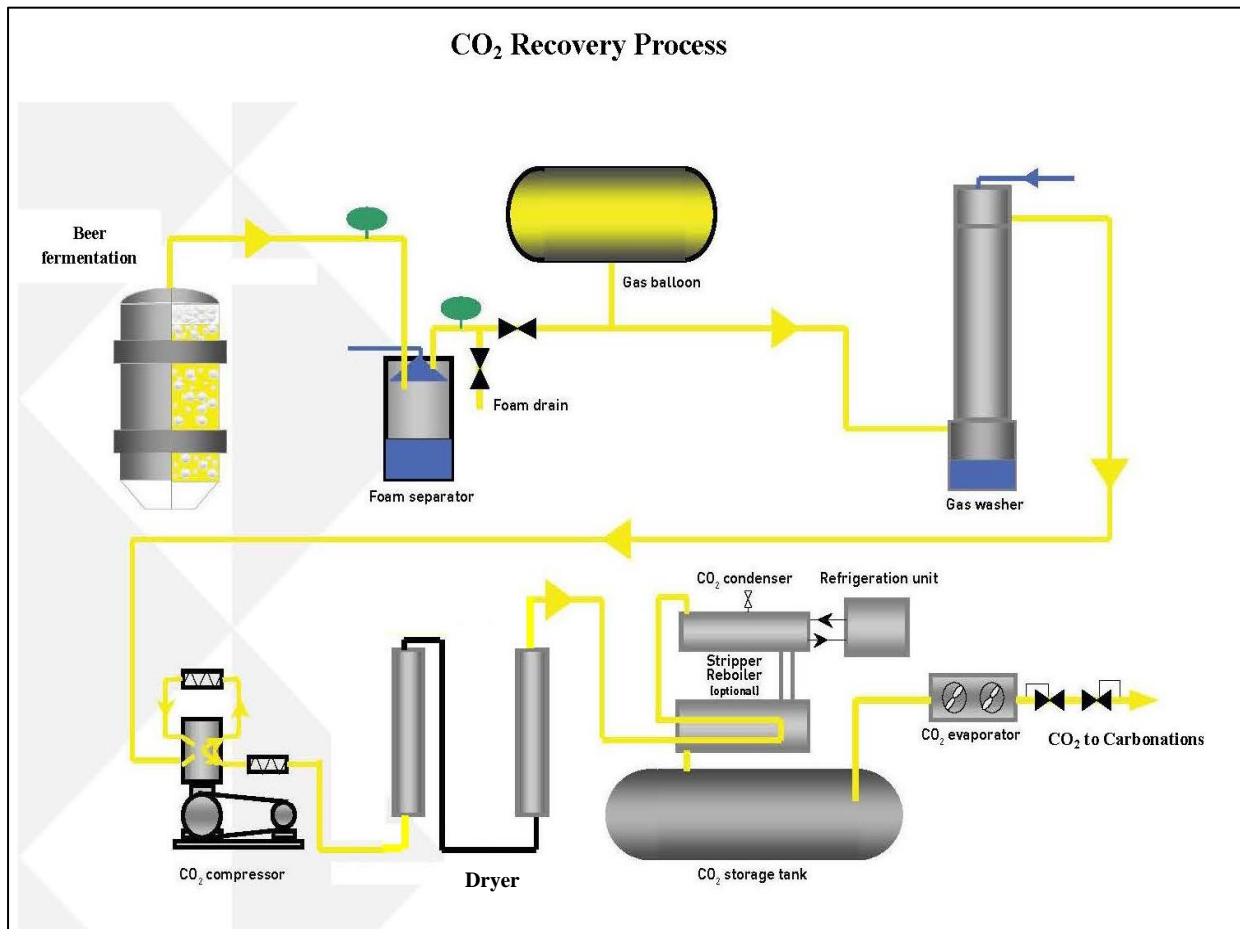


Figure 3-25 CO₂ Recovery Process

Collection from beer fermenter

At the starting of beer fermentation, there be little reaction and CO₂ coming out quantity is less and it becomes gradually increase. The end of beer fermentation the CO₂ coming out rate is decreased. The CO₂ vapour collection is performed at the period of fermentation within start and end periods. The evolved CO₂ carries the little amount of beer and it is removed at foam speration and sent to gas storage ballon.

Washing

The CO₂ vapour from gas ballon, carries the flavour of alcohol and others compoundd and there be necessary to remove them by washing with water. The flavor of alcohol and other compounds are dissolved in water and co₂ vapour become more pure. Washing is done at CO₂ recovery plant.

Compression

The washed CO₂ vapour is at the normal pressure and it is compressed by CO₂ compressor and become high pressure.

Drying

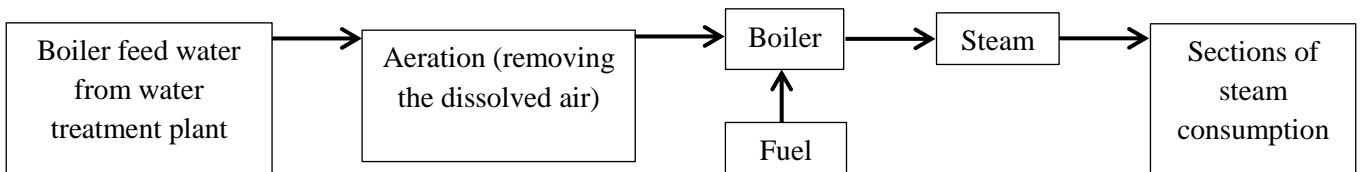
The compressed CO₂ vapour has some moisture and there be necessary to remove moisture. Moisture makes blocking of pipe Line when cooled down to liquid CO₂ stage and corrosion of some metals. Moisture removing is performed at dryer and CO₂ vapour becomes dry and high pressure.

Liquefying and Storing

The CO₂ vapour at high pressure and dry condition is liquefied by cooling in the CO₂ condenser using ammonia as refrigerant. The liquefied CO₂ is stored at CO₂ liquid storage tank for further usage.

3.10.5 Boiler Section

In the beer production steam is one of the main indirect utilities as other (electricity, refrigerant, carbon dioxide etc.). Steam is produced from boiler using various fuel such as gases, liquids, solids and in Emerald beer plant **diesel oil** is used as fuel. Steam production is as follows in brief.



The main steam utilization are at the brew house as converting starch of malt and rice to fermentable sugar using steam as heating medium. It is also used in wort boiling (hop bitterness and flavour extraction). The pipelines, equipments and tanks sterilization and beer Bottling, can and keg plant used steam as heating medium also. These are reasons for the necessary of boiler plant in beer production. In Emerald beer plant, compact and more efficient type of boiler made by Japan as **Once Through** type.

3.11 Solid Wastes

Non-hazardous wastes

No.	Description	Ingredients
1	Packaging for Raw Materials	Cardboard box (damage) Damage kegs
2	Debris and Garbage from Office Work	Used bulb, flashlight Used paper, stationery Copier parts
3	Solids Wastes by Employees, Kitchen	Debris, garbage of personnel Food waste and Packaging waste
4	Solid Wastes from Maintenance Section	Used sandpaper welding electrode, bolt, nut, gloves, etc
5	Glassware from Laboratory	Broken glassware Used materials
6	Spent grain from brewhouse	Malt fibre protein residual sugar; water

The total amount of solid waste generated from the plant operation (including Spent Grain) is

Daily	9 ton
Monthly	216 ton
Yearly	2583 ton

Hazardous Waste

The hazardous wastes are as follow:

No.	Effluent and Wastewater	A/U	Quantity (Annual)	Ingredients
1.	Light bulb, flashlight (used, damaged)	lot	1	Glass + Metal + Tungsten
2.	Broken bottle	kg	1000	Glass
3.	Damaged cap	kg	500	Aluminum + Paint
4.	Battery acid	Liter	5	Sulfuric Acid
5.	Laboratory chemicals	Liter	5	

These hazardous wastes are disposed by guideLines of YCDC.

3.12 Sanitation and Sewage Disposal

The water source is from eight tube wells, which are located within the factory compound. The tube well water will be treated before use.

The sanitary wastewater and process wastewater from the operation will also be treated in wastewater treatment plant. Storm water will be discharged by the well-designed drainages inside and outside of the compound. (See Figure 3-14)

For convenience sake, the project proponent provides 38 numbers of toilets (20 for males and 18 for females). The project proponent uses Bio Septic Tank with the dimension of 1,300 mm diameter and 1,400 mm length to treat the domestic wastewater.



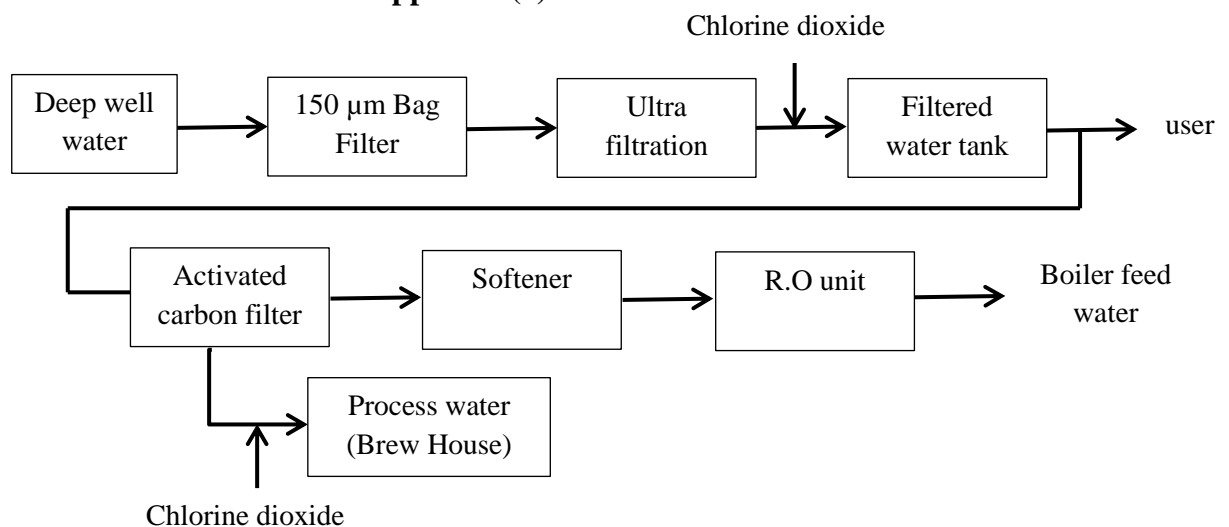


Figure 3-26 Storm Water and Drainage System

3.13 Water and Wastewater Treatment Systems

3.13.1 Water Treatment Plant

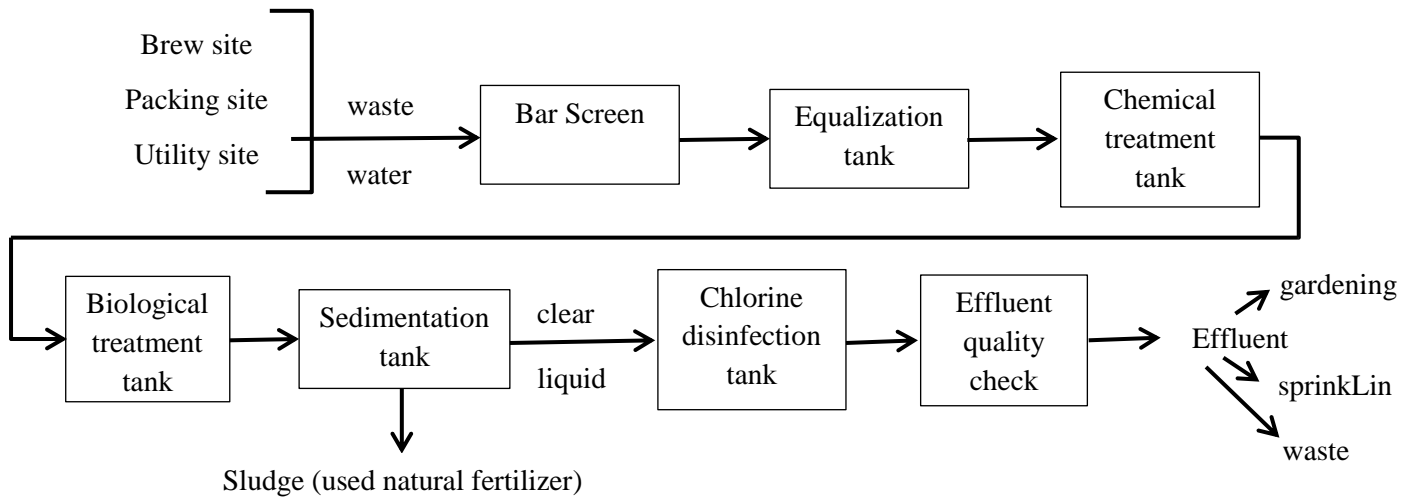
In Emerald beer plant, there are three main types of water utilization as consumption for employee and general purposes, utilization as process water in brewing and utilization as boiler feed water. So there are three different water treatment for different utilization. The water treatment process is shown in brief as follow and details are at **Appendix (8)**.



The main aim of human consumption is not to be harmful, of boiler feed water is to be long life of boiler and of process water is to be good quality beer.

3.13.2 Wastewater Treatment Plant

In Emerald beer plant there is wastewater treatment plant and running for fulfilment of NEQ(E)G guideLines parameter for effluent and environmental pollution control. The principal operations are as follow and detailed drawings are shown at **Appendix (9)**.



The capacity of wastewater treatment plant is 2500m³/day (i.e 550,000 gal/day) and estimate wastewater per day is 15000 gal. Therefore the residence-time of wastewater in WWT plant is about 36.6 days and it is enough for treated efficiently.

The equipment and function of WWT plant

Equipment	function
Bar Screen	-remove the small solid particle
Equilization Tank	-adjust the pH of wastewater
Chemical Treated	-coagulation, flocculation
Biological Treated	-nutrients adding for microbe
Sedimentation	-aerobic and anaerobic treatment with microbe
Chloine Disinfection Tank	-to separated the fine particles
Effluent Quality Check	-to kill the harmful microbes
	-check for the safety of environment

At the Emerald Brewery Myanmar Ltd., there has been installed and utilized the realtime online monitoring system at 5th January 2021 by Forbe Mashall Ptc.,Ltd. The apparatus and analyzed online data are shown as follow.



Photo of online monitoring system

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date	pH (6-9)			total COD (<250)		
	Inlet	effluent	canteen pond	Inlet	effluent	canteen pond
1.7.23	6.0	7.6	7.2	1801	230	162
2.7.23	6.7	7.7	7.0	1898	190	155
3.7.23	8.9	7.5	7.3	2070	231	70
4.7.23	6.5	8.4	7.3	2144	184	99
5.7.23	9.3	7.7	7.2	2082	170	278
6.7.23	10.1	7.4	7.6	2105	141	293
7.7.23	9.8	7.8	7.5	2151	168	275
8.7.23	9.5	7.7	7.6	2191	181	181
9.7.23	7.1	8.0	7.5	1819	178	177
10.7.23	7.8	8.2	7.4	2201	194	264
11.7.23	5.9	8.5	7.5	2158	165	280
12.7.23	7.6	7.8	7.5	2217	176	271
13.7.23	6.7	7.8	7.5	2162	179	243
14.7.23	6.6	7.8	7.6	2192	191	213
15.7.23	8.6	6.4	8.2	2001	748	167
16.7.23	5.9	8.0	7.4	2090	138	156
17.7.23	10.2	7.7	7.6	2197	80	160
18.7.23	6.6	7.8	7.5	2051	190	187
19.7.23	6.3	7.8	7.5	1980	190	173
20.7.23	7.5	7.7	7.6	1600	215	135
21.7.23	5.6	7.9	7.6	2051	192	139
22.7.23	7.4	8.8	7.6	2097	157	149
23.7.23	8.6	7.7	7.6	2027	187	139
24.7.23	7.8	7.9	7.6	179	183	105
25.7.23	6.2	8.4	7.5	2140	94	175
26.7.23	8.3	9.6	7.6	2100	58	95
27.7.23	5.6	8.5	7.4	2103	81	162
28.7.23	5.1	5.6	7.3	2149	192	91
29.7.23	5.5	8.2	7.6	2180	120	142
30.7.23	5.4	7.6	7.6	2009	144	100
31.7.23	5.6	7.9	7.5	2051	170	81

TSS (<50)			TDS (<2000)			BOD ₅ (<50)	
Inlet	effluent	canteen pond	Inlet	effluent	canteen pond	Inlet	effluent
1020	1070	no measure	2980	2210	no measure	-	-
660	1410	no measure	2300	1920	no measure	-	-
580	1200	no measure	2100	1850	no measure	1020	6
560	520	no measure	2240	2660	no measure	1020	6
640	143	no measure	1820	1550	no measure	1020	6
806	445	no measure	1570	660	no measure	1080	5
420	123	no measure	1750	1250	no measure	1140	5
430	170	no measure	2520	1480	no measure	-	-
620	65	no measure	1090	1685	no measure	-	-
560	15	no measure	2680	1395	no measure	1050	6
200	85	no measure	2900	2205	no measure	1050	6
280	1790	no measure	2640	1340	no measure	1050	5
275	790	no measure	970	880	no measure	1080	5
185	1516	no measure	1080	950	no measure	1020	6
270	353	no measure	720	2010	no measure	-	-
217	87	no measure	2403	1593	no measure	-	-
160	1180	no measure	2260	1120	no measure	1180	5
255	738	no measure	1480	810	no measure	1120	5
225	1308	no measure	1170	220	no measure	1260	6
5110	905	no measure	760	985	no measure	1080	5
310	1075	no measure	1510	1205	no measure	1080	5
180	208	no measure	2150	4989	no measure	-	-
450	750	no measure	2210	1250	no measure	-	-
4133	1358	no measure	1040	1040	no measure	1080	5
310	42	no measure	2190	1798	no measure	1080	5
250	405	no measure	3350	15355	no measure	1080	6
340	400	no measure	2800	2740	no measure	1040	6
400	708	no measure	1310	2060	no measure	Waiting result	Waiting
390	45	no measure	2050	1812	no measure	-	-
340	320	no measure	2660	1040	no measure	-	-
230	50	no measure	1380	1310	no measure	Waiting result	Waiting

Online monitoring analyzed result of wastewaters



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From the above analyzed results, parameters of effluent are except TSS, measured parameter are in standard.

At the February 2023, wastewaters as influent, effluent of WWT plant and final discharge from plant are collected analyzed. The analyzed results of effluent are except pH, TSS, Oil and Grease, Total coliform bacteria, measured parameter are beyond the standards. The analyzed results are shown as follow.

Laboratory analyzed results of wastewaters February 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	5.8	7.8	7.3	6~9
2.	Total Suspended Solids	mg/l	148	38	28	50
3.	Biochemical Oxygen Demand	mg/l	980	650	180	50
4.	Chemical Oxygen Demand	mg/l	1850	1455	386	250
5.	Total Phosphorous	mg/l	4.3	29	16	2
6.	Oil and Grease	mg/l	9	7	6	10
7.	Total nitrogen	mg/l	16	32	23	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	>1100	23	>1100	400
9.	Temperature increase	°C	<3	<3	<3	<3

Moreover, at August 2023, the wastewaters as influent, effluent of WWT and final discharge of the plant and their results are shown as following.

Laboratory analyzed results of wastewaters August 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	3.6	6.7	7	6~9
2.	Total Suspended Solids	mg/l	252	9	12	50
3.	Biochemical Oxygen Demand	mg/l	1480	26	28	50
4.	Chemical Oxygen Demand	mg/l	3800	76	94	250



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

5.	Total Phosphorous	mg/l	1.2	2.8	1.2	2
6.	Oil and Grease	mg/l	49.5	9	8	10
7.	Total nitrogen	mg/l	6.8	3.2	2.6	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	210	9	9	400
9.	Temperature increase	°C	<3	<3	<3	<3

From the above results, the analyzed results of effluent of WWT plant and final discharge are in standards. Details of this is shown at section 4-3-6-5.

Moreover wastewater quality management and monitoring plan are stated at section 6-4-6 of this report. There be mitigation measures as management plan.

3.14 Machinery and Equipment List

The machinery and equipment required for the project proponent are listed in the followings Table 3-15 and Table 3-16.

Table 3-15 Machines and Equipment for Beer Plant Including Their Sources

No	LIST OF ITEM	HS CODE	UNIT	QTY	SOURCE/REMARKS
1	RAW MATERIAL TREATMENT SECTION	8438.40XX	SET	1	SPAIN,GERMANY, CHINA,SINGAPORE
2	HOPPED WORT PREPARATION SECTION	8438.40XX	SET	1	EUROPE,CHINA,THAILAND, SINGAPORE
3	BEER PRODUCTION SECTION				EUROPE,CHINA,THAILAND, SINGAPORE,VIETNAM
	3.1 FERMENTATION SECTION	8438.40XX	SET	1	
	3.2 FILTRATION	8438.40XX	SET	1	
	3.3 BRIGHT BEER SECTION	8438.40XX	SET	1	
4	CIP SECTION	8438.40XX	SET	1	EUROPE,CHINA,THAILAND, SINGAPORE, VIETNAM
5	PACKAGING SECTION				EUROPE, CHINA, THAILAND
	5.1 GLASS BOTTLE LINE	8422.3X	SET	1	
	5.2 KEG LINE	8422.3X	SET	1	
	5.3 CAN LINE	8422.3X	SET	1	
6	LAB EQUIPMENT/QUALITY CONTROL SECTION	7017.XX 9012.XX 9016.XX	SET	1	EUROPE, SINGAPORE, THAILAND
7	UTILITIES SECTION				THAILAND, SINGAPORE, JAPAN,EUROPE, CHINA
	7.1 WATER TREATMENT SECTION (1,400 m3/day)	8421.XX	SET	1	
	7.2 BOILER SECTION	8402.XX	SET	1	
	7.3 CO2 RECOVERY SECTION	8419.XX 7311.XX	SET	1	
	7.4 COMPRESSED AIR SECTION	8414.XX	SET	1	
	7.5 REFRIGERATION SECTION	8418.XX 7311.XX	SET	1	
	7.6 WASTEWATER TREATMENT SECTION		SET	1	
	7.7 POWER SUPPLY SECTION, SOFTWARE & CONTROL SYSTEM	8502.XXXXX 8504.XXXXX 8536.XXXXX 7308.90XX	SET	1	
	7.8 UTILITIES PIPING	7304.XX 7305.XX 7306.XX 6806.XX	SET	1	
8	CONSTRUCTION MATERIAL		SET	1	THAILAND, SINGAPORE, VIETNAM, CHINA



Table 3-16 Tank for Beer Plant

No	LIST OF ITEM	UNIT	QTY
1	Spent Grain silo (body only and legs)	set	1
2	Condensate collection tank	set	1
3	Caustic Dissolving tank	set	1
4	Caustic Storage tank	set	1
5	Caustic recuperation tank	set	1
6	Operating platforms	set	1
7	Mazzanine floors	set	1
8	floor drain gutter	set	1
9	floor drain gutter gratings	set	1
10	floor/tank coatings	set	1
11	paints	set	1
12	pipe bridges and supports	set	1
13	Construction Materials (concrete, cement, bricks, sand, etc)	set	1
14	piles and precast concrete works	set	1
15	chain link fence system	set	1

3.15 List of Buildings and Layout

The following table shows the list of buildings constructed in the proposed project.

Table 3-17 List of Buildings with Dimensions

No.	Item	Type of building	L x B (ft x ft)	Area (sq-ft)
Building with Zinc Roof , Concrete Floor, Brick Wall				
1	Office Building	Two storeyed; Steel structure	243 x 43	10,449
2	Canteen (I)	One Storeyed; Reinforced concrete	89 x 46	4,094
3	Canteen (II)	One Storeyed Reinforced concrete	105 x 23	2,415
4	Beer Manufacturing Building	Steel Structure with concrete floor	410 x 41	16,810
5	Utility Building	Steel Structure with concrete floor	246 x 49 x 28	337,512
6	Packaging Building	Steel Structure with concrete floor	722 x 147	106,134
7	Security Gate	One Storeyed Reinforced concrete	25 x 13	325



No.	Item	Type of building	L x B (ft x ft)	Area (sq-ft)
8	Wastewater treatment Building	Reinforced concrete Tank	230 x 82	18,860
9	Packging Building	1-storey steel structure	-	-
10	Ware House	1-storey steel structure	-	-
11	Chemical Store	1-storey steel structure	-	-

Three Dimension (3D) Diagrams of Building

The followings 3 D diagrams show the buildings to be constructed for the proposed project.





Perspective View of Buildings of the Proposed Project

3.16 Working Hour, Manpower, and Factory Organization

Working Hour

The following table shows the operating schedule working hour for the project employees.

Table 3-18 Employee Working Schedule

Factory Operation Hours	8 hrs. per day Working day 6 days per week
Working Hours of Management Office	9.5 hrs. per day (8:00 a.m. ~ 5:30 p.m.) 5 days per week (Monday ~ Friday)

Manpower (Current)

Workforce

Local Employee	165
Foreign technicians	5
Total No. of employees	170

Table 3-19 Number of Employees (Current)

No.	Designation/Rank	Local	Foreign	Total
1	Senior management (managers, senior officials)	3	5	8
2	Other management level (except sr. mgt)	11		11
3	Professionals	8		8
4	Technicians	14		14
5	Advisors	2		2
6	Skilled labors	50		50
7	Workers	77		77
Total		165	5	170

sr. mgt = Senior management

Factory Organization

The following chart shows the organization of the project proponent.

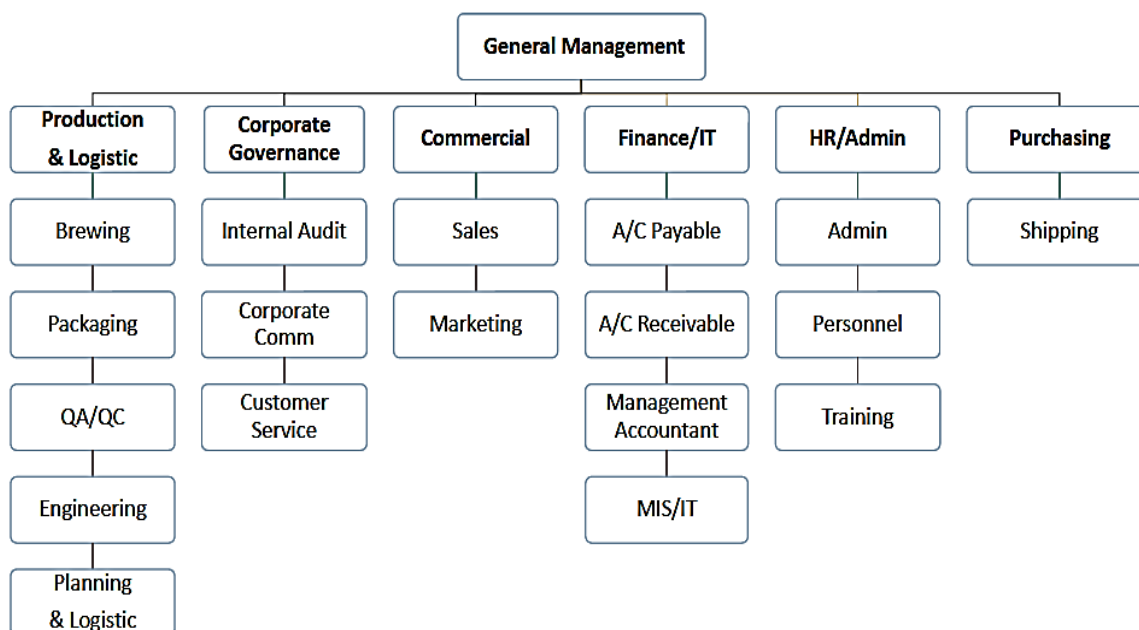


Figure 3-28 Organization Chart of Emerald Brewery Myanmar Limited

3.17 Manufacturing processes

3.17.1 Beer Production

The beer manufacturing processes will include:

- Brewing,
- Filtering,
- Fermenting,



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- Packaging,
- Various auxiliary operations which include water treatment, waste water treatment and
- Several CIP (cleaning in process), etc.

All the processes will be implemented with the support of instrumental control devices at different stages of operation.

In the area of packaging beer containers, bottles, cans and kegs are sent to the conveyor belts for Bottling, canning, and kegging activities and go through a pasteurizing process to enable a premium level of hygienic standard and followed by labeling and packing.

Quality control measures are installed at production Lines, to ensure products are in strict adherence to stringent quality standards. An in-house engineering department staffed with qualified and trained engineers and technicians will be set up to ensure efficient utilization of production equipment, and to conduct regular maintenance of the hardware facilities.

This intention is to operate the manufacturing team on a shift system. All the above will be accompanied with a high standard of operating procedures.

Process Flow

The incoming raw materials, rice sacks delivered from supplier, are sent to Quality Analyzer (QA) to know whether they are acceptable or not. QA passed rice are then moved and stored in warehouse. In order to get clean rice, foreign matters removal process, dust removal process, stone removal process, iron removal process are done with sieve cleaner, dust collector, stone remover, and magnetic trap.

After dust is removed with aspirator, the known quantity of rice are fed to the milling process to get rice powder. to convert rice (starch) into sugar, which is known as hydrolyzing process, rice powder is cooked in the cooker catalyzing by enzymes.

To get clean malt, foreign matters are removed with sieve while dust are captured in a dust collector. Collected foreign matters are stored as solid waste. Since there may be stones in malt, a stone remover is used to pick out stones. Iron pieces are trapped with the magnet. The clean malt is stored in the brew-house and then milled to get grist for converting into sugar by hydrolysis.

Malts are scaled and undergone malt hydrolyzing process to convert into sugar. During this process, the sugar from rice cooker is transferred into this Mash kettle. Wort is separated from spent grain and these spent grains are sold as animal feed. Wort collected is boiled for next step and hop is added in this boiling process.

Wort need to do separation process to remove any precipitates or adulterants. After cooling down for further fermentation process, yeast is added into the cold wort. Fermentation process is to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.



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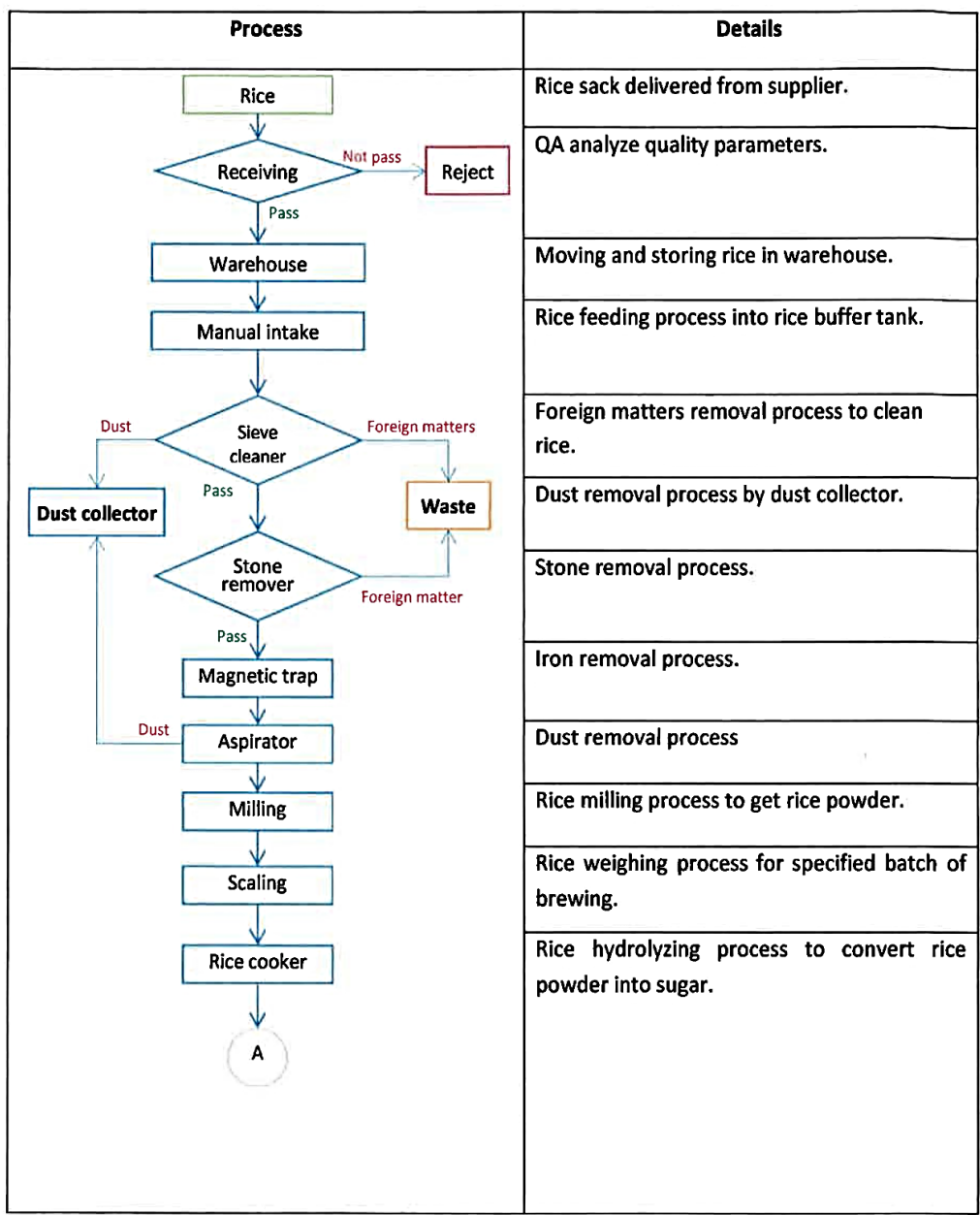
When fermentation process is complete, yeast is removed. Then, maturation process is continuing to let yeast settle down to the bottom of treatment tank at low temperature. After cooling, stabilizing agents are added.







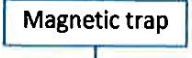






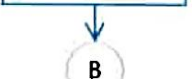
Filtration of the cooled and stabilized fermented liquid removes particulate matters giving clear beer. To get appropriate carbon dioxide level, carbon dioxide is adjusted in carbonator. After getting the bright beer, Filling process, packing and storing process are continued. Bottle, can and keg containers are filled after pasteurization. Finished products are packed and arranged on the pallet and stored in the warehouse.

The following figures show the flow chart of the brewing process.

Beer (Bottle, Keg,Can) Manufacturing Process

Brewery processing flow chart



Process	Detail
	Malt delivered from supplier.
	QA analyze quality parameters.
	Malt delivery process from truck into buffer.
	Foreign matters removal process to clean malt.
	Stone removal process.
	Storing cleaned malt prior being used in the brew house.
	Iron removal process.
	Dust removal process.
	Malt milling process to convert malt grain into grist.
	Malt weighing process for specified batch of brewing.
	Malt hydrolyzing process to convert malt into sugar (During this process, the sugar from rice cooker is transferred into this Mash kettle)
	Separation process to collect wort then remove spent grain and others into spent grain bin (being sold as animal feed).
	Wort collection and preparation processes for next step.
	Wort boiling process with hop addition during the process.

Beer Fermentation and Packing Process

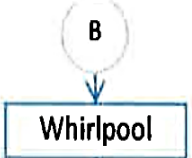

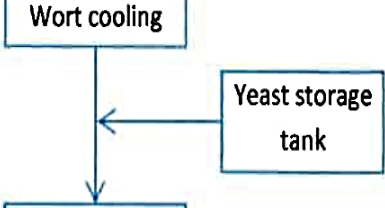
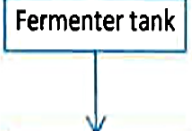



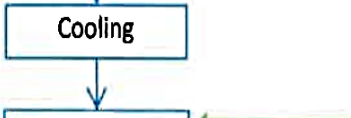





Process	Detail
	<p>Separation process to remove any precipitates or adulterants from wort.</p>
	<p>Cooling down process prior be transferred for further fermentation process.</p>
	<p>Yeast is added into the cold wort.</p>
	<p>Fermentation process to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.</p>
	<p>Yeast removal process from beer.</p>
	<p>Maturation process at low temperature to let yeast settling down to the bottom of treatment tank.</p>
	<p>Cooling down process to prepare the batch before filtration.</p>
	<p>Addition process of stabilizing agents.</p>
	<p>Filtration process for particle removal to clarify beer.</p>
	<p>Carbon dioxide adjusting process to appropriate carbon dioxide level.</p>
	<p>Storing bright beer prior be transferred to filling process.</p>
	<p>Filling process (bottle, can or keg containers) with pasteurization prior being packed in packaging and arranged on the pallet.</p>
	<p>Storing process of finished products in warehouse.</p>

Figure 3-29 Production Process (A ~ B)

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

In Emerald beer plant, after beer production there are three types of packing and they are in **bottle, can and keg**. Production capacities for Bottling are 15,000 BPH for 620 ml, 20,000 BPH for 320 ml; for canning 12,000 CPH and for kegging 100 KPH and production quantity will be in future.

Cylos stored the rice, malt as figure 3-30, other raw materials stored as figure 3-31, mash tank as figure 3-32, lauter tank as figure 3-33, wort boiling as figure 3-34, beer fermentor as figure 3-35 are shown.



Figure 3-30 Cylos for rice and malt



Figure 3-31 Storing of other raw materials



Figure 3-32 Mash Tank



Figure 3-33 Lauter Tank



Figure 3-34 Wort Boiling



Figure 3-35 Beer Fermentor

3.17.2 Beer Bottling Plant

In beer Bottling plant, the process steps are

- Empty bottle collection (recycle or new)
- washing
- empty washed bottle inspection
- beer Filling and crowning
- filled beer bottle inspection
- tunnel pasteurization
- labeling and date coding
- inspection in light box
- packaging

Detailed drawing is attached here.



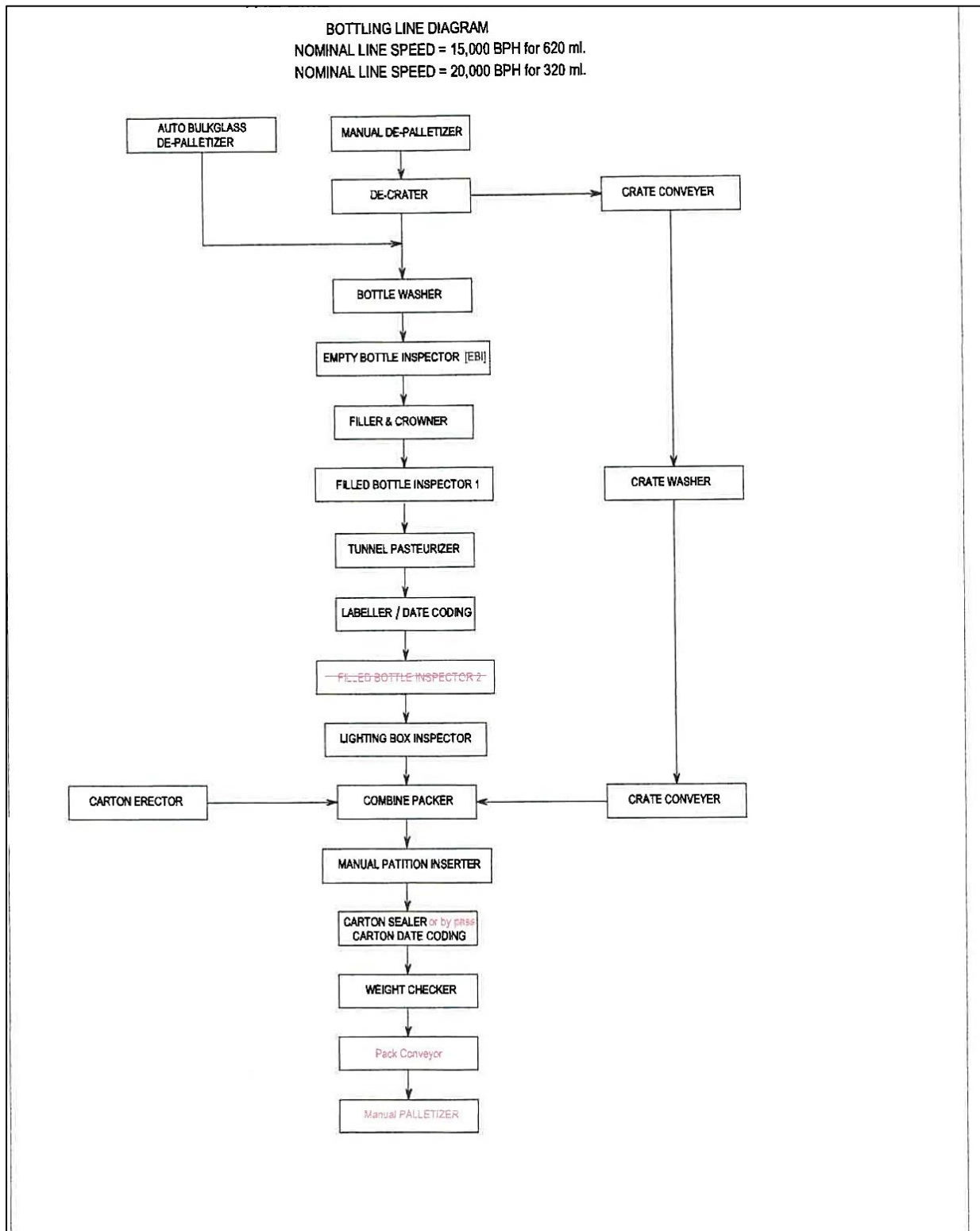


Figure 3-36 Bottling Line Diagram

Machines used in Bottling plant, bottle de-palletizer as fig 3-37, crate washer as figure 3-38, bottle unpacker as figure 3-39, bottle washer as figure 3-40, bottle filler as figure 3-41, bottle pasteurizer as figure 3-42, bottle labeler as figure 3-43, bottle packer as figure 3-44, carton erector as figure 3-45 and carton sealer as figure 3-46 are shown as follows.





Figuer 3-37 Bottle De-palletizer



Figure 3-38 Crate Washer



Figure 3-39 Bottle Unpicker



Figure 3-40 Bottle Washer



Figure 3-41 Bottle Filler



Figure 3-42 Bottle Pasteurizer



Figure 3-43 Bottle Labeler



Figure 3-44 Carton Erector



Figure 3-45 Bottle Packer



Figure 3-46 Carton Sealer

3.17.3 Beer Canning Plant

In beer canning plant the process steps are

- empty can conveying
- rinsing
- Filling and canning (capping)
- level inspection
- pasteurization in tunnel
- drying
- coding
- packing

Detailed drawing is shown at here.

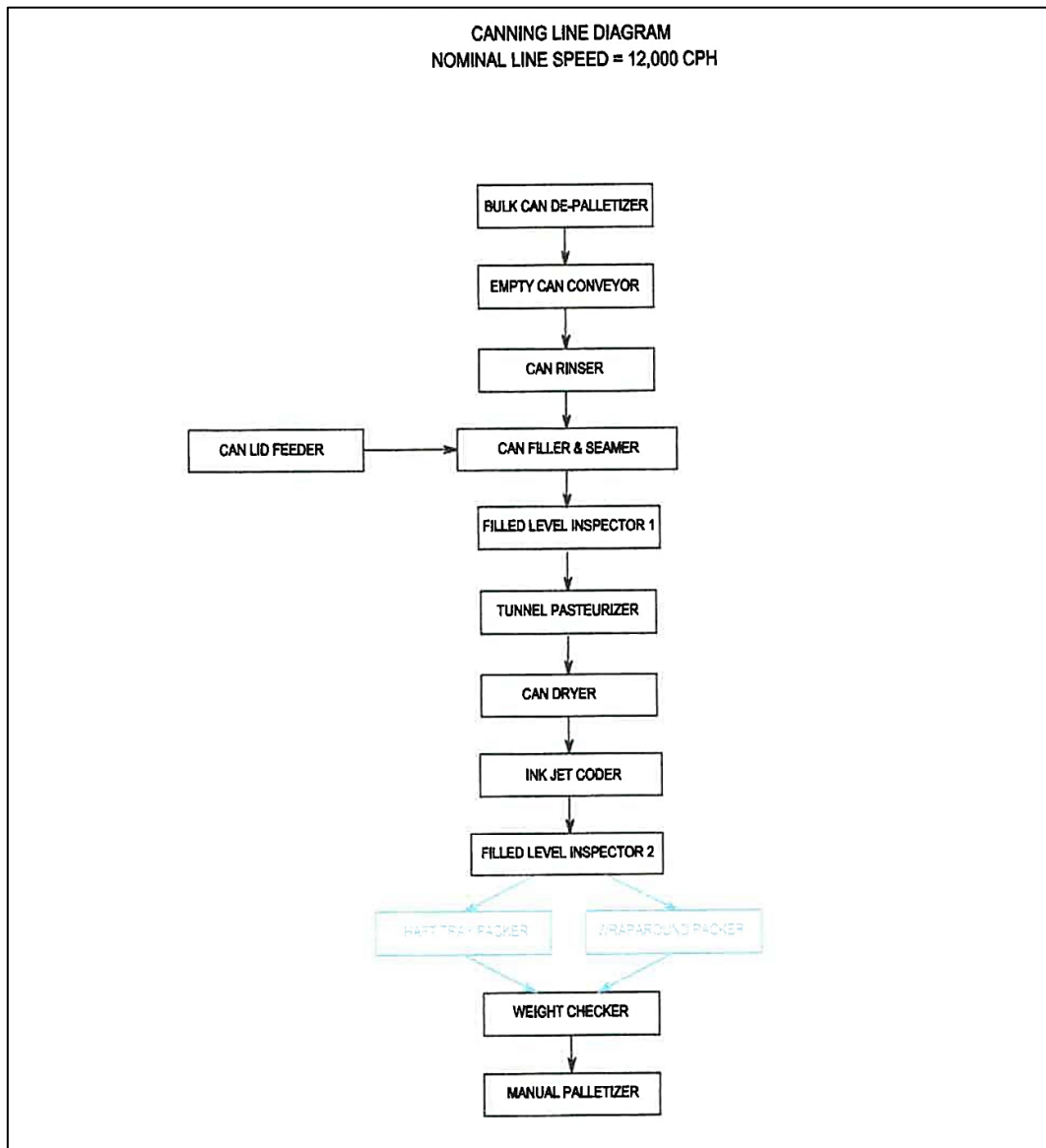


Figure 3-47 Canning Line Diagram

There are two can Line and as Line 1 and Line 2. Machine used can Line 1& 2, can Line 1 de-palletizer as fig. 3-48, can Line 1 filler as fig.3-49, can Line 1 sealer as fig 3-50, can Line 1 pasteurizer as fig 3-51 and can Line 1 packer as fig 3-52 are shown as follows.



Figure 3-48 Can Line 1 De-palletizer



Figure 3-49 Can Line 1 filler



Figure 3-50 Can Line 1 Sealer



Figure 3-51 Can Line 1 Pasteurizer



Figure 3-52 Can Line 1 Packer

Machine used can Line 2, can Line 2 de-palletizer as fig. 3-53, can Line 2 filler as fig.3-54, can Line 2 sealer as fig 3-55, can Line 2 pasteurizer as fig 3-56 and can Line 2 packer as fig 3-57 are shown as follows.



Figure 3-53 Can Line 2 De-palletizer



Figure 3-54 Can Line 2 filler



Figure 3-55 Can Line 2 Sealer



Figure 3-56 Can Line 2 Pasteurizer



Figure 3-57 Can Line 2 Packer

Canned beer Filling and seaming photos are shown figure 3-58.



Figure 3-58 Can beer Filling and seaming

3.17.4 Beer Keg Plant

In beer keggling plant, process steps are

- empty keg conveying
- keg turner
- washing (external)
- coding
- washing (internal) and Filling
- checking weight
- keg turner
- capping

Detailed drawing is shown at here.

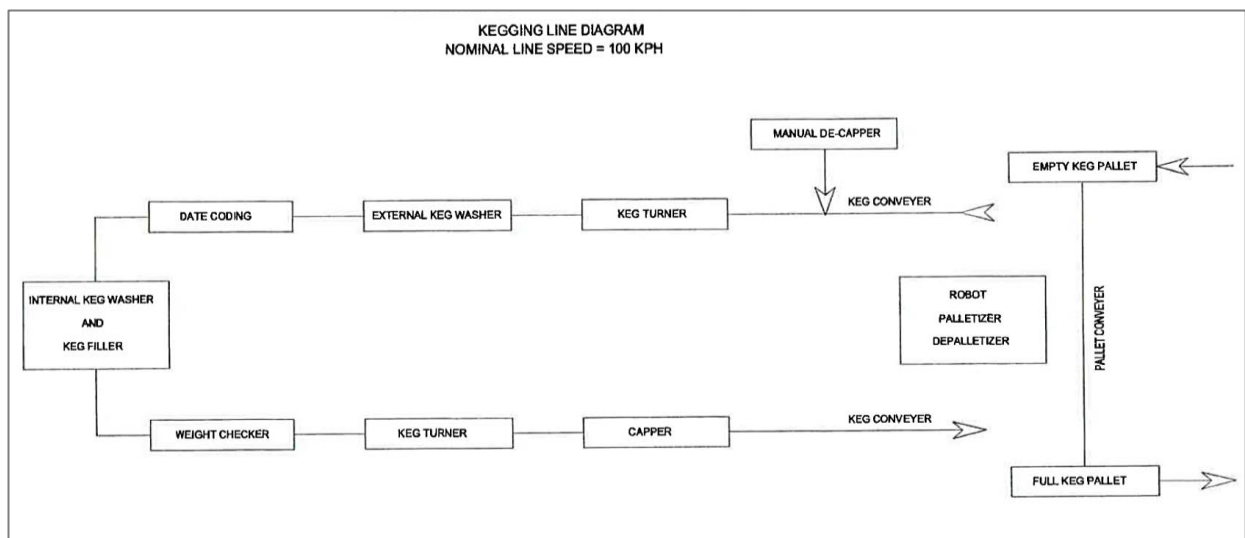


Figure 3-59 Kegging Line Diagram

Machines used in keg beer production, keg carrying system as fig.3-60, keg Filling as fig 3-61, and overall keg plant as fig 3-62.



Figure 3-60 Keg carring system



Figure 3-61 Keg Filling



Figure 3-62 Overall keg plant

3.18 Solar Power Utilization

Emerald Brewery Myanmar Limited installed the solar energy system on the roof of office since 2019 and it covers 50% of office electricity consumption. At 2023 July 24th 2MW solar energy system was installed and it covers the 70~75% of electricity requirement.

The solar energy panel mounted on roofs of buildings are shown as fig 3-63.



Figure 3-63 photo of solar energy panel on roof of buildings

3.19 Management of Waste Materials

At Emerald Brewery plant the management of waste materials is shown as follow.

There are summarized three categories of waste materials as

- Emitted gases or vapours and fine particles (Emission to air)
- Liquid waste and
- Solid waste

Emitted gases or vapour and fine particles (Emission to air)

Management plan of emission to air at Emerald Brewery plant is as follow.

Emitted gases or vapour and fine particles (Emission to air)

Emerald Brewery Myanmar Limited	
The Sources	Combusted gases from exhaust of vehicles (motor,car,forklift) Combusted gases from electric generator engines Trasformer oil vapour Refrigerant vapour from air condition, refrigerator, water cooler Refrigerant vapour from industrial refrigerant plant (ammonia) Fine particles, dust from rice cleaning, destoning,iron removing Fine particle from rice milling Fine particle from malt cleaning destoning, iron removing Vapour from mashing Vapour from wort boiling Vapour from beer fermentor Combusted gases from boiler Emitted gas from CO ₂ recovery plant (regeneration of dryer and deodorizer, emitted gases from moisture trap) Emitted gases from caustic soda dissolving for CIP Emitted gases from aerobic digester Combusted gases from kitchen

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

	<ul style="list-style-type: none"> - Volatile Organic vapour from kitchen
Risk Assessment	<ul style="list-style-type: none"> - Combusted gases as CO₂ is global warming - When combustion is not complete, CO gas comes out and it is poisonous gas - When bad quality fuels are used, the SO₂ gas emits to air and it is poisonous gas and it causes acid rain - Transformed oil vapour is carcinogenic - Refrigerants from air conditions, refrigerator are ozone destroyer - Fine particles make disease of respiratory tract. - Volatile organic compounds make nuisance - Ammonia gas is poisonous - Biogas from anaerobic digester is flammable
The impact area	<ul style="list-style-type: none"> - The people along through transportation route of raw materials, machinery and finished products. - The person within the factory area.
The impact amount and duration	<ul style="list-style-type: none"> - The impact amount is low and short duration upon people alone through transportation route. - The impact amount is medium and duration is longer upon person within factory.
Management Procedure	<ul style="list-style-type: none"> - Good maintenance of motor vehicles and generators - Using good quality fuel - Makes consist the electrical load and capacity of generator - Makes consist the electrical load and capacity of transformer - Good maintenance of air condition refrigerator and water cooler - Good maintenance of industrial refrigeration plant (ammonia) - Manager the fine particles not to emit from transportation, handling of rice and malt. - Manager the fine particles not to emit from rice milling - Not open the lids of mash cooker, lautertun and wort kettle if be unnecessary. - Operates the boiler under SOP - Makes right sequence of regeneration of CO₂ dryer and deoderizer. - Takes enough time for caustic soda dissolving at CIP plant. - Not over aeration at aerobic digestion plant. - Check and repairs the leakage of biogas from anaerobic digestion plant. - Makes good ventilation of kitchen from canteen.

Management for liquid wastes

Emerald Brewery Myanmar Limited	
The Sources	<ul style="list-style-type: none"> - Spillages of lubricating oil, battery acid, transformer oil, fuels, when they are renewed or filled. - Washed water from machines, tanks, empty bottle, cans and empty kegs. - Reject water from water treatment plant.



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	<ul style="list-style-type: none"> - Reject regeneration wash water from water treatment plant. - Reject water from R.O plant . - Washed water from laboratory - Washed water from kitchen, canteen - Boiler blow down water - Condensate from CO₂ plant - Wastewater from cleaning and sanitation of employees. - Weak reject CIP, water , caustic solution - Treated wastewater from wastewater treatment plant.
<u>Risk Assessment</u>	<ul style="list-style-type: none"> - Lubricating oil can prevent air and light to transit to water and soil - Battery acid makes pH changes of surrounding water and soil, is also corrosive. - Transformer oil is carcinogenic - Reject water from water treatment plant contains more impurities - Reject regeneration water from water treatment plant contains NaCl and it makes corrosion - Washed water from various sections of plant contain more contaminants. - Reject weak CIP solution contains caustic soda and other contaminants make corrosive and high BOD,COD. - If wastewater treatment does not treated, the wastewater may be high BOD,COD.
The impact area	Along the drain in plant and surrounding water environment
The impact amount and duration	<ul style="list-style-type: none"> - The impact amount to the person in plant is small and short. - The impact amount to the plants environment is medium and long.
Management Procedure	<ul style="list-style-type: none"> - Renewing and Filling of engine oil, transformer oil, fuel oils, lubricants and battery acid are performed by skilld and outhorized persons. - Not excess using the cleaning water if not necessary. - Systematic disposal (collect and send to WWT) and regular tank cleaning. - Used oils are collected and sold and disposed under guideLines of development committee. - Operate wastewater treatment system under standard operation procedure and regular monitoring and reporting as under NEQ(E)G guideLine values

Management for Solid Wastes

Emerald Brewery Myanmar Limited	
The Sources	<ul style="list-style-type: none"> - Personal waste materials of employees - Office waste materials as paper used stationery, used light bulb. - Packing materials for malt, rice, enzymes, hop extract, hop pellet, bottle, cans etc. - Damages materials as broken-bottle, can, label, crown cork - Expired and used materials from water treatment plant (as filters, sand, resin, activate carbon etc.)



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	<ul style="list-style-type: none"> - Sludge from aerobic digester - Spent grain - Used spare parts of motor vehicles, generator sets and machines
Risk Assessment	<ul style="list-style-type: none"> - Plastic materials are not easily decomposed and adverse impact for ecosystem. - Used light bulb and fluorescent tube make injures to people - Broken bottle, damage cap, can make injures. - Used battery acid make corrosion. - Spent grain and sludge can change the ecosystem
The impact area	People near the disposing place and factory environment
The impact amount and duration	<ul style="list-style-type: none"> - The impact amount and duration are medium and long for people near the disposing place. - The impact amount and duration are small for people of factory site.
Management Procedure	<ul style="list-style-type: none"> - Used light bulb and fluorescent tubes are disposed by guideLine of development committee. - Office waste materials are collected and disposed by guideLines of development committee. - Some packing materials are reused in other purposes, sold out and disposed by guideLines of development committee. - Broken bottle, damage caps, cans are disposed by guideLine of development committee. - Used battery, tyre and used machines parts are sold out or disposed by guideLine of development committee. - Spent grain is sold as animal feed - Sludge from aerobic degester is collected and used as natural fertilizer.

3.20 Amount of Effluent and Wastewater, Ingredients and Management Procedure

The estimated amount of effluent and wastewater, containing substances and management procedure of Emerald Brewry Plant are as following.

Table 3-20 Amount of effluent and wastewater, ingredients and management plan

Daily/Base

Sr.No	Effluent/ Wastewater	A/V	Quantity	Containing Substance	Management Procedur
1	Effluent from sanitation by employee	gallon	500	Urine, Feces	Decompose naturally in septic tank
2	Effluent from kitchen and canteen	gallon	100	Oil, Food	Send to WWT
3	Boiler blow down water	gallon	100	Mineral, Salt	Send to WWT
4	Spillage (fuel, lubricant, battery acid)	gallon	0.1	Diesel, gasoline, lubricating oil, battery acid	Wipe out and absorbent materials are disposed by guideLine of development



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

					committee
5	Regeneration wastewater and reject water from water treatment plant	gallon	50	Mineral, salt	Send to WWT
6	Weak reject CIP solution	gallon	5	Casutic soda and BOD,COD high substances	Send to WWT
7	Wastewater from WWT	gallon	15000	Organic contaminants	Treat in WWT

3.21 Amount of Solid Waste Issued, Containing Substances and Management Procedure

The amount of solid waste issued, containing substances and management procedure are as following.

Table 3-21 **Amount of solid waste issued, containing substances and management procedure**

Daily/Base					
Sr.No	Solid Waste	A/V	Quantity	Containing Substance	Management Procedur
1	Personal waste materials of employees	kg	5	Plastic,paper	Collected in separated as wet and dry debris, disposed by guideLine of development committee.
2	Office waste materials	kg	5	Paper,plastic, metal, glass	disposed by guideLine of development committee.
3	Packing materials plastic bags, wooden crate, carboard box, cans, plastic bucket	kg	150	Plastic, printing, ink, paper, wood	Used in other purposes sold and disposed by guideLine of development committee.
4	Damage material in process (broken bottle, damage caps, label, cans)	kg	100	Glass, aluminun, paper, printing ink	Disposed by guideLine of development committee.
5	Expired and used materials from water treatment plant. (sand resin , filter, RO membranc)	kg	5	Plastic, paper, organic compound	Disposed by guideLine of development committee.
6	Used spare parts of motor vehicles generator and machines	kg	100	Metal, rubber	Disposed by guideLine of development



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					committee.
7	Sludge from aerobic digester	kg	25	Organic compound	Disposed by guideline of development committee or used as natural fertilizer
8	Spent grain	kg	8000	Fiber, water, protein, sugar	Sold as animal feeds

3.22 Amount of Hazardous waste, Containing Substances and Management Procedure

Amount of hazardous water, containing substances and management procedure are as following.

Table 3-22 Amount of hazardous waste, containing substances and management procedure

Daily/Base					
Sr.No	Hazardous Waste	A/V	Quantity	Containing Substance	Management Procedur
1	Used and broken light bulbs and fluorescent tube	kg	50	Glass, metal	disposed by guideline of development committee.
2	Used battery	No	5 (annual)	Paper,battery acid, lead compounds	Sold or disposed by guideline of development committee.
3	Broken bottle	kg	100	glass	Disposed by guideline of development committee.
4	Caustic soda bags	kg	100	Plastic, printing ink, caustic soda (residue)	Disposed by guideline of development committee.

3.23 Storm Water and Drainage System

The storm water and drainage system of Emerald Brewery Myanmar Limited is shown as following figure.



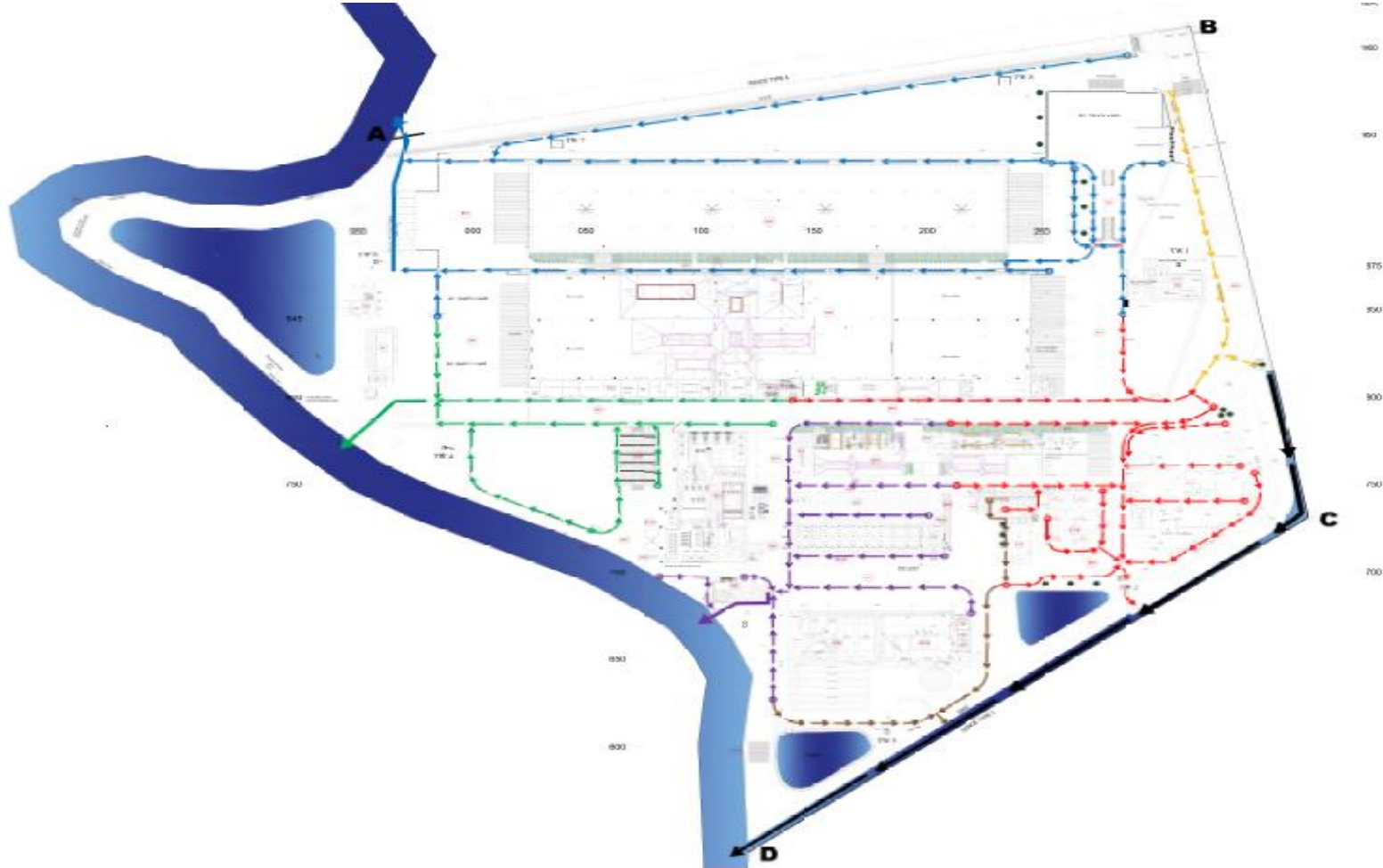


Figure 3-64 storm water and drainage system



3.24 Water Distribution System

Daily water consumption of Emerald Brewery Myanmar Limited is about 1568 m³ (344000 gal) and mainly used for beer fermentation, boiler, cleaning for tanks, pipeLine, CIP, bottles, cans,keg washing and domestic usage. Water distribution system of the said factory is shown in the following figure.



Figure 3-65 water distribution system

3.25 Road Transportation

The transportation of raw materials and finished goods and ferry system are shown as following.

Transportation arrangement

Sr.No	Commodities	From	To	Transported by	Remark
1	Rice	Whole sale dealer	factory	Transported by logistic company	
2	Calcium chloride	port			
3	Zince Sulphate				



4	Calcium Sulphate				
5	Can Lid	Whole sale dealer			
6	Carton box				
7	Raw material (imported)	port			
8	Empty bottle	Whole sale dealer			
9	Ferry system	Various place			
10	Finished product	factory	Various place		

At Emerald Beer plant, there are no factory's vehicles and uses for rent logistic company purposes of factory.

3.26 Analysis of Alternatives

The consideration of alternatives to a proposal is a requirement of the environmental assessment systems. It lies at the heart of the process and methodology.

A comparison of alternatives will help to determine the best method of achieving project's objectives while minimizing the environmental impacts. Furthermore, this can help to indicate the environmental protection with the best environmental practices with more creative options.

From an environmental perspective, not carrying out this development may be the best option. Without the development, the area would remain a relatively undisturbed area providing a habitat for the varied flora and fauna presently observed. This area will continue to be impacted, although minimally, by anthropogenic and natural factors. From a socio-economic perspective, the "no action" alternative may not be the best alternative as the numerous benefits to be gained from the development both locally and nationally would not be realized and the resources in the area would continue to be underutilized.

3.26.1 Project Alternative

The alternative consideration is "no project option".

This alternative means forfeiting the proposed development avoiding all its impact both positive and negative. Pros and Cons for this option are discussed.

The Pro identified is below:

- There will be no environment and social impact arising from the implementation of the project.

The Cons identified are below:

- Possible revenue for the proponent after the project is lost
- A piece of land would be left un-utilized which could collect waste overtime and become environmental and social hazard in the long term.
- The real estate price for the land would drop if the land were left un-used.



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3.26.2 Site Alternative

Hlegu Township has been selected to construct Brewery Manufacturing Plant by Emerald Brewery Myanmar Limited. The advantages of the specific site are as follows.

a) Sites need to be accessible for easy logistics

For an industrial development, the site should be accessible by road and highways. There is No.3 Main Road exits beside the project area. There is also another access road (inner road) exits in the proposed project area.

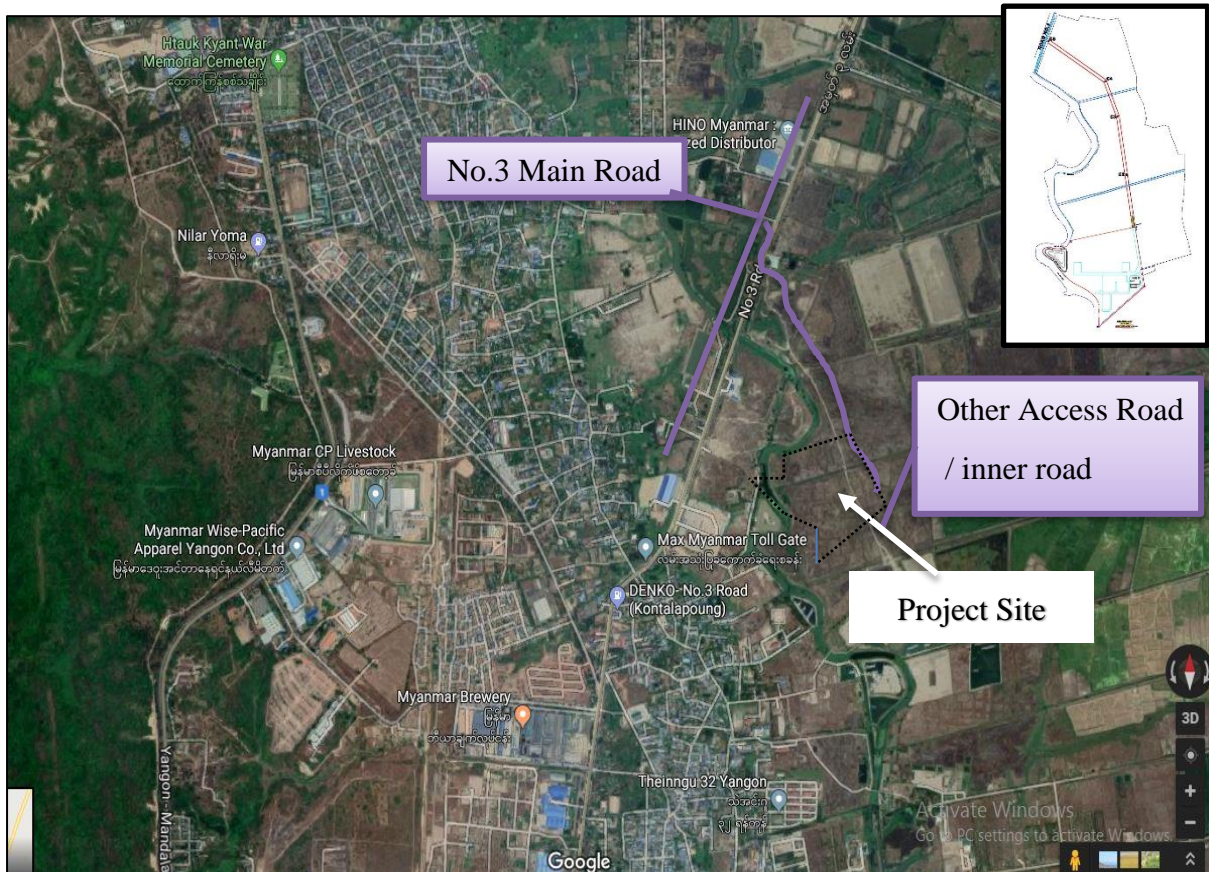


Figure 3-66 Access Roads to the Project Site

b) Build on previously developed, degraded, or urban land whenever feasible.

The application site occupies 32.84 acres of land in Hlegu Township and this is an adequate area for a proposed new industrial project, “Brewery Manufacturing Plant”. It lies beside the No.3 Main Road (Ygn-Hlegu Express Highway), Hlegu Township, Yay Ta La Baund Village. Kone Ta La Baund Village is also included in 1.5 km radius scope. Therefore, in order to get development in urban area, no other previously developed place can serve as a suitable place.

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c) Ensure there are sufficient fresh water and other resources.

Consideration must be given to the increased demand on existing water and energy supplies as well as waste and sewage disposal facilities needed to service both the industries, new workers and their families. Furthermore, water and energy plans must be considered for both the proposed project and the local community, including its commercial, agricultural, and civic activities.

Thus, this location was viewed favorable due to the accessible roads; stable and reliable communication network; availability of water and security and there lies no ecologically sensitive area etc.

3.26.3 Raw Materials Alternatives

The analysis of alternatives for the project is essential and makes more positive and less adverse impacts. There are two alternatives are stated as **refrigerant** and **raw material adjunct**.

Refrigerant

Refrigeration system is one of the main process for beer fermentation under low temperature and carbondioxide recovery plant. There are two kinds of refrigerant for systems and usually ammonia and hydrochloro carbon compound. Ammonia is hazardous substance, it is chosen as refrigerant for beer process due to the hydrochloro carbon compounds are ozone destroyer and they are banned. Although ammonia is toxic chemical, it can be noticeable due to its smell and easily controlled.

Raw Material Adjunct

There are many cereal grains for starch base raw materials for beer production. In Germany and Belgium countries, they note that beer must be produced from yeast, hop, water and malt only. Other cereal grains are not used as adjuncts for malt. In Myanmar, beer consumer are familiar with beer used rice as adjunct for malt. Emerald Brewery Myanmar Co., Ltd uses rice as adjunct and it makes less using malt, more and satisfying to consumers.

Solar

Emerald Brewery Myanmar Limited installed the solar energy system on the roof of office since 2019 and it cover 50% of office electricity consumption. At 2023 July 24th 2MW solar energy system was installed and it cover the totally electricity requirement of the plant.

Project site location does not take as alternative. Land is grant land for industrial use and own by private and no resettlement issue and no concerns about availability of water. Transport system could be built by own route to reach the no.3 highway road.

There are no other industrial projects nearby the proposed project and it may less cumulative impacts.



Chosen Alternatives and Impacts Assessment

The proposed project chooses the refrigerant alternative and adjunct alternative as ammonia and rice respectively. These alternatives may make not much more increased adverse impacts on traffic, air pollution, noise and vibration, biodiversity, archaeology and heritage, ground water and surface water, socio economic and waste water and solid wastes. Impacts assessments by chosen alternatives are summarized as following table.

Chosen Alternatives and Impacts Assessment

Impacts	Obviousness
Traffic	Not obvious
Air pollution	Not obvious
Noise and vibration	Not obvious
Biodiversity	Not obvious
Archaeology and heritage	Not obvious
Ground water and surface water	Not obvious
Wastewater and solid waste	Not obvious
Socio economic	Rice is consumed competitively in local market.

Summary of Pros and Cons of chosen Alternatives

Sr. No	Subject	Performance	Pros	Cons	Mitigation Measure
1	Project	No project	No environment and social impact	Revenue lost, unutilized land, price of land would drop	Establish with EMP, EmoP for construction and operation
2	Site	Existing place	- Accessible -Development -Sufficient fresh water -Employees	-Bad odor -Nutrient in Barlar creek -Change livelihood	-Planting -Participating in removing hyacinth -Assigning as employees if possible
3	Refrigerant	Ammonia	-Not deplete ozone -Not banned material	Moderately hazard	-Under SOP -Conduct management plan -Assigning skill and cautious person
4	Adjunct as	Rice	-Local raw material -Match taste and sensory of consumer	Rice is staple food	-Avoid severe competition with public -Research for other raws



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

5	Energy	Solar energy	-Low annual cost -Eco-friend	-Fire hazard for solar pannel -High initial investment	-Good maintenances -Check and repair -Good control system
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3.27 Certificates, Licences and Instructions Conducted by Emerald Brewery Myanmar Limited

Emerald Brewery Myanmar Limited conducts the certificates, licences and instructions are mentioned in Appendix (10).

Certificates, Licences and Instructions Conducted by Emerald Brewery Myanmar Limited

Sr. No.	Description
1.	<p>Permits and Certificates</p> <p>1) Certificate of Incorporation - Emerald Brewery Myanmar Ltd</p> <p>2) Certificate of Exportor/Importer Registration - End Date 05-11-2023</p> <p>3) Exise B1</p> <p>4) Exise Form FL8</p> <p>5) The Myanmar Investment Commission Permit 27th March 2018 – validity of investment permit 50 years - မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင် ခွင့်ပြုမိန့် ၂၀၁၈ ခုနှစ် မတ်လ ၂၇-ရက်မှ သက်တမ်း ၅၀ နှစ်</p> <p>6) Amendment onf Permit No.071/208,date 27th March 2018 - ၂၀၁၈ ခုနှစ် မတ်လ ၂၇-ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် ၀၇၁/၂၀၁၈ တွင် ပြင်ဆင်ချက် - Decision of the Myanmar Investment Commission for amendment of the amount of foreign capital and the total amount of capital of Emerald Brewery Myanmar Limited</p> <p>7) Fire Safety Certificate (25-3-2023 up to 3 years)</p> <p>8) Hazardous enterprise and others licence No. 20 (Hlegu Development Committee) (1-4-2023 to 31-3-2024)</p>



<p>9) Registration Certificate for Electricity Producing and Utilizing</p> <ul style="list-style-type: none">- YD-G(N) 241/6-2023 (13-6-2020 to 12-6-2027)- YD-G(N) 242/6-2023 (13-6-2020 to 12-6-2027)- YD-G(N) 244/6-2023 (13-6-2020 to 12-6-2027)- YD-G(N) 245/7-2023 (13-6-2023 to 12-6-2027) <p>10) Boiler Registration</p> <p>MASA 6283 9-6-2023 to Next 6 Months MASA 6284 9-6-2023 to Next 6 Months MASA 6285 9-6-2023 to Next 6 Months MASA 6361 9-6-2023 to Next 6 Months MASA 6362 9-6-2023 to Next 6 Months</p> <p>11) Registration Certificate of Special Goods Trading (2024 March 31 Expired Date)</p> <p>12) Issuing the new certificate for petroleum storing (up to 023 Dec.31) ('L' - licence) No.221 1 1173L</p> <p>13) ('L' - licence) No.221 1 1174L Remain in force till the 31st day of December 2023</p> <p>14) Building Completion Certificate (B.C.C)</p>
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4.0 DESCRIPTION OF THE ENVIRONMENT

4.1 Introduction

In this chapter, the existing environment, the environmental profile and secondary information for the proposed project are described. This section includes the delineation of the study areas and justifies those limits, description of the study area's socio-economic, cultural and visual, physical and biological characteristics. For the purpose of characterization and quantification of various pollutants, visits were made and detailed field studies were conducted in each category. Based on the measured values, the average values have been taken as basis to characterize the typical pollution streams.

The proposed project site is located in Hlegu Township. Hlegu is a small township in Yangon Region, Myanmar.

Secondary data of Hlegu Township are extracted from the '**Regional Data of Hlegu Township**' prepared by General Administration of Hlegu Township and available website is www.gad.gov.mm.

Its geographical coordinates lie between 16° 59' and 17° 19' north latitude and, 96° 13' and 96° 25' east longitude. Hlegu Township has an area of 576.918 sq. miles. Its original name (with diacritics) is Hlegu. It is about 45 km northeast of the Yangon City and is largely rural. It is located on both sides of the Ngamoeyik Creek. The township's BaundLine Dam and Ngamoeyik Reservoir supply water daily to over 28,300 hectares (70,000 acres) of farmland between Hlegu and Yangon, and nearly 340 million liters (90 million gallons) of water to the people living in Yangon.

The new Yangon-Naypyidaw Highway cuts through the township. Hlegu is the administrative seat of Hlegu Township. The township comprises 5 wards and 52 village tracts, and 167 villages. It shares borders with-

- North Okkalapa Township, North Dagon Township and East Dagon Township in the south,
- Hmawbi Township and Taikkyi Township in the west and
- Bago Township of Bago Region in the north and east.

Airports nearest to *Hlegu* are sorted by the distance to the airport from the city Centre.

1. [Hmawbi Airport](#) (distanced approximately 10 km)
2. [Yangon Airport](#) (distanced approximately 24 km)
3. [Rangoon/Mingaladon Airport](#) (distanced approximately 25 km)
4. [Bago/Pegu Airport](#) (distanced approximately 37 km)
5. [Henzada Airport](#) (distanced approximately 100 km)

Weather: Hlegu Township is in monsoon region and has fair weather condition.



4.2 Setting the Study Limits

The scope of study includes detailed baseLine data generation and characterization of existing status of environment in an area of about 1.5 km radius with the proposed project as its center. Vairous environmental components such as air, noise and vibration, waters, soil, biological, cultural and heritage and socio-economic components and other parameters of interest are to be studied.

Mingaladon Township is included if 1.5 km radius scope is considered as affected area of the project. Both socio-economic and environmental condition will be affected due to the project activities. Therefore, this Mingaladon Township is also needed to consider.

4.2.1 Some Changes of BaseLine Data of Mingaladon Township before Starting the Project

There facts are directed by ECD on 2nd revised scoping report to reviece.

- Day time temperature

Warmest daytime temperature recorded in 30 years was in 26 April 2004; and in 8 and 9 May 1998 (42°C).

Coollest daytime temperature was in 29 April 2000 (20.3°C)

- Night time temperature

Warmest nighttime temperature was observed in 1 April 1998 (32.6°C).

Coollest was in 5 January 1994 (10°C)

- Wet and dry season contribution to annual rainfall in Mingaladon (1981 to 1910)

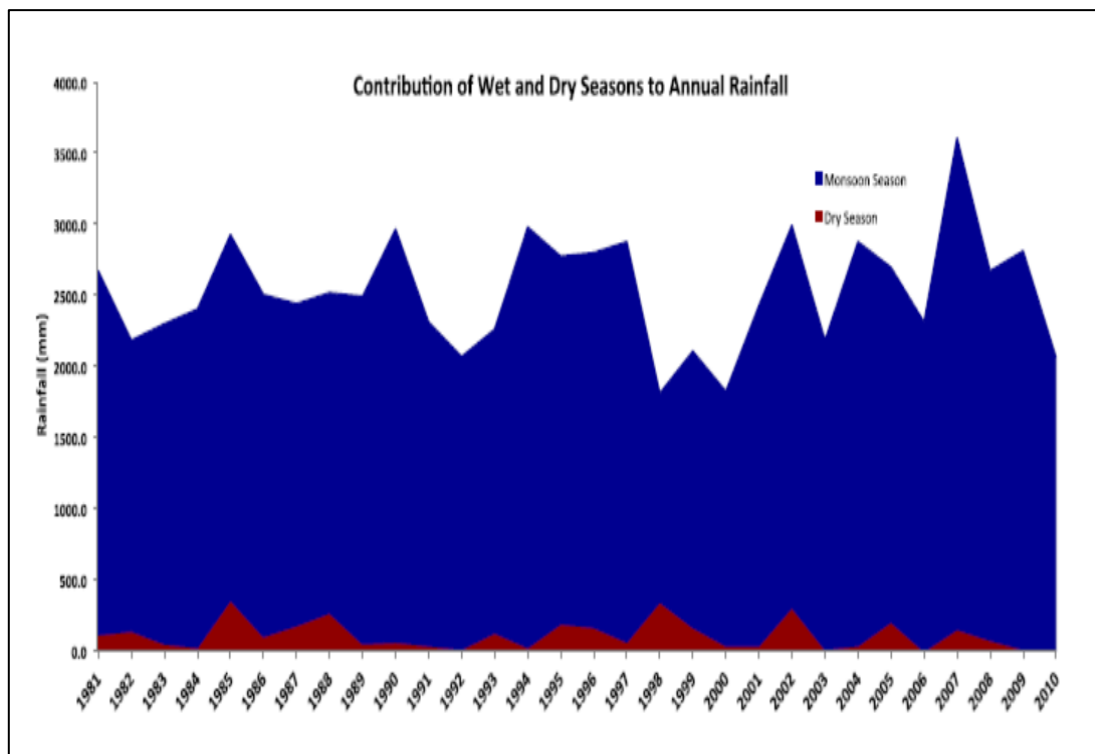


Figure 4-3 Wet and Dry Season Contribution to Annual Rainfall in Mingaladon

Most Extreme Rainfall Events Recorded in Mingaladon

Table 4-1 Most Extreme Rainfall Events Recorded in Mingaladon

24-Hour Extreme Rainfall	Date Recorded
283mm	5 May 2007
245mm	3 May 2008
214mm	22 September 2007
158mm	19 November 1988
146mm	14 November 1985
142mm	7 July 2007

Extreme Rainfall Events Recorded in Dry Season

Table 4-2 Most Extreme Rainfall Events Recorded in Mingaladon

24-Hour Extreme Rainfall	Date Recorded
158mm	19 November 1988
146	14 November 1985
123	29 April 2006
118	14 April 1999
101	25 November 2002

Annual Average Maximum Temperature in Mingaladon

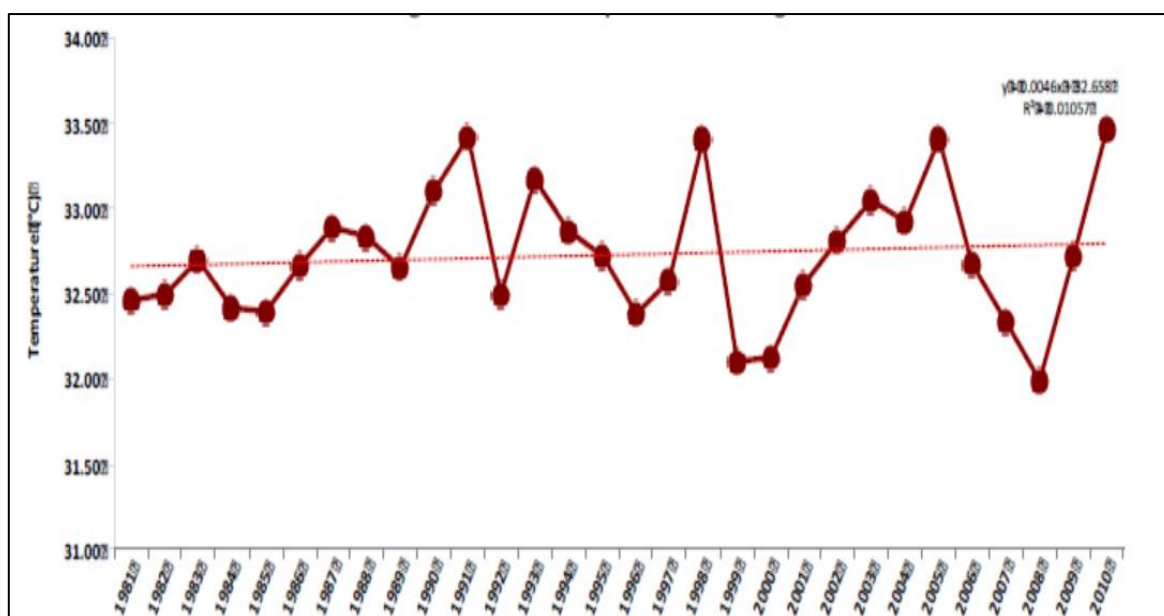


Figure 4-4 Annual Average Maximum Temperature in Mingaladon from 1981 – 2010. On the Average, the Warmest day time temperature were in 2010; the coolest were in 2008

Minimum Temperature

Annual Average Minimum Temperature in Mingaladon

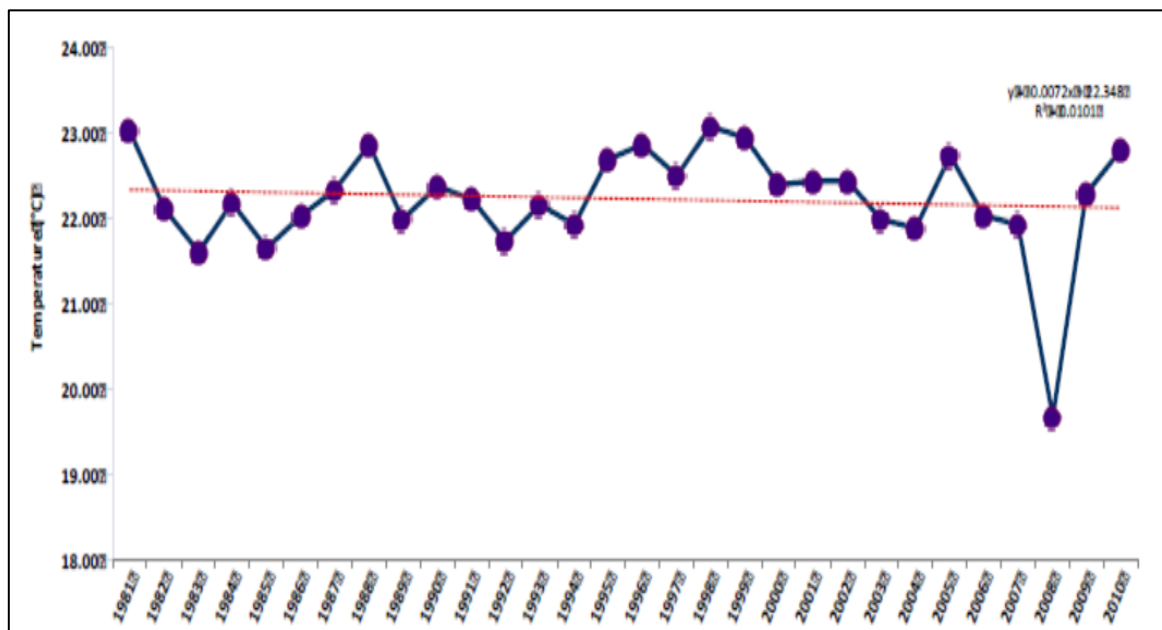


Figure 4-5 Annual Average Minimum Temperature in Mingaladon

4.2.2 Affective Area (Mingaladon & Hlegu Township)

Affective areas are noted Mingaladon and Hlegu Townships. Mingaladon Township is located in the northernmost part of Yangon, Myanmar. The township comprises 31 wards, and shares borders with Hmawbi Township in the north, North Okkalapa Township in the east, Insein Township and Shwepyitha Township in the west, and Mayangon Township in the south. Mingaladon is still relatively undeveloped and lacks basic municipal services. Mingaladon is home to the Yangon International Airport and the Hlawga National Park.

Area: 106.6 km²

Elevation: 9.14 m

Area code: 1

Transport

Mingaladon's Aung Mingala Bus Terminal serves all the highway buses to all major cities and towns in the country, except for those in the Ayeyarwady Division.

Education

The University of Computer Studies, Yangon, one of the country's best universities, is located in the western part of the township on the west side of Hlawga National Park. The township is also home to the Defence Services Institute of Nursing and Paramedical Science.

Some regional data of Hlegu Township is already shown at section 4-1.



4.2.2.1 Area of Influence (AOI)

Study areas/places upon scope at construction phases and operation phases are following.

Scope	Study area/place
Traffic	<ul style="list-style-type: none"> - Emerald Brewery factory IN. - Emerald Brewery factory OUT. - On the No.3 High way road - Monitoring plan, Mingalardon and Hlegu Townships (Data information can be available section 4-8)
Air Pollution	<ul style="list-style-type: none"> - Ambient Air (Construction phase) <ul style="list-style-type: none"> • Project Site • Kone Ta La Baund - Ambient Air (Operation phase) <ul style="list-style-type: none"> • Project Site • Amayawatty Monastery - Workplace Air (Operation phase) <ul style="list-style-type: none"> • Beer Filling Area (starting point) • Beer Filling Area (end point) • CO₂ plant area • Brewing Area (up) • Brewing Area (down) • Malt Milling Area (up) • Malt Milling Area (down) - Boiler stack emission (operation phase) - Generator stack emission (operation phase) <p>Detail information can be available at section 4-3.</p>
Noise Pollution	<ul style="list-style-type: none"> - Project Site (Construction phase) - Kone Ta La Baund (Construction phase) - Project Site (Operation phase) <ul style="list-style-type: none"> • At near main entrance gate • Near reception area • Wastewater area • At place ambient air measuring • Treated wastewater pond - Kone Ta La Baund (Operation phase) - Workplace Noise (Operation phase) <ul style="list-style-type: none"> • Beer Filling Area (starting point) • Beer Filling Area (end point) • CO₂ plant area • Brewing Area (up) • Brewing Area (down) • Malt Milling Area (up) • Malt Milling Area (down) <p>Detail information can be available at section 4-3.</p>
Vibration	<ul style="list-style-type: none"> - Factory Site (Operation phase) <ul style="list-style-type: none"> • Near wastewater area



	<ul style="list-style-type: none"> • Near security gate <p>- Amayawatty Monastery</p> <p>Detail information can be available at section 4-3.</p>
Biodiversity	<p>- 1.5 km radius from core area of project (Construction phase)</p> <ul style="list-style-type: none"> • Terrastrical environment (village) • Balar Creek <p>- 1.5 km radius from core area of project (Operation phase)</p> <ul style="list-style-type: none"> • Terrastrical environment (village) • Balar Creek <p>Detail information can be available at section 4-4.</p>
Archaeology and Heritage	<p>- 1.5 km radius from core area of project (Construction phase)</p> <ul style="list-style-type: none"> • Villages • Religious Edifice <p>- 1.5 km radius from core area of project (Operation phase)</p> <ul style="list-style-type: none"> • Villages • Religious Edifice <p>Detail information can be available at section 4-6.</p>
Ground water and surface water	<p>- Surface water (Construction phase)</p> <ul style="list-style-type: none"> • Barlar creek above upstream • Barlar creek upstream • Balra creek beside the project site • Balar creek down stream <p>- Ground water (Construction phase)</p> <ul style="list-style-type: none"> • Ta Kon Taing Monastery • Project Site • Kon Ta La Baund • Yay Ta La Baund • Nwel Khwe San Yya Village <p>- Surface water (Operation phase)</p> <ul style="list-style-type: none"> • Barlar creek above upstream • Barlar creek upstream • Balra creek beside the project site • Balar creek down stream <p>- Ground water (Operation phase)</p> <ul style="list-style-type: none"> • Ta Kon Taing Monastery • Project Site • Kon Ta La Baund • Yay Ta La Baund • Nwel Khwe San Yya Village <p>Detail information can be available at section 4-3.</p>
Hydrology	<p>Physical characteristic (Constructon phase)</p> <ul style="list-style-type: none"> • Topography • Geology and Soil • Seismology • Hydrology • Climate of the study area <p>Physical characteristic (Operation phase)</p>



	Detail information can be available at section 4-3.
Socio - economic	Secondary Data (Construction phase) Primary Data (Construction phase) Secondary Data (Operation phase) Detailed information can be available at section 4-5.
Health impact assessment	Primary Data (Construction phase) Secondary Data (Construction phase) Occupational Health and Safety Management and Mointoring place (chapter -6) Detailed information can be availabele at section 4-7.

4.2.2.1 Time Schedule on Study of Activities of AOI

Time schedule on study for Emerald Brewery Myanmar Limited is shown as following.

Time Schedule of Study

Activitiy	Study Time Schedules
Traffic	2018 October 2023 August
Air Pollution	2018 October 2023 February 2023 August
Noise	2018 October 2023 February 2023 August
Biodiversity	2018 October 2023 February 2023 August
Archaeology and Heritage	2018 October 2023 February 2023 August
Ground Water and Surface Water	2018 October 2023 February 2023 August
Wastewater and Solid Waste	2018 October 2023 February 2023 August
Hydrology	2018 October 2023 February 2023 August
Socio economic	2018 October 2023 February 2023 August
Health Impact	2018 October 2023 February



	2023 August
--	-------------

4.2.2.3 Potential Impacts on Vairous Phases of Proposed Project

Potential impacts on vairous phase of Emerald Brewery Myanmar Limited, production and distribution of beer products are described as following in brief and details in Section 5-3.

Potential Impacts on Construction Phase in Brief

Impacts	Sources
Traffic	-Vehicles in and out the site piLineg machines in and out
Air	-Emitted gas from vehicles, piLineg machines, vehicles, electric generator. -Loading, unloading of construction materials and debris wastes emitted vapour from paint leakage of transformer oil, refrigerant, fuel, etc.,
Noise and Vibrating	-PiLineg , excavation, foundationand construction work -Vehicles and electric generator -Loading, unloading of construction materials. -Erection and installation work
Biodiversity	-Noise and vibration -Emitted gases -Wastewater and solid waste
Archaeology and Heritage	-Noise and vibration -Emitted gases -Wastewater and solid waste
Ground and Surface water	-Muddy water from earth work -Spillage and leakage of fuel, battery acid, lubricants -Spillage of paint -Flush out water after testing boiler, tanks, machineries
Wastewater and Solid Waste	-Temporary bio-septic tank -Flush out washed water -Packing materials of construction materials -Construction debris
Socio economic	-Communicable diseases -Cultural conflict -Population and demographic changes -Injury in construction, erection and installation -Heat stress -Non communicable risk -Accident – fire, electric

Potential Impacts on Operation Phase in Brief

Impacts	Sources
Traffic	-Vehicles in and out carrying employee, raw materials, machinery spare parts, products -Vehicles in and out by employer, visitors, media, departmental person
Air	-Dust and PM from raw materials treatment. -Vapor and PM from mashing, wort boiling, fermentation



	<ul style="list-style-type: none"> -Emitted gases and PM from vehicles and electric generator -Leakage of transformer oil, refrigerants -Emitted gas by boiler chimney -CO vapour -Emitted gas from wastewater treatment plant
Noise and Vibrating	<ul style="list-style-type: none"> -Vehicles and electric generator -Operating machineries – milling, mashing, stirring, steam boiling, bottle washing, Filling, capping, kegging and canning -CO₂ machineries -Steam hammering -Running of wastewater treatment
Biodiversity	<ul style="list-style-type: none"> -Noise and vibration from operation -Emitted gas from operation -Wastewater from operation -Solid waste
Archaeology and Heritage	<ul style="list-style-type: none"> -Noise and vibration from operation -Emitted gas from operation -Wastewater from operation -Solid waste
Ground and Surface water	<ul style="list-style-type: none"> -Wastewater from operation -Spillage fuel, lubricant, battery acid -Improper land Filling
Wastewater and Solid Waste	<ul style="list-style-type: none"> -Spillage of fuel, lubricant, battery acid -Wastewater from operation -Broken bottle, damage can, cap, label -Empty container of raw materials -Damage of product packing material -Spent grain spillage
Socio economic	<ul style="list-style-type: none"> -Dust, vapor and PM make non communicable risk (Cough, Irritation, etc.,) -Heat stress and cold burn from steam and ammonia -Accident injury -Injury by broken bottle -Fire and electrical accident

Potential Impacts on Decommissioning Phase in Brief

Impacts	Sources
Traffic	<ul style="list-style-type: none"> -Vehicles in and out carrying demolishing workers, demolished materials -Vehicles in and out carrying left raw materials, products, machineries debris
Air	<ul style="list-style-type: none"> -Emission of PM, dust from demolishing of building, tanks, machineries -Dust from digging out foundation, tube well pipe -Emitted gases from vehicles and electric generator
Noise and Vibrating	<ul style="list-style-type: none"> -Drilling, hammering, vibrating machine from demolishing of building, machineries



	-Vehicles and electric generator -Loading, unloading transportation of debris
Biodiversity	-Emission gases, dusts destroy the ecosystem -Fauna species move to other due to noise and vibration -Wastewater destroys the ecosystem.
Archaeology and Heritage	-Emission gases, dust destroy the ancient monuments, antique objects. -Noise and vibration make short life of ancient monuments.
Ground and Surface water	-Spillage and leakage of lubricant, oil, fuel, battery acid -Washed water -Wastewater left in septic tank, wastewater treatment plant
Wastewater and Solid Waste	-Washed water from tank, machinery and equipment boiler for transportation -Demolishing waste
Socio economic	-Lack of job for Beer Factory -Job opportunity for demolishing workers -Changing the beer market -Accidental injury and disease for workers

4.2.2.4 Impacts in Spatial and Temporal Boundaries

The EIA report for proposed project has addressed impacts concern by identifying Valued Environmental Components (VECs). Initially spatial and temporal Boundaries are classified as following table.

Table 4-3 Spatial and Temporal Boundaries

Item	Definition
Spatial Boundary	
Local	-Impact limited to the local area in close proximity to the project development area.
Regional	-Impact could extend to the region surrounding proposed project development area.
Provincial	-Impact could extend to Provincial level.
National	-Impact could extend to national level.
International	-Impact could extend to international level
Temporal Boundary	
Periodic	-Importance limited by period of project development
Cyclical	-Importance varies with cyclical changes over time.
Occasional	-Significance is intermittent
Seasonal	-Significance on a seasonal varies depend on nature of valued environmental components
Year round	-Significance throughout the year

Valued environmental components at various phases on spatial and temporal Boundaries are summarized as following tables.

Valued Environmental Component at Construction Phase on Spatial and Temporal Boundaries

Valued Environmental Component	Spatial Boundary	Temporal Boundary
---------------------------------------	-------------------------	--------------------------



Traffic	Regional	Periodic
Air pollution	Local	Periodic
Noise and vibration	Local	Periodic
Biodiversity	Regional	Periodic
Archaeology and heritage	Regional	Periodic
Ground water and surface water	Regional	Periodic
Wastewater and solid waste	Local	Periodic
Socio economic	Regional	Periodic

Valued environmental component impacts assessments on construction phases are shown at this section.

Valued Environmental Component at Operation Phases on Spatial and Temporal Boundaries

Valued Environmental Component	Spatial Boundary	Temporal Boundary
Traffic	Regional	Year around
Air pollution	Local	Year around
Noise and vibration	Local	Year around
Biodiversity	Regional	Year around
Archaeology and heritage	Regional	Year around
Ground water and surface water	Regional	Year around
Wastewater and solid waste	Local	Year around
Socio economic	Regional	Year around

Valued environmental component impacts assessments on operation phases are shown at this section.

Valued Environmental Component Impact at Decommissioning Phases on Spatial and Temporal Boundaries

Valued Environmental Component	Spatial Boundary	Temporal Boundary
Traffic	Regional	Periodic
Air pollution	Local	Periodic
Noise and vibration	Local	Periodic
Biodiversity	Regional	Periodic
Archaeology and heritage	Regional	Periodic
Ground water and surface water	Regional	Periodic
Wastewater and solid waste	Local	Periodic
Socio economic	Regional	Periodic

Valued environmental component impacts assessments on decommissioning phases are shown at this section.



4.3 Physical Characteristics

4.3.1 Topography

Proposed project site is wetland and the topography is almost plain stretch of land without any undulating features. The contour map of the area shows gentlest relief. There are no adverse geological conditions providing feasibility for the construction of the project.

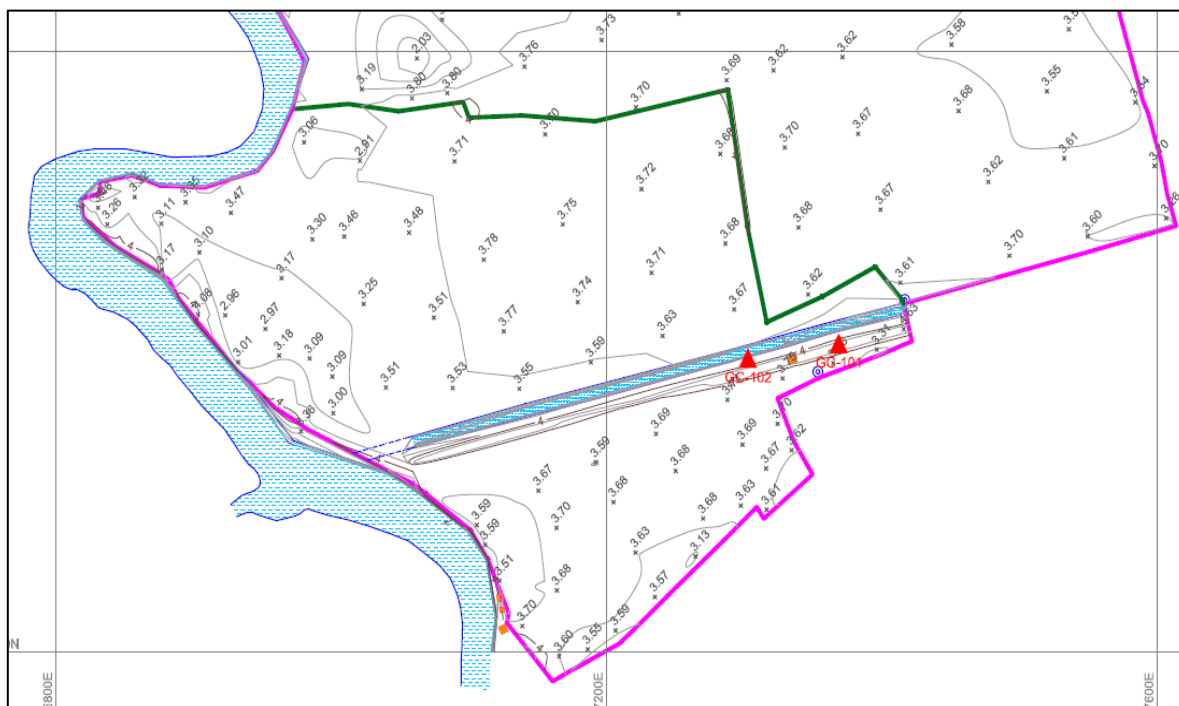


Figure 4-6 Topographic Map of the Project

UTS Land Survey Services Co., Ltd. was assigned by Fraser & Neave Ltd, (Singapore Co., Ltd) for the detailed topographical survey of the plot beside the No.3, Main Road, Htaukkyant, Mingalardon and Hlegu Township, Yangon Division. UTS Survey Team surveyed the whole area covering the existing features such as drainage, road, house, trees, electrical post etc., on the 28th April 2017. The survey features include all the buildings, roads, drainage, electrical post, tree and Boundary fence and all the features existing in the compound.

4.3.1.1 Survey Methodology and Detail Topographic Surveying

Detail Topographical survey was carried out with one GPS Team and one survey team to complete the survey. GPS team using Leica GPS-1200 for Co-ordinate data transfer from Myanmar Survey Department (known station) and the second team used Leica TC 1100 Total Station survey instruments for the detail survey. GPS survey team established 4 Ground Control Stations with FENO marker with concrete and Concrete BM to cover the whole area. All station coordinates were transferred from the Myanmar Survey Department known reference station. The detail topographical survey features include existing roads, buildings, fence, Boundary, transformer, top and toe of

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the ground etc. The studied land area is 653,704.746 m² (or) 161.53 acres including 32.84 acres of the project site.

The project is surrounded with fields in the north, south, west direction and No. 3 main road is situated in front of the project site. The following figures show the surrounding land condition of the proposed project site.



Figure 4-7 Top View of the Project Site



Figure 4-8 West View of the Project Site



Figure 4-9 North-West View of the Project Site



Figure 4-10 North View of the Project Site

4.3.2 Geology, Geography and Soil

4.3.2.1 Geology of Study Area

The geology of Yangon area was classified into the following geological units:

(a) Quaternary deposits

1. Pegu Series, Oligocene-Miocene
2. Irrawaddian Series, Pliocene

(b) Tertiary deposits

3. Lower Delta Alluvium, Pleistocene
4. Upper Delta Alluvium, Pleistocene and Recent

The regional geological study has been made in an area which includes ridges and deltaic lands lying south of the Bago Yoma. This area is in a north-south trending synclinal basin containing a thick Tertiary - Quaternary deposits. Geologic succession of the Yangon area is shown in Table 4-4.



Table 4-4 Geological Survey of the Region Located in and around the Yangon Area

Lithostratigraphic Units	Geological Age	Physical Parameter
<i>Recent Alluvial</i>	Recent	Clay and silt with trace sand
<i>Valley-filled Deposits</i>	Pleistocene	Clay, silt, sand, and very coarse-grained gravel
<i>Danyingon Clay</i>		Reddish brown, grey to blue, laminated clays, with interbedded sand-rocks
		Yellowish grey to bluish grey sand-rock, fine to coarse-grained, sometimes very coarse-grained, sometimes very coarse
<i>Arzanigon Sand-rock</i>	Pliocene	to gritty with intercalated clay and mudstone/siltstone
<i>Besapet Alternation</i>	Miocene	Alternation of shale and argillaceous sandstone
<i>Thadugan Sandstone</i>		Well consolidated, jointed argillaceous sandstone
<i>Hlawga Shale</i>	Oligocene	Generally indurated shale

Source: Data from the Geology Department

Table 4-5 Geologic Succession of the Yangon Area

Geologic age	Rock Unit	Thickness (m)	Lithology
PEGU GROUP			
Oligocene	1. Hlawga shales	-	Indurated Shales.
Miocene	2. Thadugan sandstones	600	Well consolidated argillaceous sandstone with concretions.
Miocene	3. Besapet alternations	750	Alternations of shales and argillaceous sandstone.
IRRAWADDY FORMATION			
Pliocene	4. Arzarnigon sand rocks	>300	Sometime very coarse to gritty, with intercalated clays and mudstone.
	5. Danyingon clays	-	Clay with interbedded sand rock Fine to coarse-grained sand rocks,
Pleistocene	6. Valley-fill Deposits	18-90	Clay, silt, sand and fine to very coarse gravels
Recent	7. Young alluvium	< 15	Clay and silt with trace sand

4.3.2.2 Geographic Condition of the Project Area (Hlegu Township)

As the project site is located within Hlegu Township. Its geographic condition is defined as bare land according to the following geographic map.



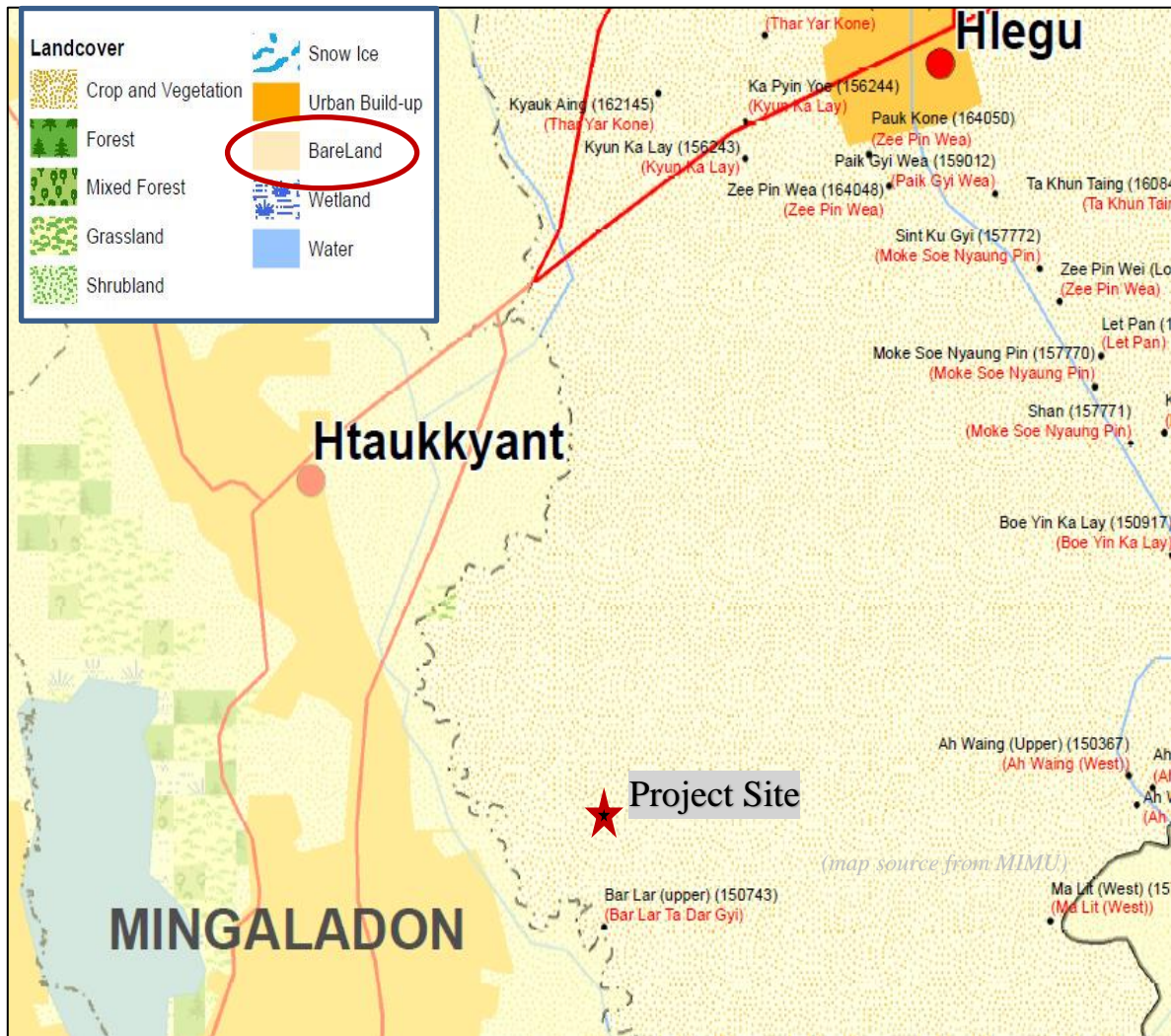


Figure 4-11 Geographic Condition of the Project Area (Hlegu Township)

4.3.2.3 Soil of Study Area

According to the soil map of Yangon Division, surrounding soil type of Hlegu Township is meadow & meadow alluvial soils. Meadow alluvium is most commonly found in and around the city and has a silty clay loam texture and high nutrient content making it very suitable for a large range of agricultural products.

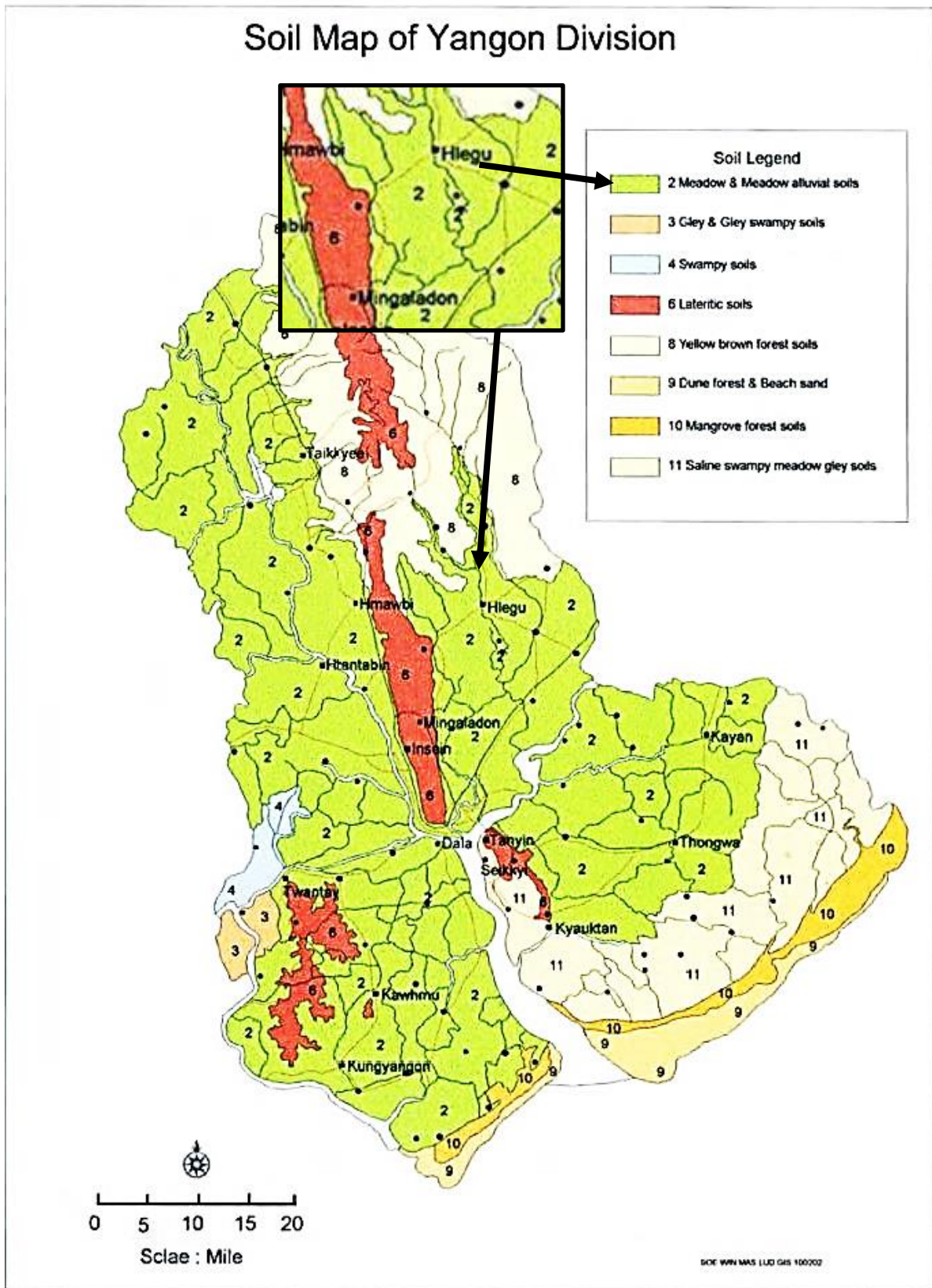


Figure 4-12 Soil Type of Hlegu

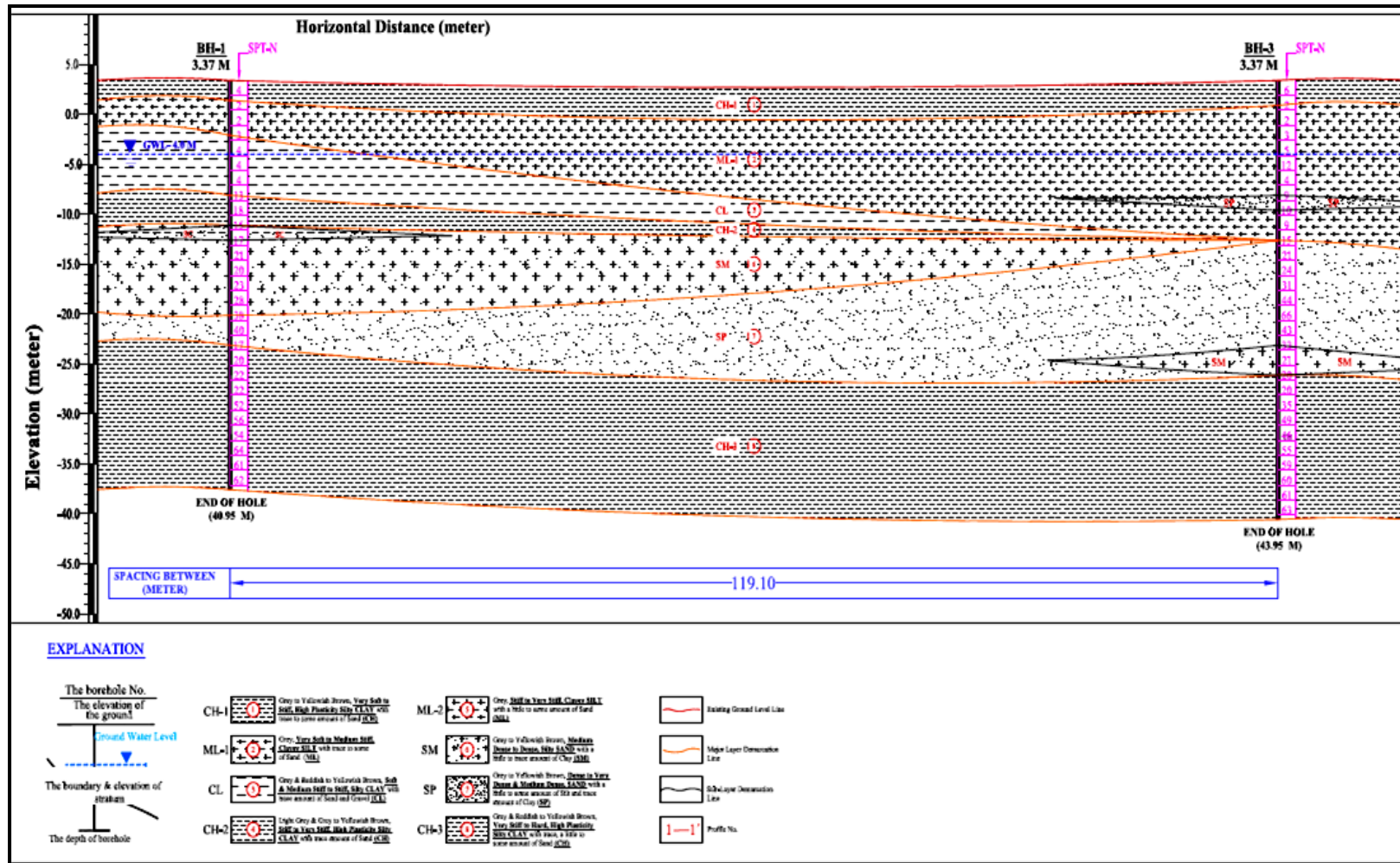


Figure 4-13 Soil layer On Project Area

4.3.3 Seismology of the Project Area (Hlegu Township)

The following figure shows the seismic condition within Yangon region and classifies shaking, damage and intensity by colour. According to the *Affected Map Earthquake in Yangon City and Hlegu Township*, the result of the proposed project area (Hlegu Township) is weak in shaking, none damage and its intensity is II-III. Therefore, this area can't be affected by the earthquake and is safe from earthquake's damage.

SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

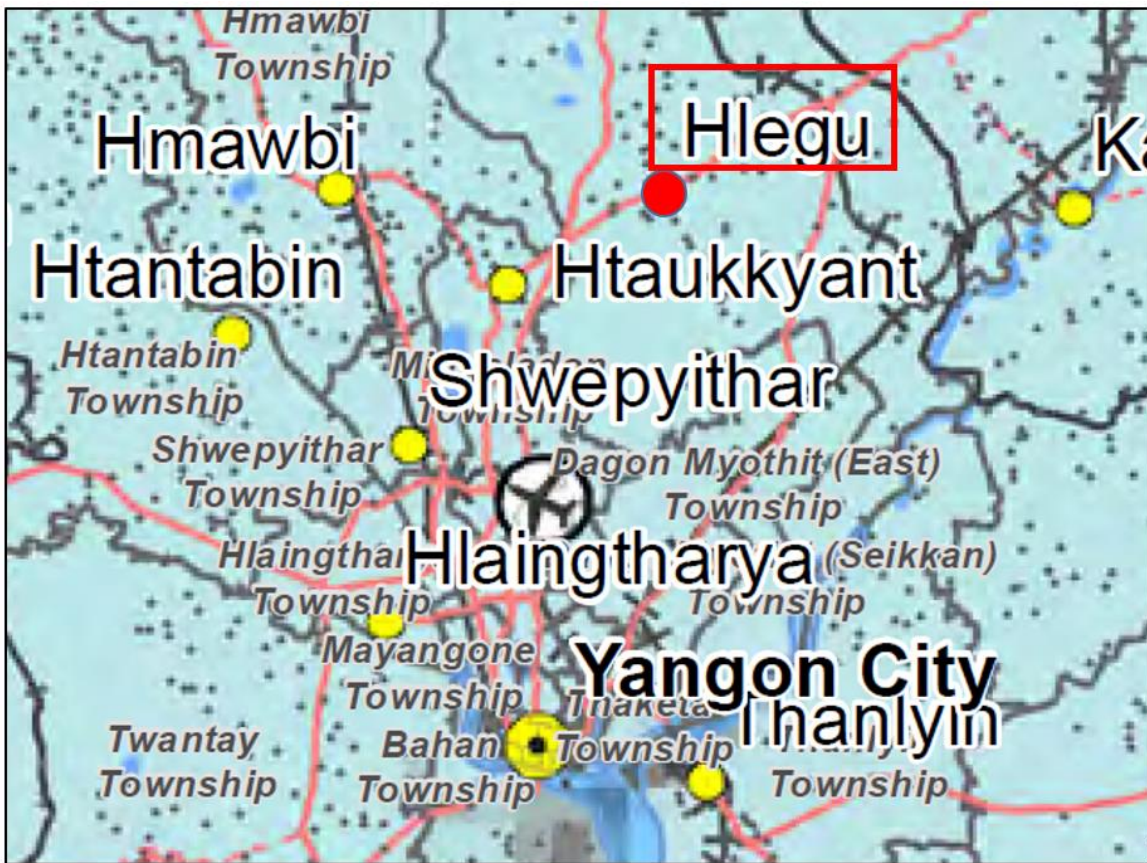


Figure 4-14 Affected Map Earthquake in Yangon City and Hlegu Township

4.3.4 Hydrology

4.3.4.1 Plan of Study for EIA

A hydrological study will be undertaken as part of the Environmental Impact Assessment phase to investigate the key potential issues identified during, construction, operation and decommissioning. These key issues have been identified based on the followings.



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- a) The nature of the receiving environment and the proposed activities discussed above;
- b) Professional experience of the hydrologist.

Information has been collected from various sources to provide the baseLine review of hydrology and hydrogeology. In performing of baseLine assessment, receptors of potential environmental effects associated with surface and sub-surface hydrology arising from the proposed development have been identified. Mitigation measures have been identified and residual effects are also evaluated.

The assessment of impacts will be based on the professional study of the hydrologist, site assessments, fieldwork, conceptualization, groundwater flow and contaminant. Assumptions, limitations and sources of information will be clearly identified. Local people have local knowledge and it is important to draw on this knowledge in the study of project groundwater use and the Drilling of boreholes and soil study. The description of the approach will include a short discussion of the appropriateness of the methods used in the hydrological study.

4.3.4.2 BaseLine Hydrology

A description of the affected hydrological environment will be provided, both at a site-specific level and for the impact area. The latter will provide an appropriate context, especially in terms of regional groundwater use. It is essential that the uniqueness or irreplaceability of the groundwater resources is understood in the context of the surrounding region at a local, regional scale.

The study will provide a sufficiently comprehensive description of the existing hydrological setting to ensure that a detailed assessment of the potential impacts of the proposed development can be made. The baseLine will include data collected during field surveys as well as desktop studies.

4.3.4.3 Objectives of Hydrology Study

In this EIA report, an indication of ideal and sensitive areas within 1.5 km radius (3 km diameter) of the proposed project are described with hydrological perspective. The main objectives of the hydrology study are presented as follows:

- To investigate Desktop and Field Study of Surface water (Hydrology) and Ground water of project area
- To evaluate the Hydrological properties of Study area
- To prepare the hydrology base Line study report of the Hydrology of project, surface water (Hydrology) and ground water of project area.

Hydrology Survey team had undertaken the necessary hydrological studies for the proposed project. The brewery plant is to be located in the Nga Moe Yeik Irrigation within the project area, Hlegu Township.



4.3.4.4 Study Area

Project area located beside The No (3) Main Road, Hlegu Township, and Yangon Division. The location and extent of the study area and Stream Flow Study Points, Environmental Flow Study Point are shown in Table 4-6.

Investigation and analysis of the hydrogeology or groundwater characteristics of the site were started in 2018 with the existing tube well and borehole results from soil investigation report. The subsoil investigation of the project area was necessarily required to determine the soil profile with the detail soil parameters as well as ground water condition. Field investigation included soil exploratory boring, soil sampling, Standard Penetration Test and Water Level Measurement.

Table 4-6 Stream Flow Study Points and Environmental Flow Study Point

No.	Point	Location	Latitude (N)	Longitude (E)
1	Point 1	Up Stream Balar Flow Study Points	17° 1'37.61	96° 9'4.68"
2	Point 2	Down Stream Balar Flow Study Points	17° 0'55.67"	96° 9'20.04"
3	Point 3	Environmental Flow Study Point	17° 1'4.03"	96° 9'21.78"



Figure 4-15 Flow Points for Hydrology Study

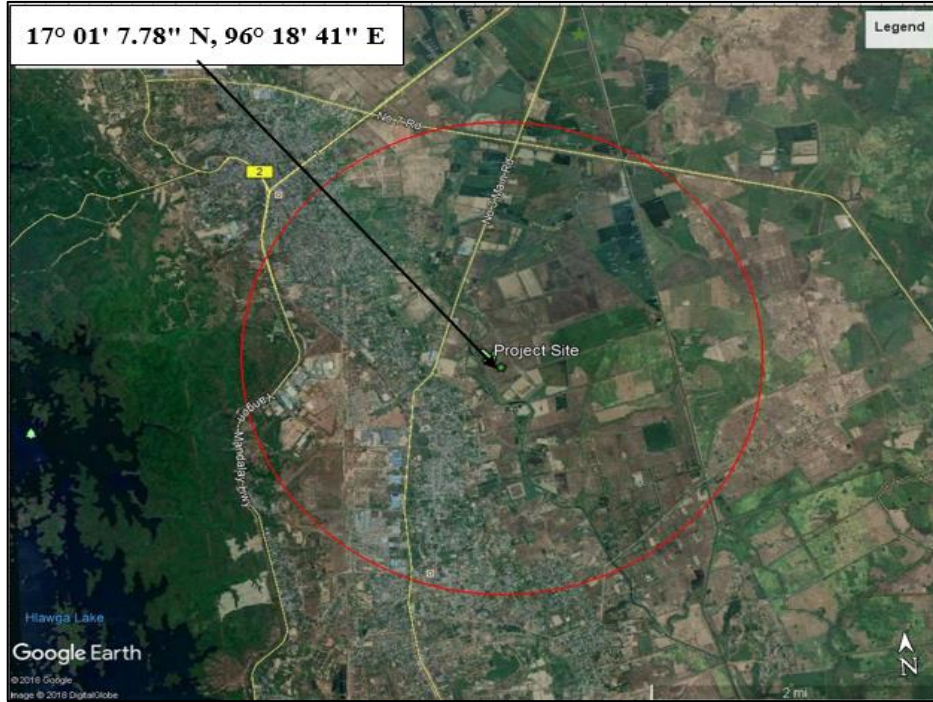


Figure 4-16 Location and Extent of the Study Area

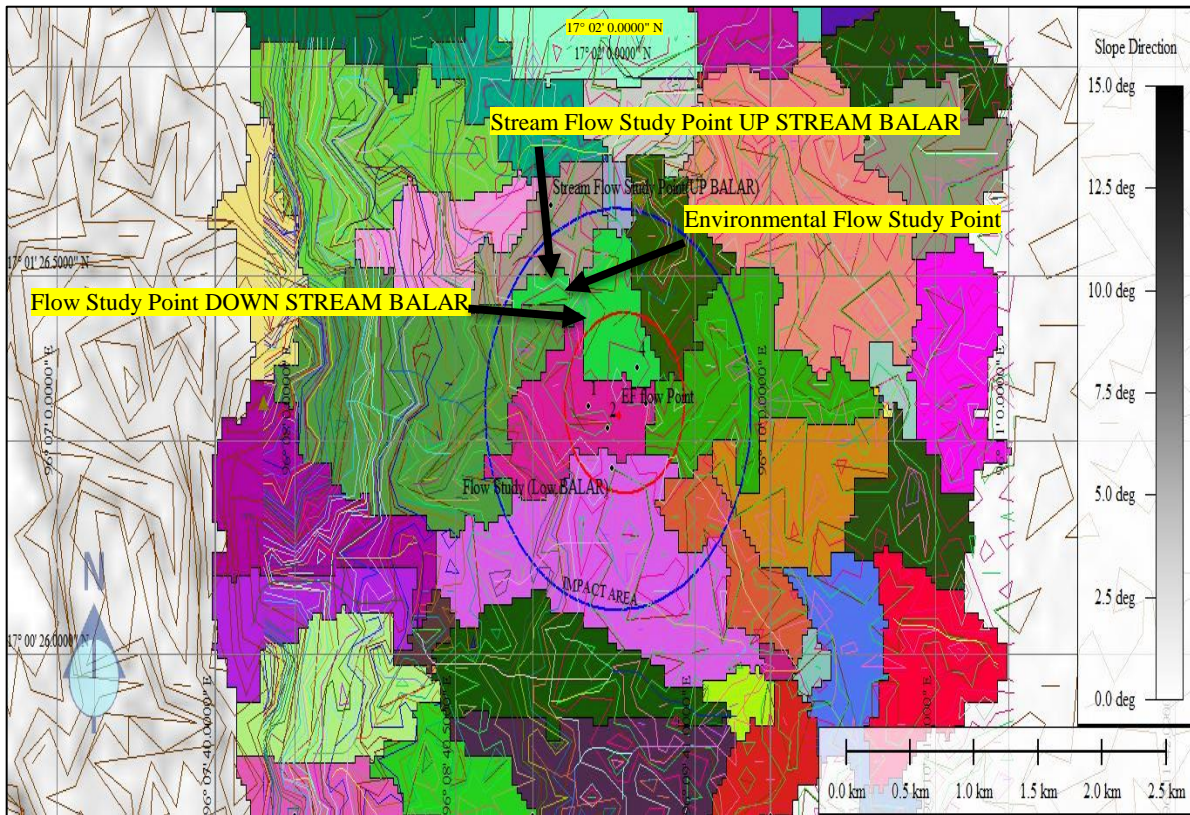


Figure 4-17 Study area and Catchment Area Slope Direction Map



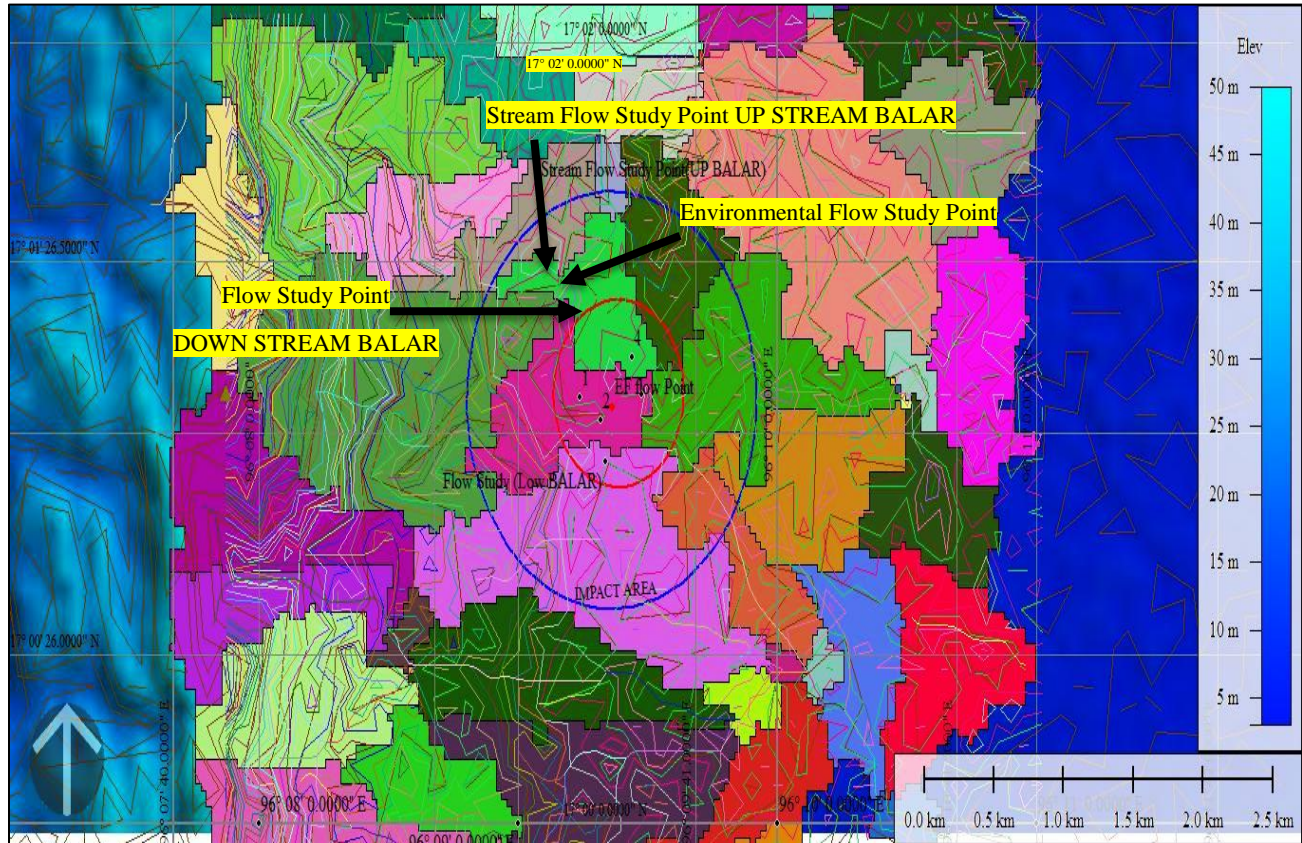


Figure 4-18 Elevation of the Study Area and Catchment Area

4.3.4.5 Ground Water Study

The geo-hydrological study in project area indicates that there are six private boreholes where exploration wells are drilled. Ground water is mainly water source of the project and is used for domestic and brewing purposes. The depth to groundwater strikes in available borehole information varies between 8.5 and 10.4m below surface. The yields of six Tube wells identified during the hydro-census are shown in following tables. Based on the fact that the boreholes are fitted with submersible water pumps, it is assumed that groundwater is abstracted at rates below 4 l/s.

Based on available information, it is thought that three aquifers are present, namely a shallow weathered rock aquifer, a deeper fractured rock aquifer and an alluvial aquifer.

The potential activities associated with the project that may effect on groundwater, include the followings-

- *Using groundwater, as water supply to the project.*
- *Project water demand can be affected on groundwater level.*



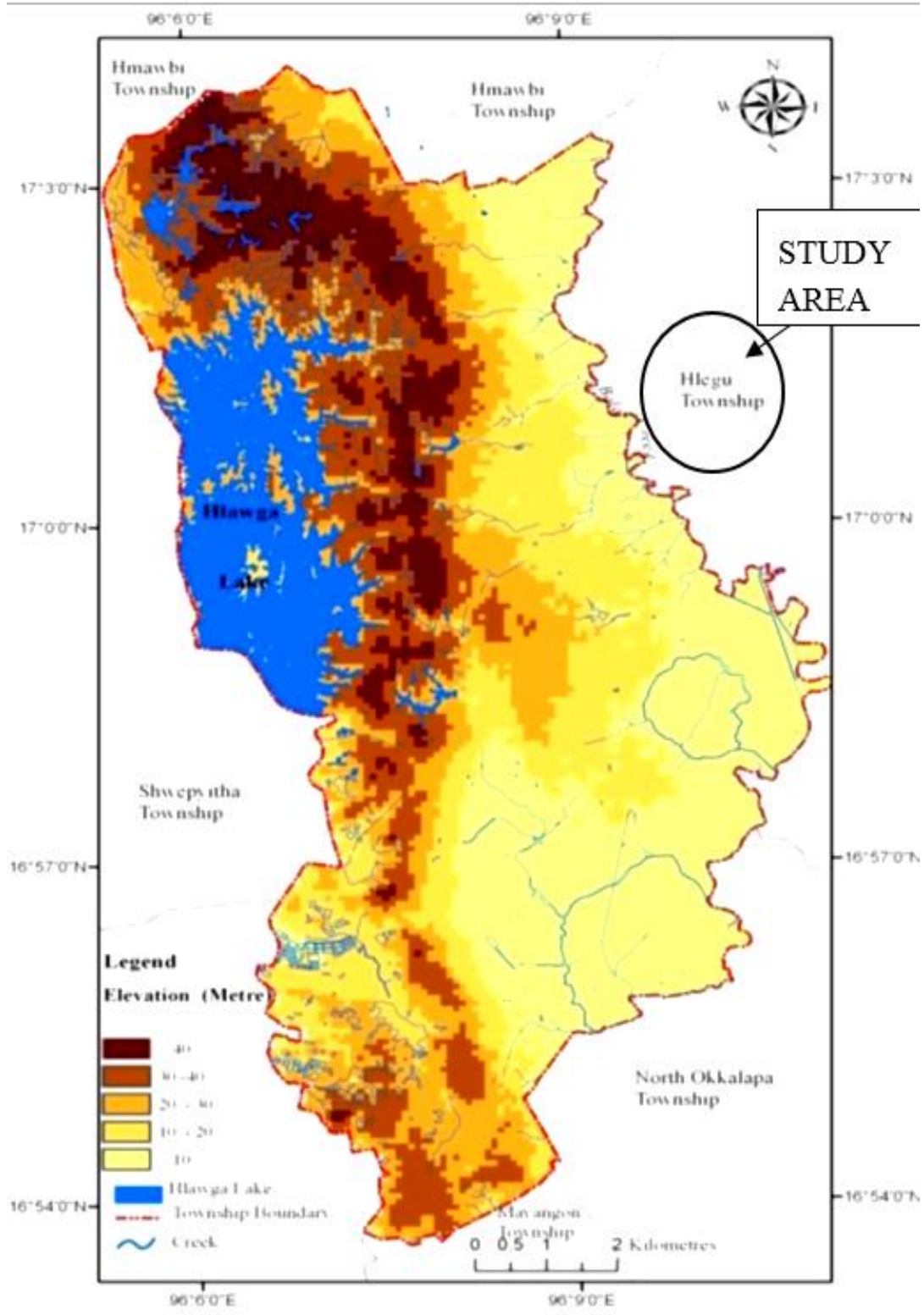


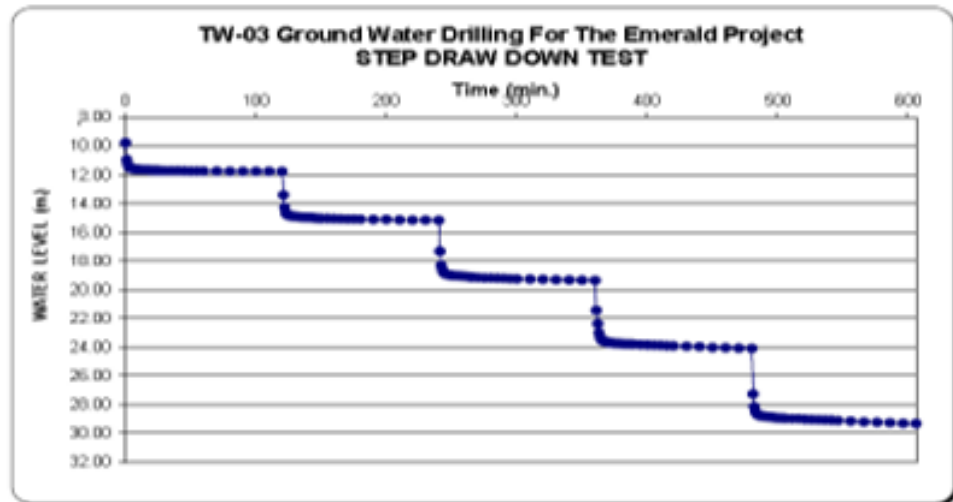
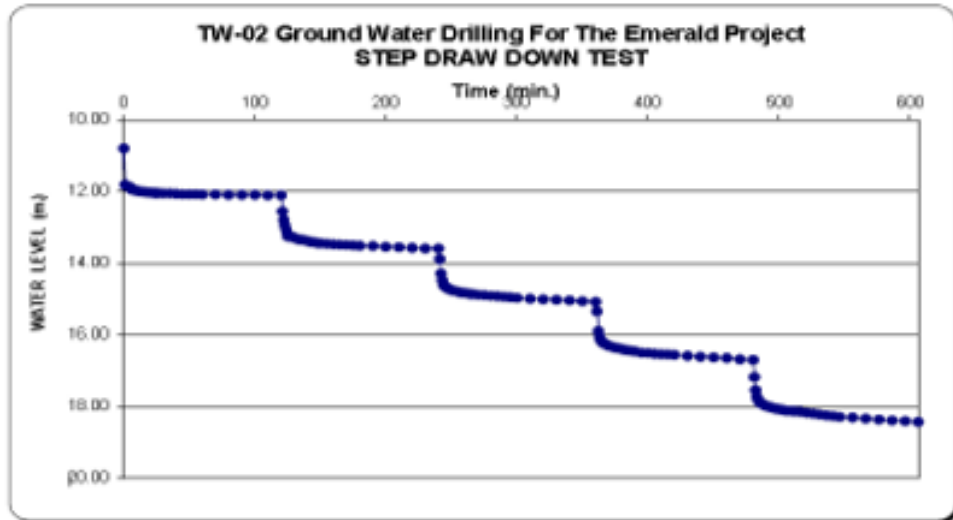
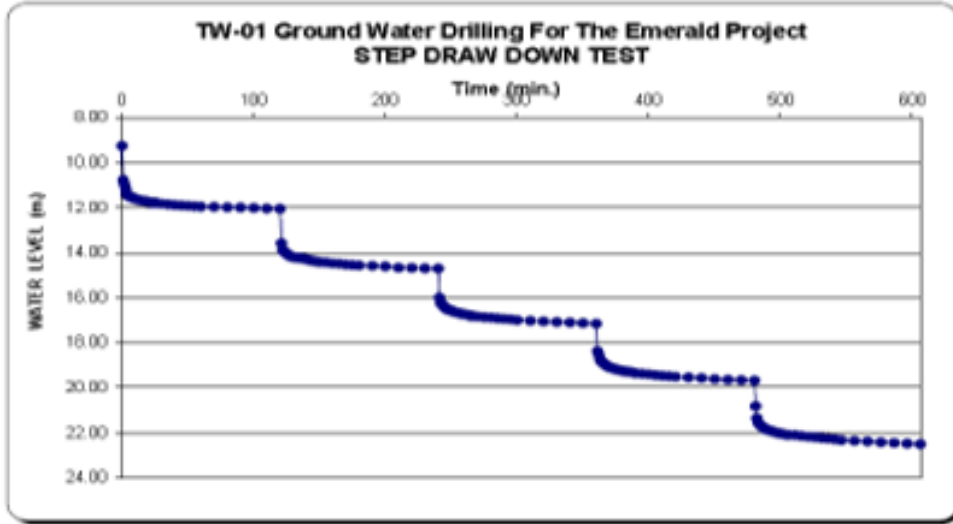
Figure 4-19 Watershed and Topography of Study Area Ground Water of Project Area

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The general conditions around proposed tube wells BH1– 6 are indicated in the points in the following Figures. During the site visit, various, small, natural canals and constructed canals were noted. These are used by farmers to collect and store the surface water. Canals are also dug into source water from the creeks and streams. It appears that groundwater is not the main source of the water supply for the proposed project area.

A total of six project tube wells were identified as part of the Hydrocensus. Details regarding of these tube wells and the location of these boreholes, the yield of the tube wells are also described.





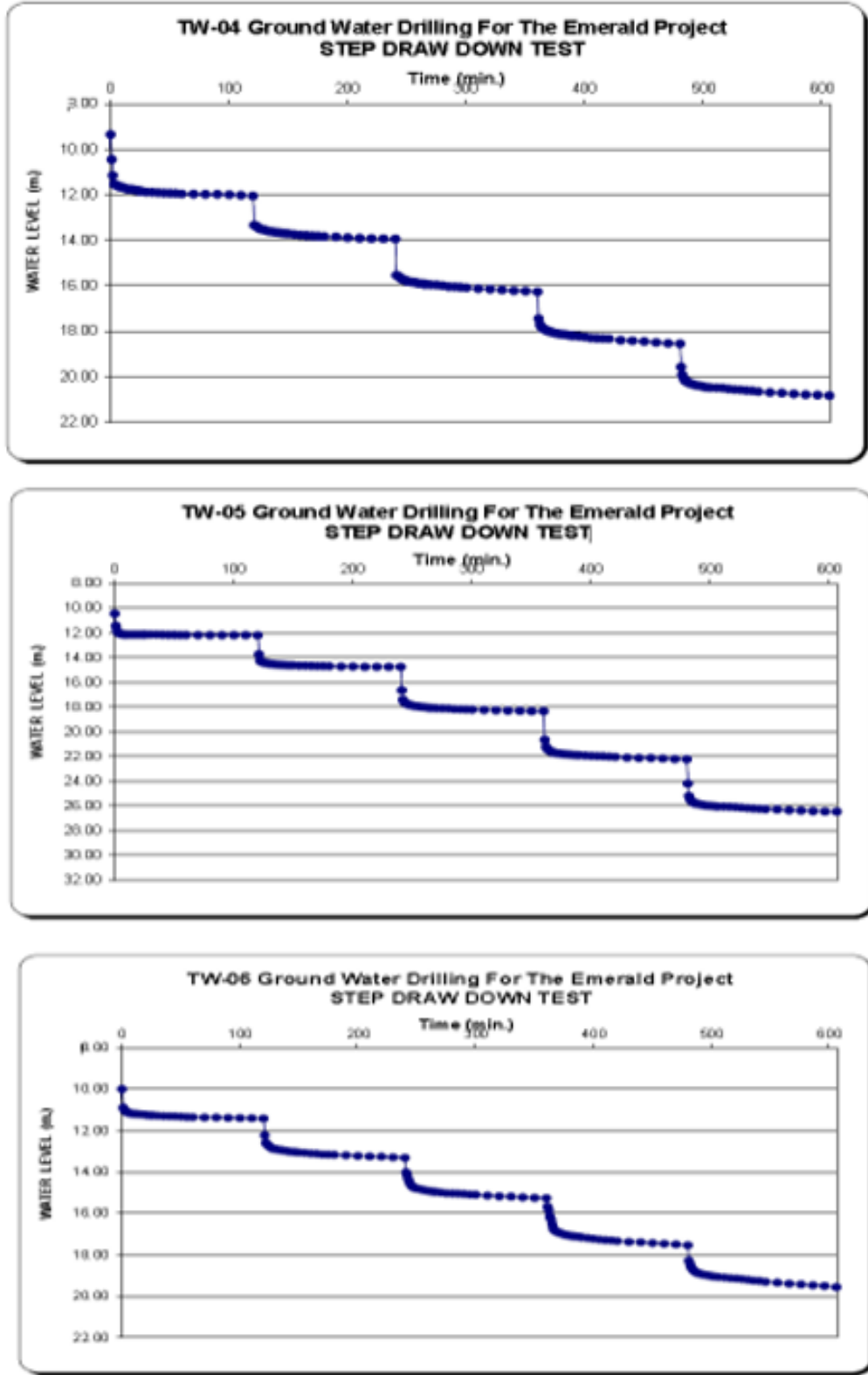
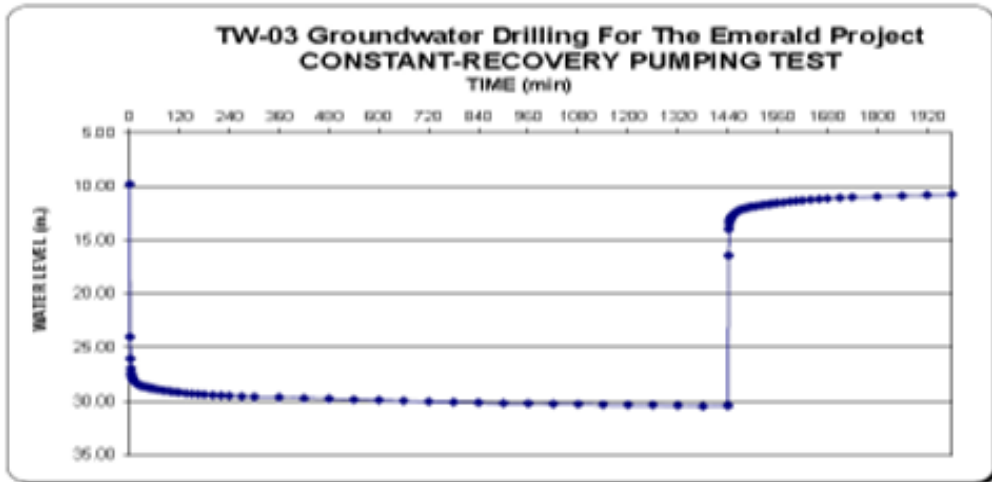
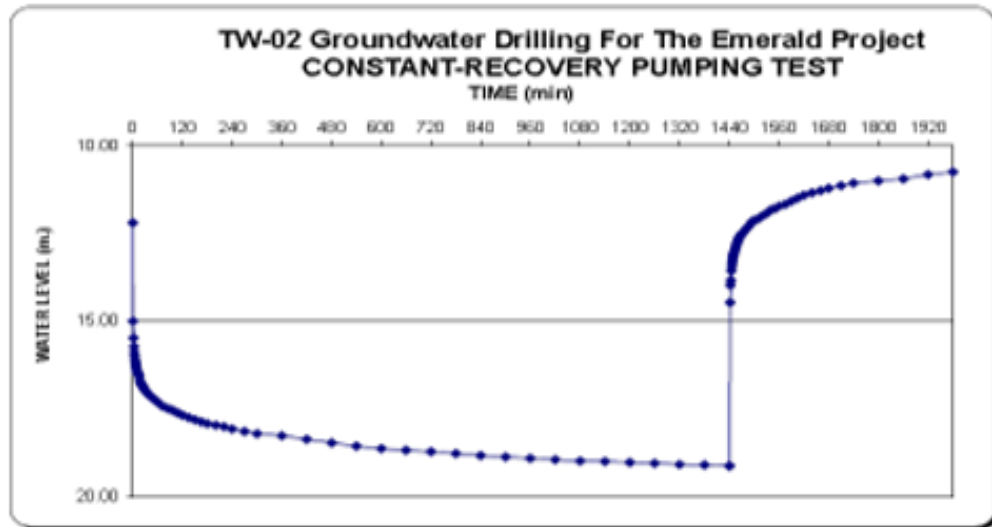
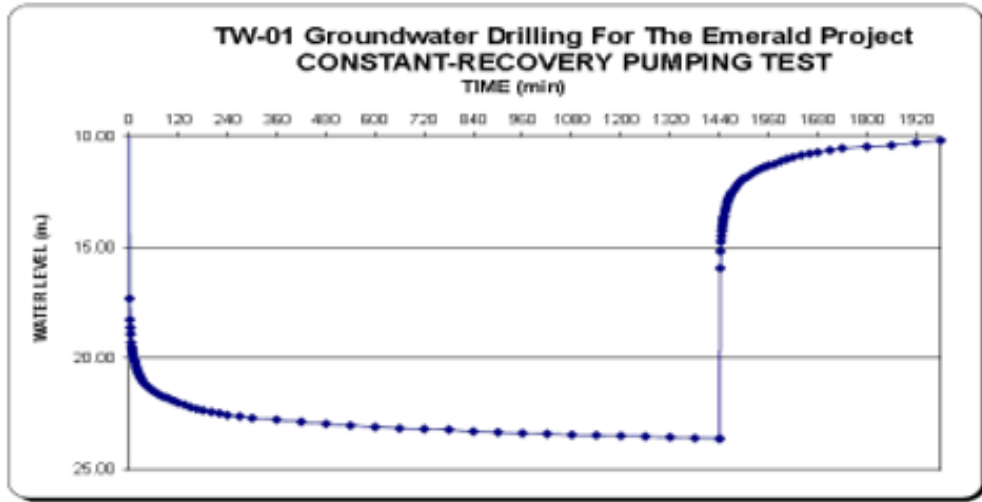


Figure 4-21 Step Draw Down Test Results of Ground Water Drilling



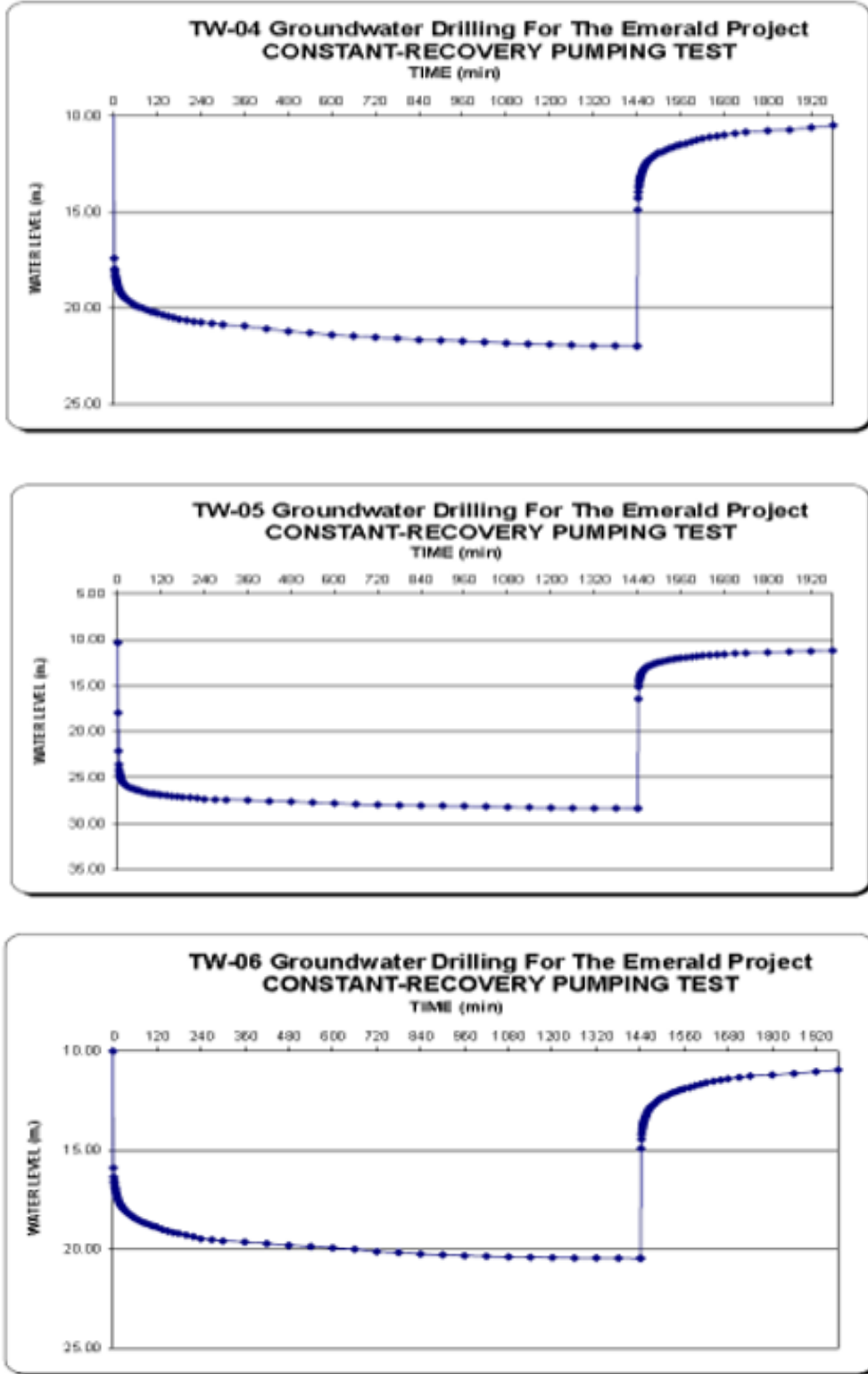


Figure 4-22 Constant-Recovery Pumping Test Results of Groundwater Drilling

4.3.4.7 Aquifers Formation

The aquifers were identified from the available information. These include;

- A shallow weathered aquifer that it typically formed in the upper 10 – 25m of the geological succession. This aquifer may not be laterally extensive and is associated with the depth of weathering of the sandstones and shales. The aquifer plays an important role in the recharge of rainwater to the underlying aquifer(s) as well as in the groundwater contribution to the base flow of creeks and streams.
- The alluvium deposited in the floodplains of the creeks and streams will also form an unconsolidated unconfined aquifer. This aquifer is not laterally extensive but is expected to play an important role in the interaction between groundwater and surface water. Due to the fact that the alluvium typically valley fill deposits, it is expected to act as a preferential flow path to groundwater.

4.3.4.8 Activities That May Impact on Ground Water

Using groundwater as water supply for the proposed project can cause negative impacts. The abstraction of groundwater by brewery project will be in direct competition with existing groundwater users in the area. The applicant has indicated that approximately 250,000 gallons of water will be used by the project per day.

4.3.4.9 Water Demand of the Project

Water demand of the project is approximately 250,000 gallons/day. Water Demand predictions are the following;

$$\begin{aligned} &190\text{HL}/\text{Brew} \times 12 \text{ Brew}/\text{day} \\ &190 \text{ HL} = 19,000 \text{ L}/\text{Brew} \\ &19,000 \text{ liters per brew} \times 12 \text{ Brew}/\text{day} \\ &= 228,000 \text{ liters per day} \end{aligned}$$

Minimum daily water demand for production

$$\begin{aligned} &1\text{lit of beer needs raw water } 5 \text{ lit} \\ &\text{Daily raw water consumption} = 5 \times 228,000 \text{ liters } / \text{day} \\ &= 1,140,000 \text{ lit}/\text{day} \\ &= 250, 764.8 \text{ gal}/\text{day} \end{aligned}$$

Maximum daily water demand for production

$$\begin{aligned} &1\text{lit of beer needs raw water } 8 \text{ lit} \\ &\text{Daily raw water consumption} = 8 \times 228,000 \text{ liters} \\ &= 1,824,000 \text{ lit}/\text{day} \end{aligned}$$



4.3.4.10 Water Facilities of Project

Table 4-7 Water Facilities of Project

Utilities	Capacity	Remark
Water Treatment Plant	1400 m ³ /day	58.33 m ³ /hr = 214 gpm
Boiler Plant	2ton/hour x 8 unit 10ton/hour x 1	1 ton=1 m ³ = 220 gal/hr x 8x2 =3520gal/hour 2200 gal/hr
Wastewater Treatment Plant	1050 m ³ /day	Treatment of wastewater generated Treatment capacity = 160 gpm

4.3.4.11 Facts About Hydrology

The following can be concluded from the groundwater assessment:

a) A Hydrocensus undertaken during the scoping phase of the hydrological study indicates that 6 private boreholes are present on the Project area on which tube wells may be drilled. Three of these tube wells are currently used for groundwater utilization.

b) Groundwater is used for domestic and brewery purposes. The project indicated that groundwater is not used extensively on a regional scale. Water is sourced mainly from perennial creeks and streams as well as from dam.

c) The depth to groundwater strikes in available borehole information varies between 8.5 and 10.4 m below surface.

d) The yields of the project tube wells identified during the Hydrocensus are shown in figures. Based on the fact that the boreholes are fitted with submersible pumps, it is assumed that groundwater is pumped at rates below 4 l/s.

e) Based on available information, it is thought that three aquifers are present, namely a shallow weathered and an alluvial aquifer.

4.3.4.12 Survey Range on Hydrology an Conclusion

The key factors impacting surface water and ground water hydrology in Brewing plant is water consumption and wastewater disposal. The study area within a 0.5 km radius around the proposed industrial site has been considered as core zone and 1 km radius as specific impact zone for scoping phase. Primary and secondary data has been collected for both the zone however focus of primary data generation has been more for 1.5 km radius.

Study Circle	Study Area
1 km radius	3.1 Sq- Km
1.5 km radius	7.51 Sq-Km



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There are no universal formats for terms of reference which will be suitable for every study. However, there are general rules which should be observed when preparing scoping for the EIA of Surface and Groundwater hydrology. The study should ensure that the consultants focus on the major issues and the most serious likely impacts. The study should identify the relevant natural resources, the water related eco-system be affected. From the environmental point of view also the proposed location for the brewing industry is not ecologically sensitive or fragile. The general terrain of the project is a plain land with minor undulations: located in agriculture area. The Southern entire area is urban habitation. The brewing industry is on the Linek road from No.3 Main road running near the site.



Study impact area with zoning metrics

Potentially Significant Effects

No.	Environmental Features	Within 500 m area Around Proposed site	Within 1 km area Around Proposed site	Within 1.5 km area around Proposed site
Ecological Environment				
1	Wildlife Sanctuary	None	None	None
	National Park	None	None	None
	Biosphere Reserve	None	None	None
2	Protected Forests	None	None	None
3	Wetland	None	None	None
Physical Environment				
1	Topography	Mainly flat with elevation ranges	Undulating. Northern part of the 1	undulating terrain, rest of the area has

		between 5.4-3.6 m	km area shows the higher elevation.	almost flat terrain
2	Surface Water	(Baoundary of west Site is water course) Balar creek	Balar creek	Balar Creek
	Resources			
3	Groundwater	Falls in HEZ 5 Zone	Falls in HEZ 5 Zone	Falls in HEZ 5 Zone
4	Soil	Clay loam	Clay loam	
5	Land-Use	Land use in 500m of site is primarily agricultural (North)	West area Urban area	
		(East, South)	North and East Agriculture area	North and East Agriculture area West Urban area
		West open space and Urban area	West Urban area	

Compairson of total abstraction and recharge of Delta HEZ Zone

	Recharge	Total abs	Total abs	Total abs	Total abs
	(Mm ³)	Low (Mm ³)	low (% of R)*	high (Mm ³)	high (% of R)*
DELTA	6,090	518	8%	715	12%

Mm³ - million cubic metre

*Abstraction as percentage of estimated recharge

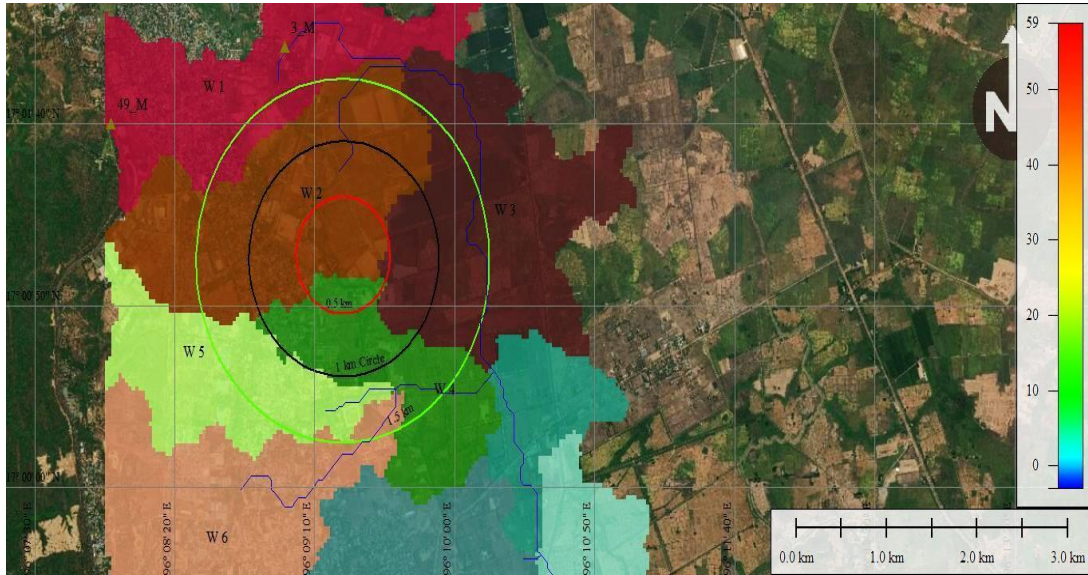
HEZ Zone = Hydro Ecological Zone

Groundwater Region & Aquifer of Study Area

HEZ	Groundwater	Geology	Main Aquifer
	Region		
HEZ 5	5-Delta	Recent alluvial deposits	Younger Alluvium with underlying Irrawaddy

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STATE OF THE BASIN ASSESSMENT (SOBA) REPORT)





According to the study, the proposed brewing plant is located in flat and lowland areas of monsoon precipitation area. The application site is located low sensitive receptors including Irrawaddy Aquifer (HEZ 5). Irrawaddy delta groundwater zone (GWZ) is a very large resource of high-yielding, low-salinity groundwater could be available in the Irrawaddy formation underlying the delta. Recharge dynamics in the study area tube well are probably constraint the recharge from rainfall and Balar creek and NgamoeYeik channel. Rainfall variability is of great practical significance in water resource analysis. The renewable resource is expected to be much more than storage volume. (Study on Tube well pump test, Well recovery test and well yield test report data). Flood prediction on study area is mainly a consequence of floodplain flooding. Study Watershed W1,2,3,4,5 are small basin for flood study including brewing plant area. Flood duration of downstream and geographic extent of floods in proposed site Area mostly depend on the influences of the Balar creek and its tributaries such as the study watershed in study area. The watershed's outlet; this increases the likelihood of downstream flooding and application site.

Therefore underground water resource is more sufficient for brewing site and environment. The another impact about wastewater, there be wastewater treatment plant (both aerobic and anaerobic process) and effluents are kept under NEQ(E)G guideline and mitigate the adverse effects.

4.3.5 Climate of the Study Area

The Study project area (Hlegu) is warm and tropical region with southwest monsoon. The rainfall is abundant for rice cultivation. Even in drought years, the region receives a stable rainfall for rice cultivation. This region has a rainy season and dry season in a year. The rainy season is from mid-May to mid-November, and the other half

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is a dry season. Rivers, rivulets, and natural drainages are flooding every year during the rainy season due to the monsoon heavy rain. However, their flow discharges are very limited during the dry season.

Study area has a tropical savanna climate with distinct wet and dry seasons of a relatively equal duration. Most of the annual rainfall occurs between May and October in every year. The following figures and table show the 10 consecutive- years (2009-2019) record for Temperature and Rainfall of Hlegu Township. Maximum temperature is 40°C in April 2014 and minimum temperature is 10°C within 10 years. Maximum rainfall is 378.54 mm with 29 Rainy days in July 2015.

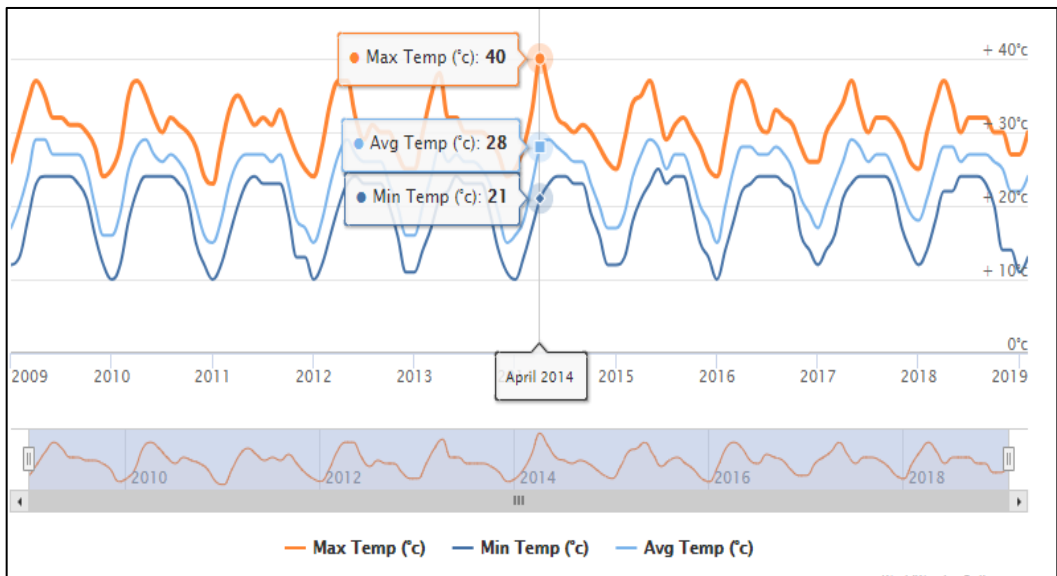
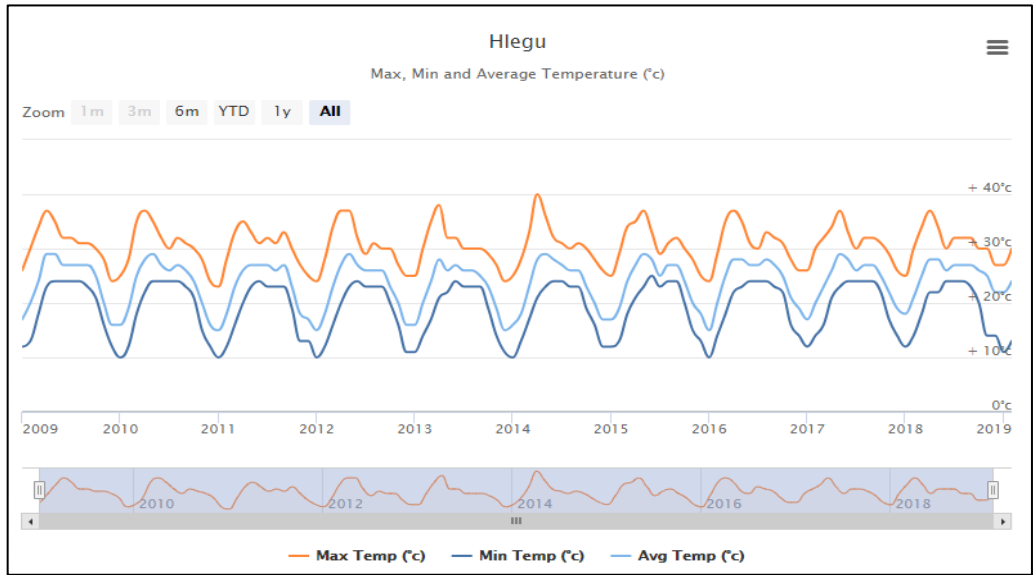




Figure 4-23 Ten Consecutive-Years (2009-2019) Record for Temperature and Rainfall

The evaporation is much less than the precipitation and is most notoriously present in the dry season. The monthly averaged values of precipitation, evaporation, temperature, wind speed, relative humidity and cloud cover between 1984 and 2016 are described in following figures. These climatologic parameters are derived from monthly data logged of Kabaraye weather station in Yangon city.

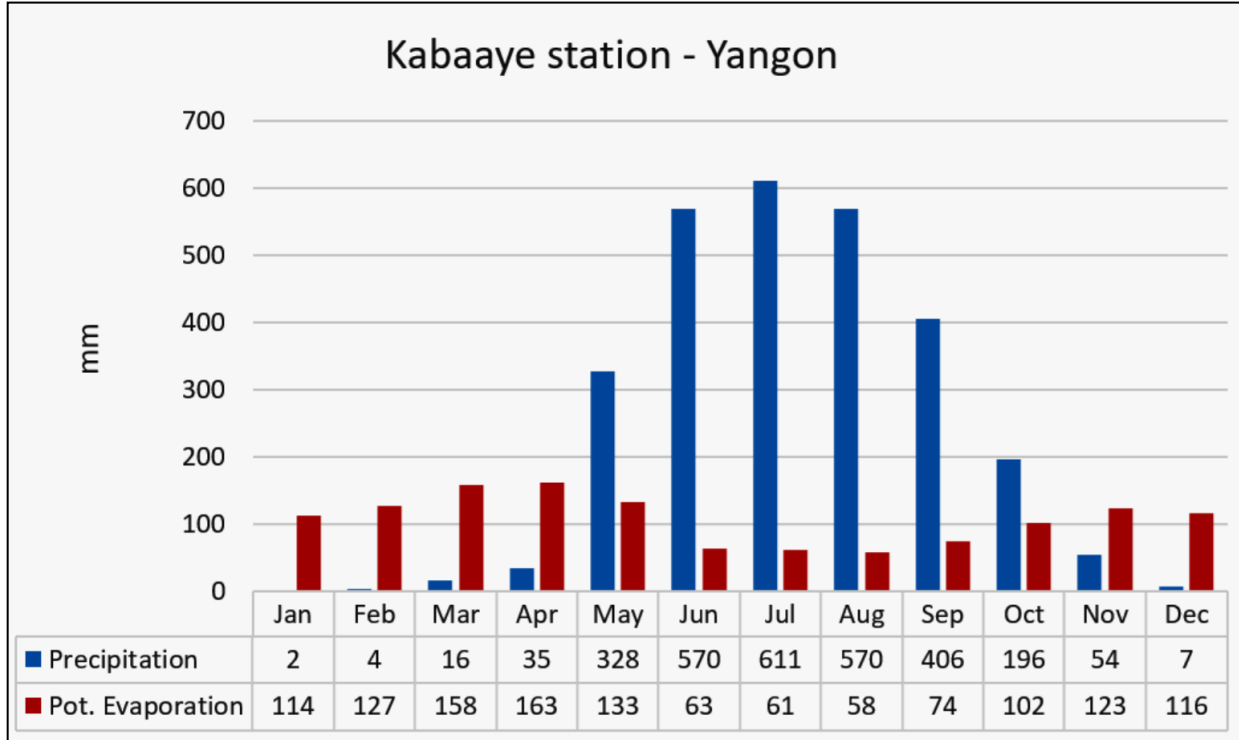


Figure 4-24 Long Term Monthly Averaged Precipitation and Evaporation, Values in mm/month

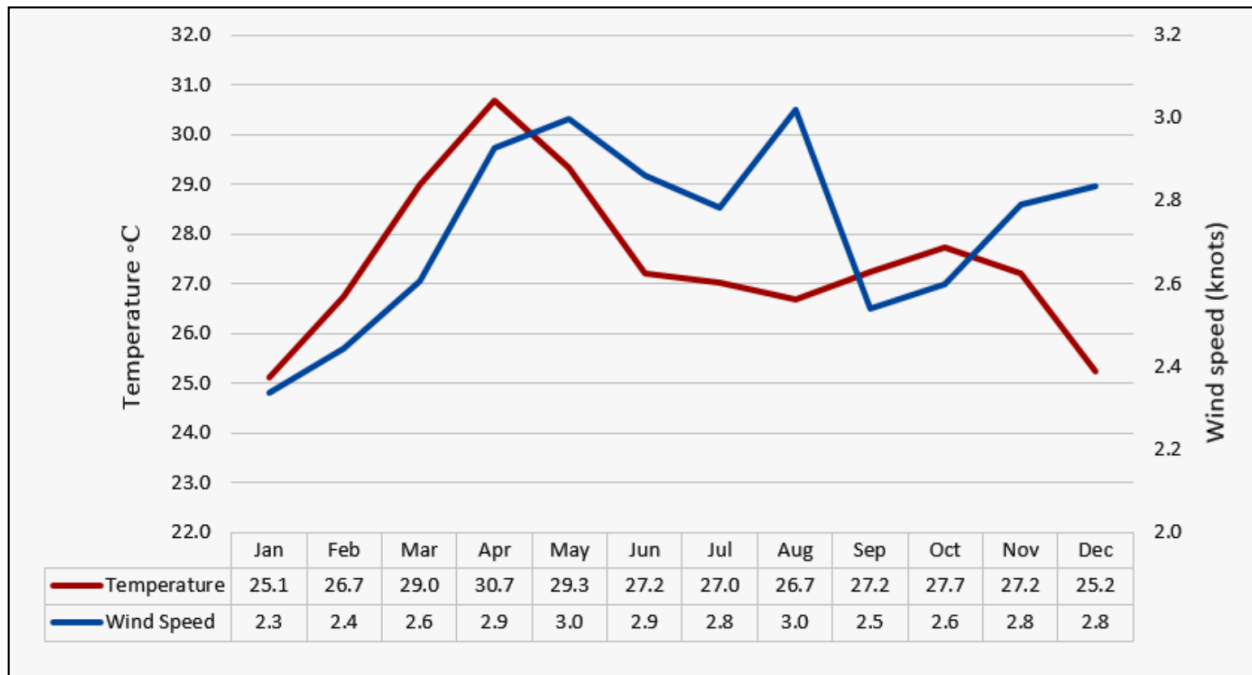


Figure 4-25 Long Term Monthly Averaged Temperature in °C and Wind Speed in km



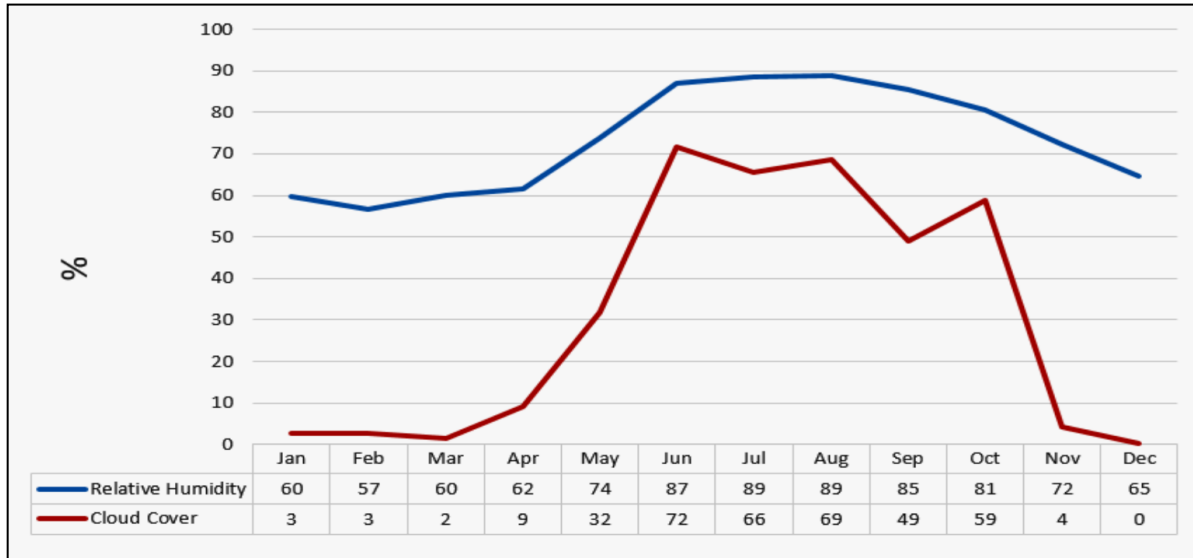


Figure 4-26 Long Term Monthly Averaged Relative Humidity and Cloud Cover Data

4.3.6 Primary Source Data for Environmental Quality

4.3.6.1 Air Quality

As the result of different air pollutants dispersion from proposed Project into surrounding atmosphere, it affects the neighborhood air environment with significant impacts and forms an important part of impact assessment studies. An air quality assessment will be carried out in relation to the Proposed Development. In both construction phase and in operation phase, the main emission impact on local air quality is likely from the road traffic generated by the proposed development.

Within the proposed project site, it is necessary to provide an assessment of air quality in order to predict whether the elevated levels of air pollutants expose the future occupants or not. Nitrogen oxide, nitrogen dioxide and particulate matter are most closely associated with traffic emission and they can change the impact result of the project. Receptor locations are selected at the proposed project and locations, which can be affected by adverse effects of traffic flow.

The key effects in construction period are dust and particulates emissions associated with construction activities. This may lead to an adverse impact in terms of elevated particulate concentrations or nuisance impacts, such as soiling of clean surfaces of the neighboring sensitive receptors. An assessment of the impact of dust is required if a sensitive receptor exists within 350 m of the site.

In order to evaluate the predicted impacts and net impacts due to proposed project's activities on air environment, the ambient air status with respect to the plant site, perform the baseLine information.





Figure 4-27 Equipments Used for Surveying the Environmental BaseLine Data

- **Materials and Methods**

The objectives of the air quality monitoring exercise is to determine the normal concentration of respiratory particulates and gaseous emissions in the project area prior to the start of the proposed project. The air quality parameters are Oxygen (O₂), Carbon monoxide (CO), Carbon Dioxide (CO₂), Sulfur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Particulate Matter (PM) and Total Volatile Organic Compound (TVOC).

KANE900 PLUS combustion Analyzer was used to measure stack emission gas, PHOTOVAC 2020 ComboPro™ Photoionization Detector and DUST TRAK™ 8532 AEROSOL MONITOR were used to measure workplace air quality and Sound Level Meter (SL-4033SD) was used to measure the noise level. And then Haz-Scanner also was used to ambient air quality. (See Figure 4-29 and 4-30)

National Standard GuideLine

(1) Air Emission

Table 4-8 Ambient Air Quality General GuideLine

Parameter	Averaging Period	GuideLine Value (µg/m ³)
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate matter PM10	1-year	20
	24-hour	50
Particulate matter PM2.5	1-year	10
	24-hour	25



Sulfur dioxide	24-hour 10-minute	20 500
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Table 4-9 Small Combustion Facilities Emission GuideLines

Combustion Technology / Fuel	Particulate matter PM ₁₀ ^a	Sulfur Dioxide	Nitrogen Oxides
Gas	-	-	200 ^b mg/Nm ^{3c} 400 ^d mg/Nm ³ 1,600 ^e mg/Nm ³
Liquid	100	3 %	1,600-1,850 ^f mg/Nm ³
Natural gas (3-<15 MW ^g)	-	-	90 ^h mg/Nm ³ 210 ⁱ mg/Nm ³
Natural gas (15-<50 MW)	-	-	50 mg/Nm ³
Fuels other than natural gas (3-<15 MW)	-	0.5 % sulfur	200 ^h mg/Nm ³ 310 ^j mg/Nm ³
Fuels other than natural gas (15-<15 MW)	-	0.5 % sulfur	150 mg/Nm ³
Gas	-	-	320 mg/Nm ³
Liquid	150 mg/Nm ³	2,000 mg/ Nm ³	460 mg/Nm ³
Solid ^j	150 mg/Nm ³	2,000 mg/ Nm ³	650 mg/Nm ³

Note: mg/Nm³ = mg/m³ because temperature is same.

^a Particulate matter 10 micrometers or less in diameter

^b Spark ignition

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

^d dual fuel

^e compression ignition

^f higher value applies if bore size > 400m

^g Megawatt

^h Electric generation

ⁱ mechanical drive

^j Includes biomass

Methods of SampLineg and Analysis

SampLineg rate of air quality was recorded automatically every one minute for important gases (Sulfur dioxide, Nitrogen dioxide, Carbon dioxide, Carbon monoxide, Hydrogen sulfide, Particulate matter, Hydrogen sulfide and Ozone) to describe ambient air quality. SampLineg pump was adjusted to 2



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liter/min. Different analysis methods are integrated in the instrument, such as particulates 90° Infrared Light Scattering for particulate matters (PM10, PM2.5), electrochemical sensors for toxic gases (SO2, NO2, CO, H2S), NDIR (optional sensor) for (CO2) and GA sensing Semiconductor- GSS technology (optional sensor) for O3.

Ambient Air Quality at Construction Phase

The ***ambient air quality*** was measured at the geographic coordinates at Latitude: 16° 58' 40.89" N and Longitude: 96° 03' 20.32" E on 8th ~9th October 2018. There was also ambient air quality measuring at N 17° 0' 38.37", E 96° 8' 57.95", Kon Ta La Baund Village on 9th October 2018.

At the initial stage of the project, baseLine air quality should be measured on the vicinity of the site and to differentiate between existing ambient conditions and project-related impacts in future. Air quality is composed of dust and gas emissions of the ambient air. Detail descriptions of the locations of sampLineg points are described in following table.

Table 4-10 Locations of Ambient Air Quality Monitoring Points

No.	SampLin eg Points	Coordinate	Description	Station height (about ground)	Logging duration (Time)		Date
1.	001	17°01'07.404" N 96°09'26.577" E	Project Site	5 ft.	24 hrs	From 10:30 am	8.10.18
						To 10:30 am	9.10.18
2.	002	17° 0'38.37" N 96° 8'57.95" E	Kone Ta La Baund Village	5 ft.	8 hrs	From 11:00 am	9.10.18
						To 7:00 pm	





Figure 4-28 Ambient Air and Noise Monitoring Points



Figure 4-29 Ambient Air Quality Monitoring at Project Site

Table 4-11 Ambient Air Quality Monitoring Results at Project Site

No.	Parameter	Unit	Results	GuideLine Value	Avg. Period
1.	Nitrogen dioxide	µg/m ³	21.96	*200 µg/m ³	1 hour
2.	Particulate Matter PM ₁₀	µg/m ³	84.84	*50 µg/m ³	24 hours
3.	Particulate Matter PM _{2.5}	µg/m ³	47.93	*25 µg/m ³	24 hours
4.	Sulfur Dioxide	µg/m ³	0	*20 µg/m ³	24 hours
5.	Ozone	µg/m ³	20.05 (24hr) 23.28 (8hr)	100 µg/m ³	8 hours
6.	Carbon Dioxide	ppm	331.59	NG	24 hours
7.	Carbon Monoxide	ppb	0.19	NG	24 hours
8.	Ammonia	ppm	23.8	NG	24 hours
9.	Volatile Organic Carbon (VOC)	ppm	0	NG	24 hours
10.	Oxygen (O ₂)	mol%	20.97	NG	24 hours
11.	Wind Speed	mph	4.16	NG	24 hours
12.	Wind Direction	Deg	45	NG	24 hours
13.	Temperature	°C	27.38	NG	24 hours



Figure 4-30 Ambient Air Quality Monitoring at Kone Ta La Baund Village

Table 4-12 Ambient Air Quality Monitoring Results at Kone Ta La Baund Village

No.	Parameter	Unit	Results	GuideLine Value	Avg. Period
1.	Nitrogen dioxide	µg/m ³	2	*200	1-hour
2.	Particulate Matter PM ₁₀	µg/m ³	95.14	*50 µg/m ³	24 hours
3.	Particulate Matter PM _{2.5}	µg/m ³	57.79	*25 µg/m ³	24 hours
4.	Sulfur Dioxide	µg/m ³	0	*20 µg/m ³	24 hours
5.	Ozone	µg/m ³	7.0(24hr) 7.95(8hr)	100 µg/m ³	8 hours
6.	Carbon Dioxide	ppm	354.34	NG	24 hours
7.	Carbon Monoxide	ppb	0.26	NG	24 hours
8.	Ammonia	ppm	80.05	NG	24 hours
9.	Volatile Organic Carbon (VOC)	ppm	25.79	NG	24 hours
10.	Oxygen (O ₂)	mol%	21.19	NG	24 hours
11.	Wind Speed	mph	2.8	NG	24 hours
12.	Wind Direction	Deg	180	NG	24 hours
13.	Temperature	°C	30	NG	24 hours

The ambient air quality results from both locations (at Project Site and at Kone Ta La Baund Village), all parameters such as NO₂, and Ozone are lower than the standards values and there is no result for SO₂. Result of PM_{2.5} and PM₁₀ are higher than guideLine values and this is because of their construction activities at site, vehicles movement in both site and village. The other parameters have no guideLine values. These parameters which don't have the guideLine values can be used as baseLine data for the monitored values during operation. On the basis of the above, it is considered appropriate to include an assessment of air quality within operation phase.

4.3.6.1.1 Comparison of ambient air qualities at Site on 9th October 2018 with standards

The measured values of ambient air quality at site on 8~9th October are compared with NEQ(E)G and it is following.



Table 4-13 Compare Table of ambient air quality at site on 8~9th October 2018 with that of NEQ(E)G guideLine

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Vairation from standard
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	- 200 (1hr)	-178.04
2.	Particulate Matter PM ₁₀	µg/m ³	84.84	50	+34.84
3.	Particulate Matter PM _{2.5}	µg/m ³	49.73	25	+22.93
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	100	-76.72

From the compairson table, nitrogen dioxide and ozone are under standards and PM₁₀,PM_{2.5} are beyound the standards.

The possible reasons are:

- There will earth work and vehicles movement
- October is drying reason.

4.3.6.1.2 Compairson of ambient air qualities at Kone Ta La Baund Village on 9th October 2018 with standards

The measured values of ambient air quality at Kone Ta La Baund Village on 9th October 2018 with NEQ(E)G and it is following.

Table 4-14 Comparison of ambient air qualities at Kone Ta La Baund Village on 9th October 2018 with standards

No.	Parameter	Unit	Measured values of ambient air (Kone Ta La Baund Village)	Standard value of NEQ(E)G	Vairation from standard
1.	Nitrogen dioxide	µg/m ³	1.8 (8hr) 2 (1hr)	- 200 (1hr)	-198
2.	Particulate Matter PM ₁₀	µg/m ³	95.14 (8hr)	50	+45.14
3.	Particulate Matter PM _{2.5}	µg/m ³	57.79 (8hr)	25	+32.79
4.	Sulfur Dioxide	µg/m ³		20	
5.	Ozone	µg/m ³	7.95(8hr)	100 (8hr)	-92.05

From the compairson table, nitrogen dioxide and ozone are under standards and PM₁₀,PM_{2.5} are beyound the standards.



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The ambient air quality results from both locations (at Project Site and at Kone Ta La Baund Village), some parameters such as NO₂, and Ozone are lower than the standards values and there is no result for SO₂. Result of PM_{2.5} and PM₁₀ are higher than the (guideLine) standards values and there are because of construction activities at site, vehicles movement in both site and village. Moreover measured data is 8th, 9th October is rather drying season.

The other parameters monitored at table 4-11 and 4-12 have no guideLine values. These parameters which don't have the guideLine values can be used as baseLine data for the monitored values during operation phase. On the basis of the above, it is considered appropriate to include an assessment of air quality within the operation phase.

4.3.6.1.3 Monitoring of ambient air quality during operation phase

There is monitoring activity for Emerald Brewery plant during the operation at 7th ~9th February 2023, as ambient air quality, work place air quality, stack emission, noise, vibration, water, wastewater and soil. This monitoring report is attached at Appendix 6. The results of ambient air quality measuring are extracted and compairson with standards and it is following.

Table 4-15 Monitoring result of ambient air quality at site on 7th ~ 9th February 2023 and compairson data

At site N17°1'7.61", E 96°9'25.01"

No.	Parameter	Unit	Measured Result	GuideLine Value	Deviation From Standard
1.	Nitrogen dioxide	µg/m ³	10.15 (24hr) 29.62 (1hr)	- 200 (1hr)	-170.38
2	Sulfur Dioxide	µg/m ³	0.5 (24hr)	20 (24hr)	-19.5
3.	Particulate Matter PM ₁₀	µg/m ³	44.45 (24hr)	50 (24hr)	5.55
4.	Particulate Matter PM _{2.5}	µg/m ³	24.57 (24hr)	25 (24hr)	-0.43
5.	Ozone	µg/m ³	2.36(24hr) 3.41(8hr)	200 (1hr)	-196.39
6	Ammonia	ppm	1.12 (24hr)	-	-
7.	Carbon Dioxide	ppm	283.79	-	-
8.	Carbon Monoxide	ppb	0.24	-	-
9.	Volatile Organic Carbon (VOC)	ppm	0	-	-
10.	Wind Speed	mph	1.67	-	-
11.	Wind Direction	Deg	SE	-	-



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From the above monitoring result of ambient air quality and comparison data, there are all parameters under the standard guidelines.

Moreover, there is comparison table of ambient air quality of at site on October 2018 and that of on February 2023, it is shown as following.

Table 4-16 Comparison table of ambient air quality at site on October 2018 with that of February 2023

No.	Parameter	Unit	Measurement result at N17°1' 7.40", E 96°9' 25.77" October 2018	Measurement result at N17°1' 7.61", E 96°9' 25.01" February 2023	More/less
1.	Nitrogen dioxide	µg/m ³	20.5 (24hr) 21.96 (1hr)	10.15 (24hr) 29.62 (1hr)	-10.35 +7.66
2	Sulfur Dioxide	µg/m ³	-	0.5	-
3.	Particulate Matter PM ₁₀	µg/m ³	84.84	44.4	40.44
4.	Particulate Matter PM _{2.5}	µg/m ³	47.93	24.57	-23.36
5.	Ozone	µg/m ³	20.05(24hr) 23.28(8hr)	2.36 3.41	-17.69 -19.87
6	Ammonia	ppm	23.8	0.24	-23.56
7.	Carbon Dioxide	ppm	331.59	283.79	-47.8
8.	Carbon Monoxide	ppb	0.19	0.24	+0.05
9.	Volatile Organic Carbon (VOC)	ppm	-	-	-

From above comparison table except carbon monoxide, all measured parameters on February 2023 are less than of October 2018.

It may conclude that ambient air quality at operation phase is better than that of construction phase.





Figure 4-31 Location of ambient air quality monitoring point at site on February 2023

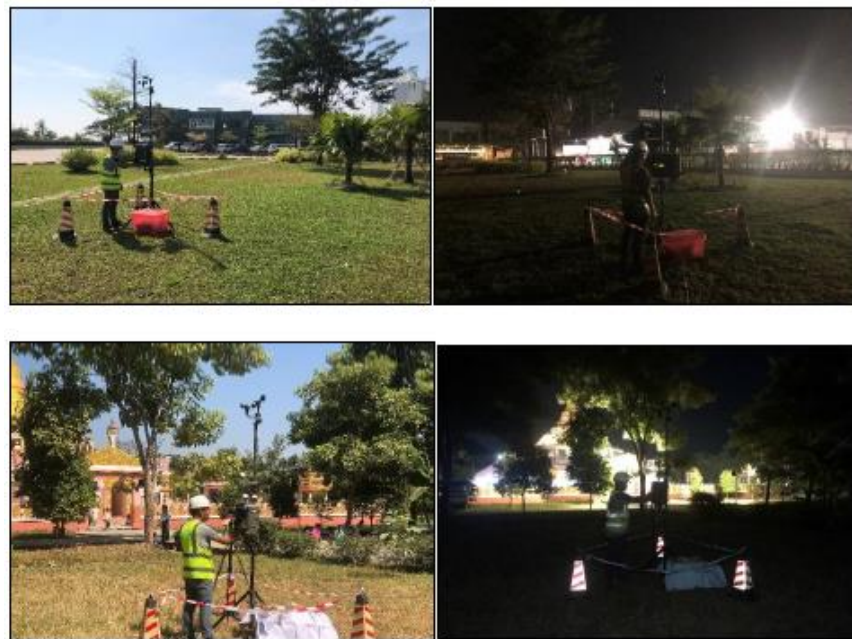


Figure 4-32 Photo of ambient air quality measuring at site on February 2023



Figure 4-33 Location of ambient air quality monitoring point at village on February 2023

4.3.6.2 Noise Environment

Parameter for noise level survey was determined according to Myanmar National Environmental Quality (Emission) GuideLines. Noise survey has been conducted at the project site in order to establish an acoustic baseLine onto which potential impacts from the proposed project may be superimposed. Noise level monitoring was also done at the same sampLineg points of monitoring air quality. The survey results are described in Table 4-19 and Table 4-20.

Table 4-17 NEQ(E)G’s Noise Level GuideLine

Receptor	One Hour L_{Aeq} , dB (A)	
	Day time 07:00-22:00 (10:00-22:00 for Public holidays)	Night time 22:00-07:00 (22:00-10:00 for Public holidays)
Industrial Commercial	70	70
Resident, Institutional, Educational	55	45

The table below shows the Permissible Noise Exposures Limit of OSHA’s.

Table 4-18 OSHA’s Noise Level GuideLine

OSHA’s Permissible Noise Exposures	
Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
<.25	115

Table 4-19 Results of Ambient Noise Level at Project Site on October 2018

8.10.18 -9.10.18	24 Hours Average Value, dB (A) Leq	National Environmental Quality (Emission) GuideLine Values Industrial, Commercial
Day time	51.3	70
Night time	53.75	70

From the noise level measurement result at project sit, there are noise levels at day time and night time within the standard.

Table 4-20 Results of Noise Level in Kone Ta La Baund Village

9.10.2018	8 Hours Average Value, dB (A) Leq (11:00 am -7:00 pm)	National Environmental Quality (Emission) GuideLine Values, Residential, Institutional, Educational, Industrial, Commercial Day time 07:00~22:00 (10:00 ~ 22:00 for public holidays)
Day time	59.4	55

From the noise level measurement results, at Kone Ta La Baund 8 hours noise level value is beyond the standard and it may be vehicles movements.



Noise level measuring at operation phase

Noise level measuring are performed at the project site on February 2023 at five locations as near main entrance gate, near reception area, wastewater area, ambient air measuring point and treated wastewater plant point. The measuring take place 24 hours and the results are following.

Table 4-21 Noise level measuring results (day time) at site on February 2023

No.	Location of measurement point	Unit	Noise level day time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1'11.90" E 96°9'25.16"	dB(A)	47.59	80.70	37.50	70	-22.41
2.	Near reception area N17°1'3.32" E 96°9'24.69"	dB(A)	51.46	71.2	37.2	70	-18.54
3.	Wastewater area N17°1'0.62" E 96°9'19.39"	dB(A)	47.76	80.9	39.6	70	-22.24
4.	Ambient air measurement point N17°1'3.33" E 96°9'17.82"	dB(A)	67.39	87.7	58.2	70	-2.61
5.	Treated wastewater point N17°1'9.59" E 96°9'9.14"	dB(A)	45.43	78.0	35.8	70	-29.57

Table 4-22 Noise level measuring results (night time) at site on February 2023

No.	Location of measurement point	Unit	Noise level night time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
1.	Near main entrance gate N17°1'11.90" E 96°9'25.16"	dB(A)	48.09	82.80	42.60	70	-21.91
2.	Near reception area N17°1'3.32" E 96°9'24.69"	dB(A)	48.03	71.10	44.20	70	-21.97
3.	Wastewater area N17°1'0.62" E 96°9'19.39"	dB(A)	43.19	55.5	39.50	70	-26.81
4.	Ambient air measurement point	dB(A)	47.77	50.33	45.40	70	-22.23



No.	Location of measurement point	Unit	Noise level night time			NEQ(E)G Industrial, Commerical	Variation of Avg value with std
			Avg	max	min		
	N17°1'3.33" E 96°9'17.82"						
5.	Treated wastewater point N17°1'9.59" E 96°9'9.14"	dB(A)	45.47	59.08	31.25	70	-24.53

From the noise level measuring of day and night , all avarage results are within the standards, but some results of maximun are beyond the standard. It should manage the mitigation of noise.

Noise level measurement for Kone Ta La Baund Village on february 2023

Table 4-23 Result of noise level at Kone Ta La Baund at February 2023

8~9 th -2-2023	Measurement	Average Value, dB (A)	NEQ(E)G GuideLine Values
	Day time	50.34	55
	Night time	50.95	45

Although the noise levels of dag time and night time at Kone Ta La Baund are nearly same, the night time measured levels are higher than the standard, due to night time standard is lower than that of day time. (i.e 55 and 45)



Figure 4-34 Five location of noise measurement points at site on February 2023

4.3.6.3 Workplace air quality and noise level monitoring

4.3.6.3.1 Workplace air quality monitoring

There are seven points for work place air quality measuring as at **Filling area (starting point), Filling area (end point), co₂ plant area, brewing area (up), brewing area (down), malt milling area (up), malt milling area (down)** on February 2023. The parameters are particulate matter, PM₁₀ and PM_{2.5} and the results are following.

Table 4-24 Results of workplace air quality monitoring on February 2023

No.	Location	PM ₁₀ µg/m ³			PM _{2.5} µg/m ³		
		Measurement result	Standard	More/ Less	Measurement result	Standard	More/ Less
1.	Filling area (starting point)	38	50	-12	17	25	-8
2.	Filling area (End point)	43	50	-7	22	25	-3
3.	CO ₂ plant area	48	50	-2	24	25	-1
4.	Brewing area (up)	40	50	-10	19	25	-5
5.	Brewing area (down)	43	50	-7	22	25	-3
6.	Malt milling area (up)	38	50	-12	20	25	-5
7.	Malt milling area (down)	41	50	-9	20.5	25	-4.5

From results of workplace air quality monitoring at 7 location of site on February 2023, all measured results are within the standards

4.3.6.3.2 Workplace noise level monitoring

There are seven points for workplace noise level monitoring (same location of air quality monitoring) as **Filling area (starting point), Filling area (end point), co₂ plant area, brewing area (up), brewing area (down), malt milling area (up), malt milling area (down)** on February 2023. Both of air quality and noise level are monitored simultaneously with same type apparatus. The results of noise levels are shown as following.

Table 4-25 Results of monitoring of workplace noise level and comparison with standards

No.	Location	Noise level			More/ Less
		Unit	Measurement	Standard NEQ(E)G	
1.	Filling area (starting point)	dBA	78.1	70	+8.1
2.	Filling area (End point)	dBA	71.5	70	+1.5
3.	CO ₂ plant area	dBA	88.7	70	+18.7
4.	Brewing area (up)	dBA	75.9	70	+5.9
5.	Brewing area (down)	dBA	79.4	70	+9.4
6.	Malt milling area (up)	dBA	72.1	70	+2.1
7.	Malt milling area (down)	dBA	85.3	70	+15.3



Figure 4-35 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at Filling area (starting point)



Figure 4-36 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at Filling area (end point)



Figure 4-37 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at CO₂ plant area



Figure 4-38 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at brewing (up)



Figure 4-39 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at brewing (down)



Figure 4-40 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at malt milling area (up)



Figure 4-41 Photo of ambient air quality (PM₁₀,PM_{2.5}) and noise level (dBA) at malt milling area (down)

From 7 point noise level monitoring , all noise levels are beyond the standard 70 dBA, but there be within the 8 hour exposure limit of noise level 90 dBA of OHS guideLine.

4.3.6.3.3 Stack Emission Measurement

- Boiler stack emission
- Generator stack (Exhaust) emission

Boiler stack emission

Stack Specification

Diameter x Height = OD1150 mm x 15 m

Fuel Type - Diesel

Table 4-26 Boiler stack emission monitoring result and comparison with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	14.27	13.57	-	-
2.	CO	mg/m ³	30	51	-	-
3.	CO ₂	mole%	2.6	5.5	-	-
4.	NO ₂	mg/m ³	24(2.65Avg)	29	460	-433.5
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	150	-

There is lack of instrument for measuring the PM₁₀ at stack.

From the above measured result and comparison, the measured results are with the standards.



Figure 4-42 Photo of boiler stack emission monitoring

Electric Generator stack (Exhaust) emission

Electric generator specification

Capacity - 1420 kVA

Fuel Type - Diesel

Table 4-27 Electric generator stack (Exhaust) emission monitoring result and comparison with standard

No.	Parameter	Unit	Measurement result		Standard	More / less
			After 30 min	After 1hr		
1.	O ₂	mole%	19.92	20	-	-
2.	CO	mg/m ³	133	125	-	-
3.	CO ₂	mole%	0.8	0.8	-	-
4.	NO ₂	mg/m ³	154(153Avg)	152	460	-307
5.	SO ₂	mg/m ³	ND	ND	2000	-2000
6.	PM ₁₀	mg/m ³	-	-	-	-

There is lack of instrument for measuring the PM₁₀ at stack.



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From the above measured result and comparison, the measured results are with the standards.

4.3.6.4 Water Quality

Selected water quality parameters of ground water, ambient water and wastewater have been studied for assessing the water environment and evaluating the anticipated impact of the proposed project.

The purpose of this study are to:

- Assess the water quality characteristics for critical parameters,
- Predict impact on water quality by this project and related activities and
- Suggest appropriate mitigation measures.

During Construction Phase

Water samples were analyzed in the *Green Myanmar Environmental Services Co., Ltd.*'s (GMES) laboratory and Department of Research and Innovation Analysis Department (D.R.I) laboratory. Water qualities at the project site and its surroundings were monitored at the total of three sampling points and detail locations and coordinate points for water sampling are shown in the following tables.

Table 4-28 Locations and Coordinate Points for Water Sampling

Sr.No	Location	Coordinate Points	Remark
1.	Tube well from Ta Kon Taing Monastery	17° 02' 01.545" N 96° 08' 56.42" E	
2.	Barlar Creek's Above Up Stream	17° 01' 59.199" N 96° 08' 56.421" E	Surface water (ambient water)
3.	Barlar Creek's Up Stream	17° 01' 36.48" N 96° 09' 6.02" E	
4.	ground water Tube well of Project Site	17° 01' 09.039" N 96° 09' 25.453" E	General water
5.	Barlar Creek beside the Project site	17° 01' 00.742" N 96° 09' 19.015" E	lateral
6.	Barlar Creek's Down Stream	17° 00' 44.84" N 96° 09' 26.82" E	
7.	Tube well from Kone Ta La Baund	17° 01' 26.374" N 96° 15' 11.87" E	public
8.	Tube well from Yay Ta La Baund Village	17° 00' 44.84" N 96° 09' 26.82" E	



Sr.No	Location	Coordinate Points	Remark
9.	Tube well from Nwel Khwe San Pya Village	17° 02' 14.43" N 96° 14' 17.36" E	

(a)(1) Ground Water (tube well) Quality on October 2018 (construction phase)

Tube well water from project site, Ta Kon Taing Monastery, Kone Ta La Baund, Yay Ta La Baund, and Nwel Khwe San Pya villages are collected as ground water samples and analyzed at the laboratories of GMES and D.R.I.

Table 4-29 Analyzed results of ground water quality by G.M.E.S laboratory and standard. (October 2018)

Sr. No	Parameters	Unit	Ta Kon Taing Monastery	Project Site	Kone Ta La Baund	Yay Ta La Baund	Nwel Khwe San Pya	Standard 2014 Ministry of Health
1	pH	-	7.6	5.93	7.45	7.52	5.61	6.5~8.5
2	Chloride (Cl ⁻)	mg/l	14	10	12	10	12	250
3	Total Hardness as CaCO ₃	mg/l	36	7	15	20	9	500
4	Total Iron (Fe)	mg/l	0.1	0.1	0.1	0.1	0.1	1
5	Sulphate (SO ₄)	mg/l	3.3	2	2.3	2.6	2.5	250
6	Total Alkalinity as CaCO ₃	mg/l	70	25	45	75	20	-
7	Turbidity	NTU	0.42	0.22	1.68	2.15	1.34	5
8	Manganese (Mn)	mg/l	ND	ND	ND	0.01	ND	0.4
9	Aluminum (Al)	mg/l	0.01	0.02	ND	0.1	0.03	0.2
10	Cyanide (CN)	mg/l	ND	ND	ND	ND	ND	0.07
11	Arsenic (As)	µg/l	10	53	1.2	7.7	6.2	50
12	Total Dissolved Solids (TDS)	mg/l	220	-	160	110	170	1000
13	Copper	mg/l	ND	ND	ND	ND	ND	2.0

Note: Not Detected



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From analyzed results of tube well (general water) by GMES laboratory, there show as

- pH of site tube well water is beyond standard.
- Arsenic of site tube well water is beyond standard.

Table 4-30 Analyzed tube well water results by DRI laboratory and standard. (October 2018)

Sr. No	Parameters	Unit	Ta Kon Taing Monastery	Project Site	Kone Ta La Baund	Yay Ta La Baund	Nwel Khwe San Pya	Standard 2014 Ministry of Health
1	pH	-	7.28	5.88	7.7	7.09	5.35	6.5~8.5
2	Chloride (Cl ⁻)	mg/l	12.40	3.4	4.30	3.9	15.1	250
3	Total Hardness as CaCO ₃	mg/l	31.00	7.0	16.00	16.00	7.0	500
4	Total Iron (Fe)	mg/l	0.06	0.067	0.048	0.050	0.09	1
5	Sulphate (SO ₄)	mg/l	Nil	Nil	Nil	Nil	Nil	250
6	Total Alkalinity as CaCO ₃	mg/l	58	20	31.00	27.00	5.0	-
7	Turbidity	NTU	0.42	0.17	1.1	0.71	0.74	5
8	Manganese (Mn)	mg/l	0.022	0.071	0.008	0.008	0.107	0.4
9	Aluminum (Al)	mg/l	0.02	0.02	0.02	0.02	0.02	0.2
10	Cyanide (CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.07
11	Arsenic (As)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	50
12	Total Dissolved Solids (TDS)	mg/l	85.6	31.2	44.5	54.7	34.3	1000
13	Copper	mg/l	0.008	0.008	0.008	0.006	0.013	2.0

From analyzed results of tube well (ground water) by DRI laboratory, there show as

- pH of site tube well water is beyond standard.





Figure 4-43 photo of tube well water at Ta Kon Taing Monestry



Figure 4-44 photo of tube well water sampling at project site



Figure 4-45 photo of tube well water sampling at Kone Ta La Baund



Figure 4-46 photo of tube well water sampling at Yay Ta La Baund



Figure 4-47 photo of tube well water sampling for Nwel Khwe San Pya Village

(a)(2) Ground Water (tube well) Quality on February 2023 (operation phase)

Ground waters (tube well) were sampled at Ta Kon Taing Monastery, project site, Kone Ta La Baund, Yay Ta La Baund, and Nwel Khwe San Pya villages on February 2023 and sampling points are shown as following.



Figure 4-48 SampLineg points of tube well water on February 2023

Table 4-31 Analyzed results of ground water quality and standard on February 2023 (Operation phase)

Sr. No	Parameters	Unit	Ta Kon Taing Monastery	Project Site	Kone Ta La Baund	Yay Ta La Baund	Nwel Khwe San Pya	Standard 2014 Ministry of Health
1	pH	-	6.8	6.4	6.8	7.2	6.1	6.5~8.5
2	Chloride (Cl ⁻)	mg/l	165	23.9	23	9.2	21.1	250
3	Total Hardness as CaCO ₃	mg/l	ND	7.5	15.1	70	7.5	500
4	Total Iron (Fe)	mg/l	ND	0	ND	ND	ND	1
5	Sulphate (SO ₄)	mg/l	3	6	3	3	ND	250
6	Total AlkaLineity as CaCO ₃	mg/l	73	34	40	104	30	-
7	Turbidity	NTU	3.21	2.42	2.32	1.09	1.3	5
8	Manganese (Mn)	mg/l	0.39	0.23	0.35	0.35	0.3	0.4
9	Aluminum (Al)	mg/l	ND	ND	ND	ND	ND	0.2
10	Cyanide (CN)	mg/l	ND	ND	ND	ND	ND	0.07
11	Arsenic (As)	µg/l	0	0	0	0	0	50



Sr. No	Parameters	Unit	Ta Kon Taing Monastery	Project Site	Kone Ta La Baund	Yay Ta La Baund	Nwel Khwe San Pya	Standard 2014 Ministry of Health
12	Total Dissolved Solids (TDS)	mg/l	60	40	60	45	40	1000
13	Copper	mg/l	0.06	0.1	0.03	ND	0.04	2.0

From analyzed results of tube well (ground water) water there are all parameters in standard

(a)(3) Comparing the tube well water analyzed results at project site of October 2018 with those of February 2023

There is comparison table of tube well water analyzed results at project site of October 2018 with those of February 2023 as following:

Table 4-32 Comparison table of tube well water analyzed results at project site of October 2018 with those of February 2023

Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
1	pH	-	5.93	6.4	+0.47	
2	Chloride (Cl)	mg/l	10	23.9	+22.9	
3	Total Hardness as CaCO ₃	mg/l	7	7.5	+0.5	
4	Total Iron (Fe)	mg/l	0.1	0	-0.1	
5	Sulphate (SO ₄)	mg/l	2	6	+4	
6	Total Alkalinity as CaCO ₃	mg/l	25	34	+9	
7	Turbidity	NTU	0.22	2.42	+2.2	
8	Manganese (Mn)	mg/l	ND	0.23	+0.23	
9	Aluminum (Al)	mg/l	0.02	ND	-0.02	
10	Cyanide (CN)	mg/l	ND	ND	-	
11	Arsenic (As)	µg/l	53	0	-53	



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Sr. No	Parameters	Unit	Project Site October 2018	Project Site February 2023	More / Less	Remark
12	Total Dissolved Solids (TDS)	mg/l	-	40	+40	
13	Copper	mg/l	ND	0.1	+0.1	

From comparison table of tube well water analyzed result at project site on October 2018 and with those of February 2023

- pH, chloride, total hardness, sulphate, turbidity, manganese, total dissolved solid are increased but still in standard.
- Total iron, aluminum, arsenic are decreased but still in standard.

There is conclusion that the change of tube well quality is not significant.

(b) Surface Water (Ambient Water) Quality

(b)(1) In order to monitor the ambient water quality, samples are taken from Barlar Creek's Above Up-stream, Up Stream, beside the project site and Down Stream as ambient water samples and analyzed at the laboratories of GMES and (D.R.I). The analysis results of the physico-chemical parameters are presented in the following tables on October 2018.

Surface Waters Sampling and analyzed was performed at October 2018 (construction phase)

Table 4-33 Results of Ambient Water Quality (surface water) by GMES Laboratory on October 2018

No	Parameters	Unit	Barlar creek above up stream	Barlar creek up stream	Barlar creek beside the project site	Barlar creek down stream	Standard (NEQEG) Brewery & Distilleries
1	5-day Biochemical Oxygen Demand	mg/l	ND	ND	ND	ND	50
2	Chemical Oxygen Demand	mg/l	20	20	20	20	250
3	pH	-	7.54	7.43	7.51	7.35	6~9
4	Total Suspended Solids	mg/l	125	120	70	125	50
5	Total Phosphorous	mg/l	ND	ND	ND	ND	2
6	Oil and Grease	mg/l	ND	ND	3	ND	10



Note: ND- Not Detected

From above analyzed result of Barlar creek except total suspended solid at Barlar creek beside the project measurement parameter are within the standard.

Table 4-34 Results of Ambient Water Quality (surface water) by D.R.I Laboratory on October 2018

Sr. No.	Parameters	Unit	Barlar creek above up stream	Barlar creek up stream	Barlar creek beside the project site	Barlar creek down stream	Standard (NEQEG) Brewery & Distilleries
1	5-day Biochemical Oxygen Demand	mg/l	3.77	4.45	2.96	2.92	50
2	Chemical Oxygen Demand	mg/l	39.00	35.00	38	39	250
3	pH	-	7.42	7.35	7.38	7.28	6~9
4	Total Suspended Solids	mg/l	48	38	56	70	50
5	Total Phosphorous	mg/l	3.3	3.96	3.63	3.3	2
6	Oil and Grease	mg/l	10	11	13	11	10

From above analyzed results of Barlar creek except total suspended solid at Balar creek beside the project site, total phosphorous at four points oil and grease at 3 sample points, measured parameter are within the standard. The analyzed results which beyond the standard are coloured in table.

The photos of Balar creek sampLineg are shown as follows:



Figure 4-49 photos of water sample collecting from Balar creek, above up stream



Figure 4-50 photos of water sample collecting from Balar creek, up stream



Figure 4-51 photos of water sample collecting from Balar creek, beside the project site
(Lateral)



Figure 4-52 photos of water sample collecting from Balar creek, down stream

(b)(2) In order to monitor the surface (ambient) water quality, samples were taken at Barlar Creek's Above Up-stream, Upper 1, Barlar creek up stream (middle) (upper 2); Barlar creek beside project site (lateral) and Barlar creek down stream on February 2023. These samples were analyzed at GMES laboratory and results are shown as following table.

Table 4-35 Results of Ambient (surface) Water Quality Monitoring at February 2023.

Sr. No.	Parameters	Unit	Barlar creek above up stream (upper 1)	Barlar creek up (middle) (upper 2)	Barlar creek beside (lateral) project site	Barlar creek down stream	Standard (NEQEG) Brewery & Distilleries
1	5-day Biochemical Oxygen Demand	mg/l	<30	<30	<30	<30	50
2	Chemical Oxygen Demand	mg/l	38	39	38	35	250
3	pH	-	6.9	6.5	7.7	6.8	6~9
4	Total Suspended Solids	mg/l	38	38	40	40	50
5	Total Phosphorous	mg/l	-	-	-	-	2
6	Oil and Grease	mg/l	<5	<5	<5	5	10
7.	Total coliform count (MPN/100 ml) Presumption test)	ml	1100	>1100	460	>1100	400

From above analyzed Barlar creek, except **coliform**, measured parameters are in within standard.

More population along side of Barlar creek and some duck, fish, cattle farming make higher contamination as coliform.

The recorded photos and Barlar creek water sampling point are shown as follows.



Figure 4-53 Barlar creek sampling points



Figure 4-54 photos of Barlar creek water sampling

Findings and Conclusion

- 1) From the analysis results of Barlar creek water at October 2018 and comparison with NEQ(E)G 2-3-1-8 there are
 - One datum as TSS is beyond the standard

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- Four data as phosphorous are beyond the standard
- Three data as oil and grease are beyond the standard

From the visual of Barlar creek there is concluded as not contaminated (eg. Water hyacinth, household rubbish)



Figure 4-55 visual condition of Barlar creek October 2018

- 2) From the analysis results of Barlar creek water at February 2023 and comparison with NEQ(E)G 2-3-1-8, there are
- Count of coliform bacteria are more than standard

From the visual of Barlar creek, there are concluded as

- Unknown wastewater inlet
- Contaminated household rubbish
- Increase of water hyacinths (VEDA)
- The flow of water is blocked due to Aung Ta Kon water control gate



3) Visual conditions of BarLar creek at, crrent as August 2023

The visual condition of Barlar creek at current, as August 2023 are shown as following.



Figure 4-57 visual condition of Barlar creek August 2023

There are concluded as

- July, August heavy rain
- Water flow freely, not blocking by Aung Ta Kon water control gate

4.3.6.5 Wastewater Quality

There are similar and difference between distillery and brewery. The main difference is that brewery produces fermented liquor and distillery produces distilled liquor. Brewery produces 90% ~ 95% of fermented volume and distillery produce 10 ~ 15% of fermented volume. Brewery issues wastewater less than distillery as 10 ~ 15 times.

Wastewater qualities are monitored by following procedures.

Methodology

Samples from inlet and outlet of wastewater treatment plant, and final discharge of wastewater from plant and analyzed.

Approaching way

The staff of Green Myanmar Environmental Services Co.,Ltd and employee of factory are in pre-discussing and take the samples together.

Sampling point

Wastewater samples collected points and photos of sampling are shown as following.



Figure 4-58 wastewater samples collecting point



Figure 4-59 photos of wastewater collecting

The analyzed results of wastewater samples are summarized as follows.

Table 4-36 Laboratory analyzed results of wastewaters February 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	5.8	7.8	7.3	6-9
2.	Total Suspended Solids	mg/l	148	38	28	50
3.	Biochemical Oxygen Demand	mg/l	980	650	180	50
4.	Chemical Oxygen Demand	mg/l	1850	1455	386	250
5.	Total Phosphorous	mg/l	4.3	29	16	2
6.	Oil and Grease	mg/l	9	7	6	10
7.	Total nitrogen	mg/l	16	32	23	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	>1100	23	>1100	400
9.	Temperature increase	°C	<3	<3	<3	<3

The parameters of wastewater beyond the standard are coloured at above laboratory samples results.

Conclusion

Final discharge wastewater should be in standard by improving the wastewater treatment procedure.

At Emerald Brewery Myanmar Limited, there has beer installed utilized the Realtime Online Monitoring System at 5th January 2021 by Forbe Marshall Pte. Ltd. The analyzed on Line data are shown as follow.



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date	pH (6-9)			total COD (<250)		
	Inlet	effluent	canteen pond	Inlet	effluent	canteen pond
1.7.23	6.0	7.6	7.2	1801	230	162
2.7.23	6.7	7.7	7.0	1898	190	155
3.7.23	8.9	7.5	7.3	2070	231	70
4.7.23	6.5	8.4	7.3	2144	184	99
5.7.23	9.3	7.7	7.2	2082	170	278
6.7.23	10.1	7.4	7.6	2105	141	293
7.7.23	9.8	7.8	7.5	2151	168	275
8.7.23	9.5	7.7	7.6	2191	181	181
9.7.23	7.1	8.0	7.5	1819	178	177
10.7.23	7.8	8.2	7.4	2201	194	264
11.7.23	5.9	8.5	7.5	2158	165	280
12.7.23	7.6	7.8	7.5	2217	176	271
13.7.23	6.7	7.8	7.5	2162	179	243
14.7.23	6.6	7.8	7.6	2192	191	213
15.7.23	8.6	6.4	8.2	2001	748	167
16.7.23	5.9	8.0	7.4	2090	138	156
17.7.23	10.2	7.7	7.6	2197	80	160
18.7.23	6.6	7.8	7.5	2051	190	187
19.7.23	6.3	7.8	7.5	1980	190	173
20.7.23	7.5	7.7	7.6	1600	215	135
21.7.23	5.6	7.9	7.6	2051	192	139
22.7.23	7.4	8.8	7.6	2097	157	149
23.7.23	8.6	7.7	7.6	2027	187	139
24.7.23	7.8	7.9	7.6	179	183	105
25.7.23	6.2	8.4	7.5	2140	94	175
26.7.23	8.3	9.6	7.6	2100	58	95
27.7.23	5.6	8.5	7.4	2103	81	162
28.7.23	5.1	5.6	7.3	2149	192	91
29.7.23	5.5	8.2	7.6	2180	120	142
30.7.23	5.4	7.6	7.6	2009	144	100
31.7.23	5.6	7.9	7.5	2051	170	81

TSS (<50)			TDS(<2000)			BOD ₅ (<50)	
Inlet	effluent	canteen pond	Inlet	effluent	canteen pond	Inlet	effluent
1020	1070	no measure	2980	2210	no measure	-	-
660	1410	no measure	2300	1920	no measure	-	-
580	1200	no measure	2100	1850	no measure	1020	6
560	520	no measure	2240	2660	no measure	1020	6
640	143	no measure	1820	1550	no measure	1020	6
806	445	no measure	1570	660	no measure	1080	5
420	123	no measure	1750	1250	no measure	1140	5
430	170	no measure	2520	1480	no measure	-	-
620	65	no measure	1090	1685	no measure	-	-
560	15	no measure	2680	1395	no measure	1050	6
200	85	no measure	2900	2205	no measure	1050	6
280	1790	no measure	2640	1340	no measure	1050	5
275	790	no measure	970	880	no measure	1080	5
185	1516	no measure	1080	950	no measure	1020	6
270	353	no measure	720	2010	no measure	-	-
217	87	no measure	2403	1593	no measure	-	-
160	1180	no measure	2260	1120	no measure	1180	5
255	738	no measure	1480	810	no measure	1120	5
225	1308	no measure	1170	220	no measure	1260	6
5110	905	no measure	760	985	no measure	1080	5
310	1075	no measure	1510	1205	no measure	1080	5
180	208	no measure	2150	4989	no measure	-	-
450	750	no measure	2210	1250	no measure	-	-
4133	1358	no measure	1040	1040	no measure	1080	5
310	42	no measure	2190	1798	no measure	1080	5
250	405	no measure	3350	15355	no measure	1080	6
340	400	no measure	2800	2740	no measure	1040	6
400	708	no measure	1310	2060	no measure	Waiting result	Waiting
390	45	no measure	2050	1812	no measure	-	-
340	320	no measure	2660	1040	no measure	-	-
230	50	no measure	1380	1310	no measure	Waiting result	Waiting

Figure 4-60 Online monitoring analyzed result of wastewaters



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Moreover the wastewaters as influent, effluent final discharge are sampled at 11th August 2023 and shown as follow.

ALARM Ecological Laboratory

Water Testing Result Report



Report Number: EL-WR-23-01861			Date : August 21, 2023		
Client Information			Sample Information		
Client Name : Emerald Brewery Myanmar Limited			Sample ID : 9993		
Organization : -			Sample Name : Influent		
Client ID : -			Sample Type / Source : Waste		
Registration Date & Time : 11.8.2023 ; 3:45 PM			Sampling Date & Time : 11.8.23;1:45 AM		
Contact : 09-799120360,09-420112894			Sample Location : Hlegu		
Email : thein.zaw@emeraldbrewery.com			Latitude : -		
Testing Purpose : For Monitoring			Longitude : -		
Testing Results					
<small>This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service. This report shall not be reproduced except in full, without written approval of the laboratory</small>					
Sr.	Quality Parameters	Results	Units	Emission Standard	Remarks
1	pH ¹	3.6	S.U	6.0 – 9.0 ^d	In Acid Range
2	Temperature ²	26	°C	±3 ⁺	-
3	TSS ³	252	mg/L	≤80 ^d	Above the limit
4	BOD ₅ ⁴	1480	mg/L	≤ 50 ^d	Above the limit
5	COD ⁵	3800	mg/L	≤ 250 ^d	Above the limit
6	Total Phosphorous ⁶	1.2	mg/L	≤2 ^d	Normal
7	Oil & Grease ⁷	49.3	mg/L	≤ 10 ^d	Above the limit
8	Total Nitrogen ⁷	6.8	mg/L	-	-
ND = Not Detected		*LOD* = Lower limit of detection		* - * = No Reference Standard	
Tested by		Checked by		Approved by	
 Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM		 Daw Lin Myat Aung Lab. Technician I Ecological Laboratory ALARM		 Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)	

No.237, Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com



ALARM Ecological Laboratory
Water Testing Result Report



Report Number: EL-WR-23-01862		Date : August 21, 2023			
Client Information Client Name : Emerald Brewery Myanmar Limited Organization : - Client ID : - Registration Date & Time : 11.8.2023 ; 3:45 PM Contact : 09-799120360,09-420112894 Email : thein.zaw@emeraldbrewery.com Testing Purpose : For Monitoring		Sample Information Sample ID : 9994 Sample Name : Effluent Sample Type / Source : Waste Sampling Date & Time : 11.8.23;2:00 PM Sample Location : Hlegu Latitude : - Longitude : -			
Testing Results <i>This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service. This report shall not be reproduced except in full, without written approval of the laboratory</i>					
Sr.	Quality Parameters	Results	Units	Emission Standard	Remarks
1	pH ¹	6.7	S.U	6.0 - 9.0 ¹	Normal
2	Temperature ²	26	°C	±3 ²	-
3	TSS ³	9	mg/L	≤50 ³	Normal
4	BOD ₅ ⁴	26	mg/L	≤ 50 ⁴	Normal
5	COD ⁵	76	mg/L	≤ 250 ⁴	Normal
6	Total Phosphorous ³	2.8	mg/L	≤2 ⁴	Above the limit
7	Oil & Grease ³	9	mg/L	≤ 10 ⁴	Normal
8	Total Nitrogen ³	3.2	mg/L	-	-
"ND" = Not Detected		"LOD" = Lower limit of detection		" - " = No Reference Standard	
Tested by		Checked by		Approved by	
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM		Daw Lin Myat Aung Lab. Technician I Ecological Laboratory ALARM		Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)	

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ALARM Ecological Laboratory

Water Testing Result Report



Report Number: EL-WR-23-01863		Date : August 21, 2023			
Client Information Client Name : Emerald Brewery Myanmar Limited Organization : - Client ID : - Registration Date & Time : 11.8.2023 ; 3:45 PM Contact : 09-799120360,09-420112894 Email : thein.zaw@emeraldbrewery.com Testing Purpose : For Monitoring		Sample Information Sample ID : 9995 Sample Name : Effluent (final discharge) Sample Type / Source : Waste Sampling Date & Time : 11.8.23;2:15 PM Sample Location : Hlegu Latitude : - Longitude : -			
Testing Results This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service. This report shall not be reproduced except in full, without written approval of the laboratory.					
Sr.	Quality Parameters	Results	Units	Emission Standard	Remarks
1	pH ¹	7	S.U	6.0 – 9.0 ²	Normal
2	Temperature ²	26	°C	±3 ³	-
3	TSS ³	12	mg/L	≤50 ⁴	Normal
4	BOD ₅ ⁵	28	mg/L	≤ 50 ⁴	Normal
5	COD ²	94	mg/L	≤ 250 ⁶	Normal
6	Total Phosphorous ²	1.2	mg/L	≤2 ⁷	Normal
7	Oil & Grease ⁸	8	mg/L	≤ 10 ⁴	Normal
8	Total Nitrogen ¹	2.6	mg/L	-	-
"ND" = Not Detected		"LOD" = Lower limit of detection		" - " = No Reference Standard	
Tested by		Checked by		Approved by	
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM		Daw Lin Myat Aung Lab. Technician I Ecological Laboratory ALARM		Dr. Aye Aye Win Laboratory In Charge Ecological Laboratory (ALARM)	

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township, Yangon.
 Tel: 09-407496078, Email: aelab.2022@gmail.com

Figure 4-61 Laboratory results of wastewater at August 2023





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Ecological Laboratory



စိမ်းလန်းအသိမြှင့်တင်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

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စာအမှတ်/Reference Number: EL (M)-R / 1152

နေ့စွဲ/Date: 21th August, 2023

ဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်/ Laboratory Analysis Report

နမူနာရာဇဝင် / Sample Profile

နမူနာအမည် / Sample Name	Influent	နမူနာအမှတ် / Sample ID	1152	
နေရာ (မြို့နယ်) / Location (Township)	Hlegu	လတ္တီတွဒ် / Latitude		
နေရာ (တိုင်း/ပြည်နယ်) / Location (Region/State)	Yangon	လောင်ဂျီတွဒ် / Longitude		
ပေးပို့သူအမည် / Sender Name	Emerald Brewery Myanmar Limited	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) / Sampling Time (Date, Time)	11.8.2023	1:45 PM
အဖွဲ့အစည်း / Organisation	Emerald Brewery Myanmar Limited			
ဆက်သွယ်ရန် / Contact	09420112894	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) / Arriving Time (Date, Time)	11.8.2023	3:45 PM

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအစဉ်သည် ပေးပို့သူမှပိုမိုဆောင်ရွက်ရန်အတွက်သာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် / Sr.	အရည်အသွေးညွှန်းကိန်း / Quality Parameter	ရလဒ် အဖြေ / Results	နည်းစဉ် / Method	စံသတ်မှတ်ချက် / Drinking Standard	မှတ်ချက် / Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	210	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Plate count method	0	
7	Total <i>E.coli</i> count (CFU/ml)		3M Plate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး / Tested by

May Myat Nyein
Research Assistant
ALARM

စစ်ဆေးပြီး / Checked by

May Zaw
Research Assistant
ALARM

တာဝန်ခံ / Approved by

Ni Tar Nwe
Research Scientist





ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory



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စာအမှတ်/Reference Number: EL (M)-R / 1153

နေ့စွဲ/Date: 21st August, 2023

ဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာထုစင် /Sample Profile

နမူနာအမည် /Sample Name	Effluent	နမူနာအမှတ် / Sample ID	1153	
နေရာ (မြို့နယ်) Location (Township)	Hlegu	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Yangon	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Emerald Brewery Myanmar Limited	နမူနာကောက်ယူချိန် (နေ့ နာရီ) Sampling Time (Date, Time)	11.8.2023	2:00 PM
အဖွဲ့အစည်း /Organisation	Emerald Brewery Myanmar Limited	နမူနာရောက်ရှိချိန် (နေ့ နာရီ) Arriving Time (Date, Time)	11.8.2023	3:45 PM
ဆက်သွယ်ရန် /Contact	09420112894			

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲခန်းစမ်းသပ်မှုအစီအရင်ခံစာသည် ပေးပို့သူမှပေးဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	9	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total E.coli count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး

Tested by

May Myat Nyein
Research Assistant
ALARM

စစ်ဆေးပြီး

Checked by

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Research Assistant
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တာဝန်ခံ

Approved by

Ni Tar Nwe
Research Scientist
ALARM





ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory



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စာအမှတ်/Reference Number: EL (M)-R / 1154

နေ့စွဲ/Date: 21th August, 2023

ဓာတ်ခွဲခန်းစမ်းသေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာအမည် /Sample Profile

နမူနာအမည် /Sample Name	Effluent (Final discharge)	နမူနာအမှတ် / Sample ID	1154	
နေရာ (မြို့နယ်) Location (Township)	Hlegu	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Yangon	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	Emerald Brewery Myanmar Limited	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	11.8.2023	2:15 PM
အဖွဲ့အစည်း /Organisation	Emerald Brewery Myanmar Limited	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	11.8.2023	3:45 PM
ဆက်သွယ်ရန် /Contact	09420112894			

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲခန်းစမ်းသေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	9	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total <i>E.coli</i> count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး

Tested by

May Myat Nyein
Research Assistant
ALARM

စစ်ဆေးပြီး

Checked by

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Research Assistant
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Approved by

Ni Tar Nwe
Research Scientist
ALARM

Figure 4-62 Laboratory results of wastewater at August 2023(Total coliform count)

The analyzed results of above laboratory are summarized as table 4-37 and as follow.



Table 4-37 Laboratory analyzed results of wastewaters August 2023

Sr. No.	Parameters	Unit	inlet of wastewater treatment plant	Outlet of wastewater treatment plant	Final discharge wastewater	Standard (NEQEG) Brewery & Distilleries
1.	pH	-	3.6	6.7	7	6-9
2.	Total Suspended Solids	mg/l	252	9	12	50
3.	Biochemical Oxygen Demand	mg/l	1480	26	28	50
4.	Chemical Oxygen Demand	mg/l	3800	76	94	250
5.	Total Phosphorous	mg/l	1.2	2.8	1.2	2
6.	Oil and Grease	mg/l	49.5	9	8	10
7.	Total nitrogen	mg/l	6.8	3.2	2.6	10
8.	Total coliform count (MPN/100 ml) Presumption test)	ml	210	9	9	400
9.	Temperature increase	°C	<3	<3	<3	<3

From the laboratory analysis results, all parameter of effluent and final discharge wastewater are in standards.

4.3.6.6 Soil Quality

In order to monitor the soil quality at construction phase October 2018, soil sample was collected from the project site and tested at GMES laboratory. The sample location, photo of sample and analyzed results are shown as following.



Figure4-63 Soil Quality SampLineg Point October 2018



Figure 4-64 Photo of Soil Sample Taking from the Project Site October 2018

Table 4-38 Results of Soil Quality at October 2018

No	Parameters	Unit	Analysis Value
			Soil (Project site)
1	pH	-	6.1
2	Chloride (Cl)	g/kg soil	0.15
3	Total Iron (Fe)	mg/kg soil	7.5
4	Copper	mg/kg soil	ND
5	Cyanide (CN)	g/kg soil	0.15

6	Aluminum	mg/kg soil	0.35
7	Manganese (Mn)	mg/kg soil	ND
8	Arsenic (As)	mg/kg soil	ND
9	P- AlkaLineity	mmol/l extract	0
10	Total AlkaLineity	mmol/l extract	0.8
11	Extractable Acidity	cmol/kg soil	4.25

Note: ND- Not Detectable

Moreover, soil was sampled and analyzed at February 2023, operation phase.

Soil was sampled location at the premise of the Emerald Brewery Factory on Feb.2023. The location coordinates are 17°1' 1.87' N and 96°9' 19.1' E and shown as following.



Figure 4-65 soil sampLineg point location

The analyzed results of soil are following.

Table 4-39 Laboratory analyzed results of soil sampLineg at February 2023

No.	Parameters	Unit	Analysis Value	Minimum Measurement Range of Methods
1.	Aluminum	mg/kg soil	<0.05	0.05 mg/kg soil
2.	Arsenic	mg/kg soil	<0.025	0.025 mg/kg soil
3.	Chloride	g/kg soil	0.017	0.025 g/kg soil
4.	Copper	mg/kg soil	0.05	0.25 mg/kg soil
5.	Cyanide	mg/kg soil	<0.05	0.05 mg/kg soil
6.	Extractable Acidity	cmol/kg soil	2.5	0.25 cmol/kg soil

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

7.	Manganese	mg/kg soil	<1	1 mg/kg soil
8.	P - AlkaLineity	mmol/l extract	0	0.2 mmol/l extract
9.	pH	-	6.8	0.1
10.	Total AlkaLineity	mmol/l extract	1.8	0.2 mmol/l extract
11.	Total Iron	mg/kg soil	<0.5	0.5 mg/kg soil

Analyzed results of soil are noted as baseLine data and by comparing the two consecutive values in order to conclude pollution is better of worse.

Table 4-40 Comparision table of analyzed results of soil at October 2018 with those of February 2023

No	Parameters	Unit	Analyzed result Oct 2018	Analyzed result Feb2018	More / Less
1	pH	-	6.1	6.8	+0.7
2	Chloride (Cl)	g/kg soil	0.15	0.017	-0.133
3	Total Iron (Fe)	mg/kg soil	7.5	<0.5	-7.0
4	Copper	mg/kg soil	ND	0.05	+0.05
5	Cyanide (CN)	g/kg soil	0.15	ND	-0.15
6	Aluminum	mg/kg soil	0.35	<0.05	-0.3
7	Manganese (Mn)	mg/kg soil	ND	<01	+<01
8	Arsenic (As)	mg/kg soil	ND	<0.025	+0.025
9	P- AlkaLineity	mmol/l extract	0	0	-
10	Total AlkaLineity	mmol/l extract	0.8	1.8	+1.0
11	Extractable Acidity	cmol/kg soil	4.25	2.5	-1.75

From the above comparison table, pH, copper, manganese, arsenic and total alkaLineity are more and chloride, total iron, caynide, aluminum, p-alkaLineity and extractable acidity are less. More and less quality are a little and it may conclude, the soil cyanide did not larged significantly.

4.3.6.7 Vibration Measurement

The vibration level was measured at the near wastewater area, main entrance of gate and monastery (Amayawatty). The location vibration measurement point photo and results are shown as following.

Table 4-41 Location of vibration measurement points

No.	Point Name	Description	Coordinate Points
1	VMP-1	Near wastewater area	17° 1'11.90"N, 96° 9'25.16"E



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

2	VMP-2	Amayawatty Monastery	17° 1'3.32"N, 96° 9'24.69"E
3	VMP-3	Near Security Gate	17° 1'12.55"N 96° 9'25.32"E

VMP – Vibration Measurement Points

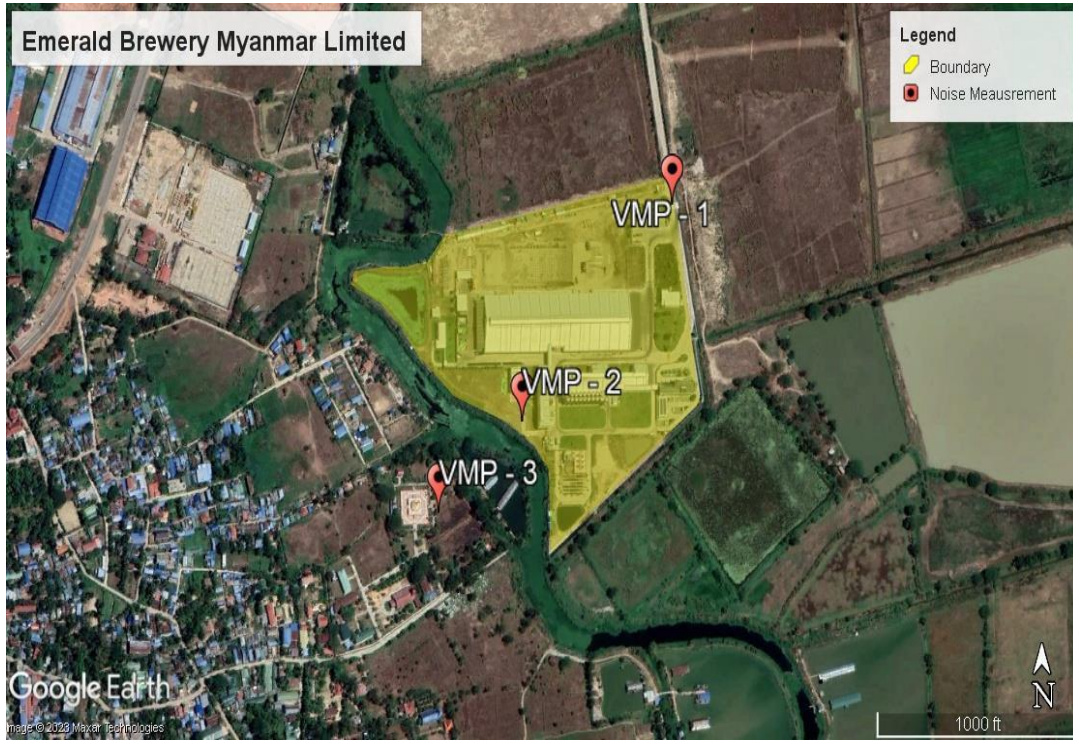


Figure 4-66 The location of vibration measurement points

Table 4-42 Summary of Vibration Monitoring Results

Instrument ID	Date	Maximum Peak Vector Sum (mm/s)	Remark
Monastery	7/2/2023 to 8/2/2023	0.67	Max: PVS on 7 th , February 2023 11:15 AM
Near Wastewater Treatment Area/ Back side of factory Premises	7/2/2023 to 8/2/2023	0.93	Max: PVS on 7 th , February 2023 13:48 PM
Near Entrance Gate	8/2/2023 to 9/2/2023	1.53	Max: PVS on 8 th , February 2023 5:03 PM

Remark : Vibration is less than Threshold limit 0.5 mm/sec not recorded the data.

Comparison Standard for above measuring Results

Type of Structure	Peak Particle Velocity (mm/sec)		
	Acceptable Level	Moderate Level	Extreme Level
Commercial and Industrial Building (Type-1)	20	20 ~ 40	40 ~ 50
Dwellings (Type-2)	5	5 ~ 15	15 ~ 20
Ancient and Historic Buildings (Type-3)	3	3 ~ 8	8 ~ 10



Figure 4-67 photos of vibration measurement

Conclusion

Vibration measurement results in maximum Peak Vector (pvs-mm/sec) are 0.67, 0.93 and 1.53 at manastery, near wastewater treatment area and near entrance gate respectively. The maximum PVS for ancient and historic buildings is 3 mm/sec and as so three vibration results are in limit.

4.4 Biological Characteristics

4.4.1 Introduction for Biodiversity

Biodiversity is the vairability among living forms (including plants and animals) from all sources including, inter alia, terrestrial, mairne and other aquatic ecosystems and



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the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.” It is the variety of life on earth at all levels, from genes to worldwide populations of the same species; from communities of species sharing the same small area of habitat to worldwide ecosystems defined by Convention on Biological Diversity (2014).

Biodiversity supports many lives and livelihoods. It does this by providing essential services. Biodiversity is a source of harvestable goods including food, medicines and building materials; essential for regulation of natural processes and the earth’s life support systems, e.g., carbon sequestration, soil formation, and purification of water; essential for pollination of commercially valuable crops and biological control of pests and diseases; a source of spiritual and religious enrichment and well-being. The first World Summit on Environment and Development in Rio de Janeiro (1992) emphasized the importance of biodiversity as the basis of our very existence, to be used wisely and sustainably and conserved for current and future generations. The main threats to global biodiversity are associated with human activities causing habitat loss or damage. Among the many human activities that cause habitat loss, industrial and urban development produces some of the greatest local extinction rates and frequently eliminates the large majority of native species (Vale and Vale 1976, Luniak 1994, Kowarik 1995, Marzluff 2001).

Biodiversity impact assessment (BIA), a subset of EIA, can be defined as an evaluation exercise which involves identifying, measuring, quantifying, valuing and internalizing the unintended impacts (on biodiversity) of development interventions. In terms of policy, biodiversity impact assessment is meant to predict and quantify biodiversity impacts to design mitigation measures. For projects with biodiversity impacts, scoping refers to the delineation of the temporal, spatial and diversity dimensions of the impacts. With the competing demand on water resources and water reuse, discharge of industrial effluents into the aquatic environment has become an important issue.

Much attention has been placed on the impact of industrial wastewater on water bodies worldwide due to accumulation of organic and inorganic suspended matter, nitrite, nitrate as well as soluble phosphorus in the water bodies which will be negatively impacted on aquatic organisms including fish and birds. Due to recent environmental pollution problems that have emerged, monitoring and controlling of quality of liquid effluents being discharged into natural water bodies (<https://waset.org/publications/.../characterization-of-brewery-wastewater-composition>). The survey record will serve as biological database before the implementation of the project in the proposed project area.

Scope of Survey range on Biodiversity

(Terrestrial and aquatic organisms) for a proposed project, Manufacturing and Distribution of Beer in Hlegu Township was assigned about 1.5 km radius from core area of the project site with the reasons,

According to pre-survey,



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- *Terrestrial environment of the proposed project area is open land existing few common species of small trees, shrubs, birds, amphibians and reptiles, flying insects such as butterfly and dragonfly occur, considered as not biodiversity significant area and has also no connection with any other wildlife protected/conservation areas.*
- *The creek known as Barlar Chaung (a branch of Ngamoeyeik Chaung/River) beside the project site which is considered as point source of discharge-water body from the Beer Plant/industry.*
- *The creek is not significant area for biodiversity. Few common water plants, fish (small fish), bird and other common species are observed. No IUCN Red list species are found.*
- *The creek is not connected to any other protected wetland areas or sensitive aquatic ecosystem.*

Treated-Discharged water from BEER Plant will be sunk or deposited nearby the water of the creek, as the water current is very slow in the creek. The effect of discharged water on aquatic organisms will be localized and site specific.

Remarks on the finding significance of aquatic species (invasive species) in the water of Barlar Creek nearby the proposed project area

The proposed project area is on the low land and close to the Barlar Creek. The creek is one the branches of Ngamoeyeik Chaung/River. The water of Creek is shallow less than five feet depth and generally less than one meter and also the water is more turbid found during the study period before starting the project. Barlar creek is considered as already polluted in the water. Small numbers of fish and bird species were already observed, instead invasive species were largely encountered. They are *Mimosa pigra* (Ye-subok), *Pomacea canaliculate* (Golden Apple Snail) *Hypostomus Plecostomus* (Sucker-Mouth Fish). Those invasive species are dangerous for the native species means it can reduce and disappear the native species and also destroy the environment where they exist. This observation of invasive species in the Barlar creek is great concern as they can spread to the main river of Ngamoeyeik Chaung/river. But it may not relate by the Project activities. However, the project developer should be cooperated if there have a management plan to control/remove those invasive species.

4.4.2 Purposes of Assessment for Biodiversity

The purposes of assessment for Biodiversity are to identify:

- *the potential issues and impacts on flora and fauna species to be considered at the whole project life*
- *the key information for decision-making; and*
- *the facts to support the Terms of References (ToR)*



4.4.3 Regulatory and Legislative Overview

Regards on biodiversity conservation and to reduce the impacts, Myanmar's Environmental laws relating to biological conservation and management issued by the Ministry of Natural Resources and Environment Conservation (MONREC) are listed in below table.

Table 4-43 Environmental Law related to Biological Matters

No.	Laws and Regulations	Description
1.	The Forest Law, 2018	Provisions to conserve water, soil, biological diversity and the environment; sustain forest produce yields; protect forest cover; establish forest and village firewood plantations; sustainably extract and transport forest products
2.	Biodiversity and Protected Area Law 2018	Provision of biodiversity and wildlife protection, natural areas conservation, carrying out the protection and conservation of biodiversity, ecosystems and protected areas as well as protection of migratory birds in accordance with International Conventions acceded by the State, protecting the endangered species of wildlife and their natural habitats and contribution for the development of research on natural science.

4.4.4 Survey

Survey will be carried out for two days in and surrounding area of the project site. The surrounding area is 1.5 km radius of the project site included terrestrial, west portion of Barlar Creek on October 2018. On February 2023 final necessary was carried at project site and project surrounding to be finalized.

- *Flora and Fauna species in the terrestrial environment of the surrounding area of the project site.*
- *Flora in and surrounding area of the project site will be surveyed on vegetation and list of tree species, and abundance class, Fauna in and surrounding area of the project site will be surveyed on terrestrial animals (amphibians & reptiles and birds)*
- *Fauna species (aquatic animals e.g. fish and birds etc.) in the aquatic environment of the surrounding area of the project site.*
- *IUCN Red list species and Non-Indigenous Species (NIS) will be identified.*

4.4.5 Description of the Study Area and Project Environment

The project site is located in southern direction from No. (3) Highway Road, Hlegu Township, Yangon Region. The total area of land is 32.84 acres, and land use for the buildings (site area) is 18 acres, the total area of entrance road to the project site is



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approximately (2) acres and is approximately 1.2 km in length. The central coordinate point of the project site is at 96° 09' 18.41 E and 17° 01' 7.78" N. According to land cover classification, a total of about (20) acre was used to remove the grass vegetation for both areas of project site and entrance road.

The two villages, Nwel Khwe San Pya and Kone Ta La Baund, situate very near on the other side of Barlar Creek. The main characteristics of the surrounding areas of the project site are grassland areas with scattered trees, creek, and villages with industries, agricultural lands and fish farms.

Some villagers rely on fishing and other natural resources from creek. Agricultural lands and wetlands are situated in the eastern direction, within 1km of the project site. Also, fish farms and some agricultural lands are found in the southern direction of the project site.

Generally, the project site is water logging areas (mostly in rainy season) in which mostly grass species and a few shrubs and herbs are growing. At present situation, vegetation in the proposed project area are mainly grasses because of land preparation. A branch of Nga Moe Yeik Chung, namely Barlar Creek which flows from south to north, and lies beside the project site in west direction.

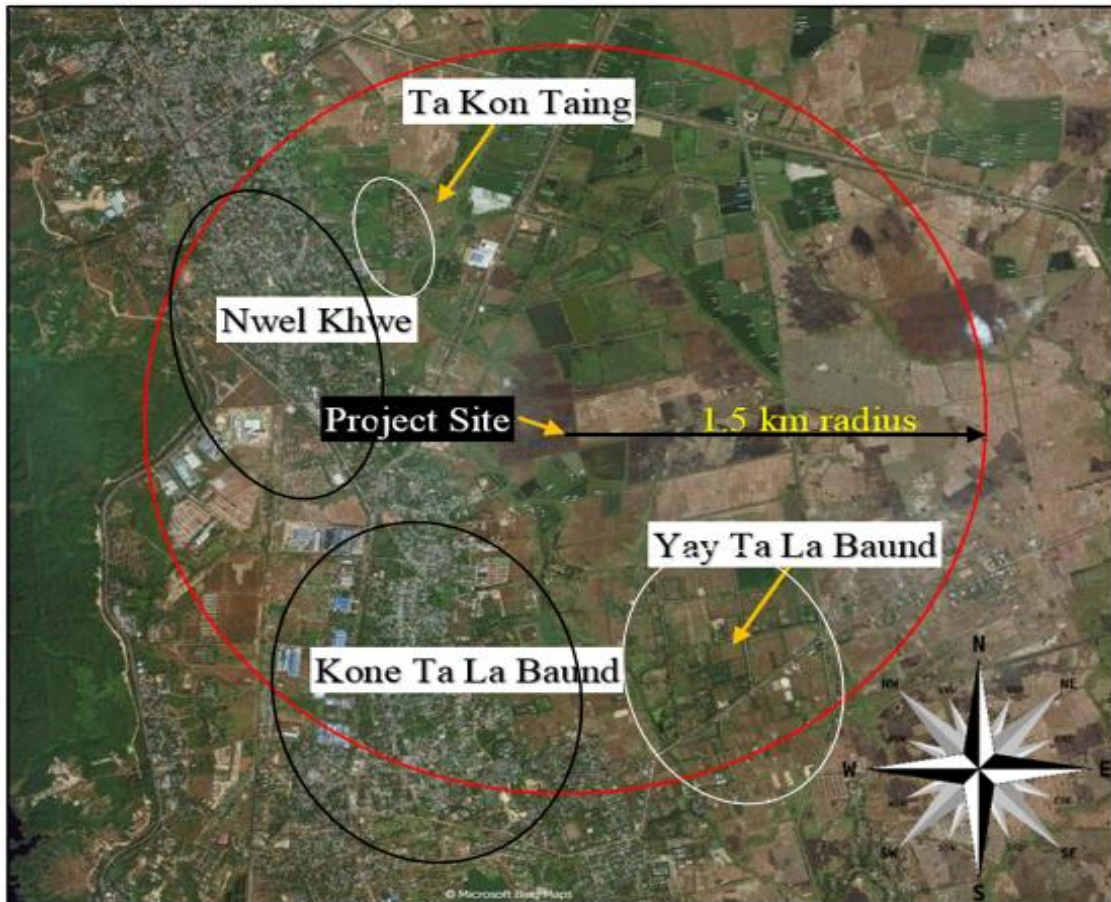


Figure 4-68 Nearest Villages (Especially Nwel Khwe San Pya and Kone Ta La Baund)

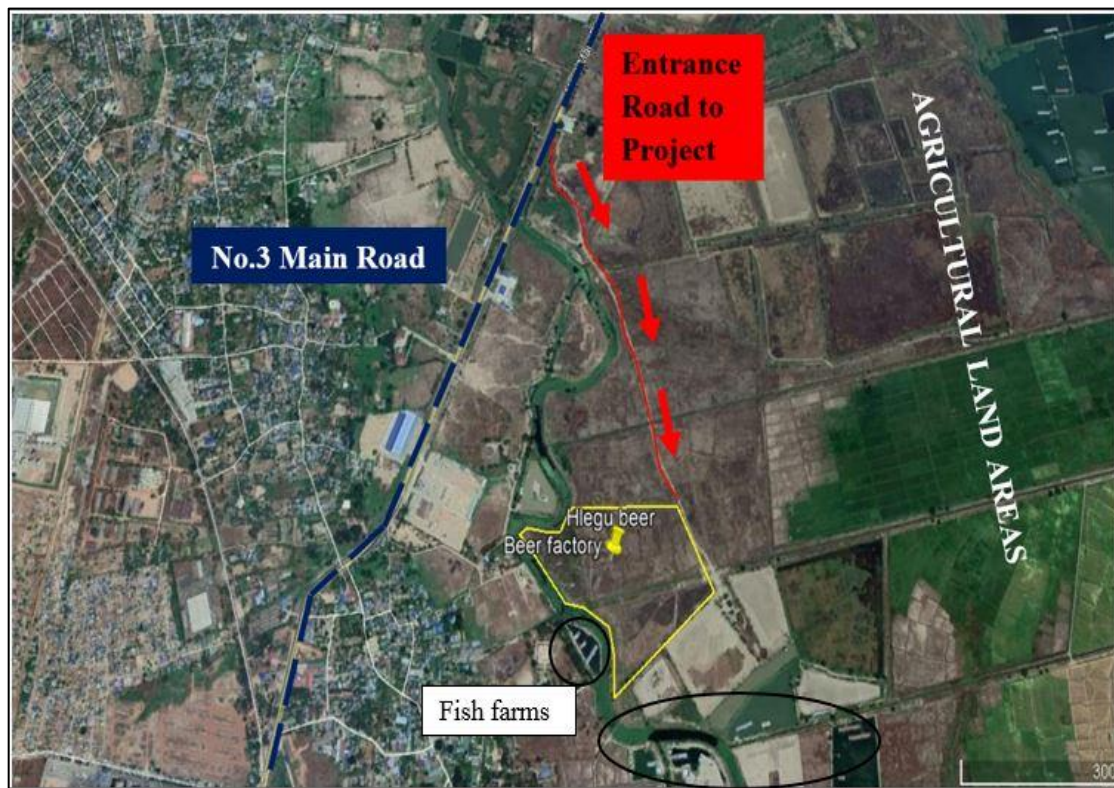


Figure 4-69 Surrounding Environmental Conditions of the Project

4.4.6 Survey Range on Biodiversity

Survey range on Biodiversity (Terrestrial and aquatic organisms) for a proposed project, Manufacturing and Distribution of Beer in Hlegu Township was assigned about 1.5 km radius from core area of the project site with the reasons,

According to pre-survey and final survey

- *Terrestrial environment of the proposed project area is open land existing few common species of small trees, shrubs, birds, amphibians and reptiles, flying insects such as butterfly and dragonfly occur, considered as not biodiversity significant area and have also no connection with any other wildlife protected/conservation areas.*
- *The creek known as Barlar Chaung (a branch of Ngamoeyeik Chaung/River) beside the project site which is considered as point source of discharge-water body from the Beer Plant/industry.*
- *The creek is not significant area for biodiversity. Few common water plants, fish (small fish), bird and other common species are observed. No IUCN Red list species are found.*
- *The creek is not connected to any other protected wetland areas or sensitive aquatic ecosystem.*

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Treated-Discharged water from BEER Plant will be sunk or deposited nearby the creek, as the water current is very slow in the creek. The effect of discharged water on aquatic organisms will be localized and site specific.

4.4.7 Survey Methodology

4.4.7.1 Land Cover Classification

Fieldwork was conducted using draft classification maps derived from Google images, especially Google Earth and UTM maps using as guides. Study area plot and others related land use types were collected by using GPS and information regarding respective sites was noted. Data were projected to Universal Transverse Mercator (UTM) projection system zone 46 N and datum of World Geodetic System 84 (WGS 1984). The map-processing was made using ArcGIS 10.1 software.

4.4.7.2 Data Collection

Direct observation method is used to collect necessary data and information. Specimen collection was taken from the core area and surrounding area of the project site. In surrounding area, data collection will be taken within 1.5 km radius of project site. GIS site mapping is also created for biological sample study area. And also, land cover classification will be conducted by GIS software, Identification and list of the plant and animal species inhabiting in the surrounding area. In data collection of flora and fauna, a total of (20) sample points (3m x 3m quadrats), (8) sample points for aquatic flora and fauna species and walking-through survey method will be used. Also record the observed frequency and abundance class of individual species of both plants and animals. To investigate fish species richness and abundance, interview survey will be taken with local fishermen.

4.4.7.3 Data Collection of Plant Species

Three types of vegetation areas are classified for the surroundings of the project site in which –

- *Waterlogging areas,*
- *Aquatic areas of the Barlar Creek and roadside areas of the two villages*
- *No. (3) Main Road*

For plant species of waterlogging areas, random sample method with 3m x 3m quadrat size is used to determine the frequency or abundance of species in this area. For plant species of aquatic areas along the Barlar Creek and roadside areas, the plant species are recorded and listed by boat and by walking-through survey areas within 1.5 km radius of the project site.



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A Global Positioning System (GPS) is used to present the sample plots and the recorded places of aquatic species from the Barlar Creek. Survey tracks are applied by walking through survey in field based on google map and GPS. After this, to created colorful tracks and sampLineg points on map, Adobe Photoshop Software is used.

4.4.7.4 Data Collection of Animals

(a) Specimen collection of Herpetofauna

The Survey work mainly involves walking and visual inspection with active searching for amphibians and reptiles. These animals are observed in potential resting and foraging places in near water bodies and hidden places under stones, logs and among the bushes and trees. Guide books and camera were used to identify the observed species. Interview survey was also used for additional information.

(b) Observation on Avifauna

Birds were studied using the point count methods by using the field guide books with help of the binoculars, camera and GPS. Species identification, observed numbers of birds, habitat utilization was examined. Point count and opportunistic methods were used to census the species richness and point counting was used to get the relative measure of bird abundance. Identification of birds were confirmed using *Bird History Records* (by Author Kyaw Nyunt Lwin and Khin Ma Ma Thwin (2004) and Woo-Shin Lee 2018).

(c) Specimen collection of Fish

Fish samples were collected with the help of fishermen who are fishing along the river nearby the project area. Fish sample collection was made by use of drifted gill net, traditional way of rod and Line fishing and identification was made by *FAO (2012)* and *Fish base 2015*.

4.4.7.5 Data Analysis of Plant Species

Samples of species were not directly identified in field. After field trip, plant identification is conducted based on available literatures such as key to the families of the flowering plants, issued by Department of Botany, Yangon University (1994), Backer *et. al.*(1963), Kress *et. al.* (2003), Gardner *et al.* (2000), ***Caton et al. etc.***, and verification is also conducted by recorded field photographs and some useful internet websites. For this biodiversity survey, most scientific names and family names of flora are based on the literature of “*A checklist of the trees, shrubs, herbs and climbers of Myanmar*” (2003).

Especially for waterlogging grassland areas, a total of (20) random sampLineg points with 3m x 3m quadrat sizes is set up and recorded the data samples of species. Data of collected from quadrat sampLineg is arranged in



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spreadsheet with excel software and analyzed using the following formulae to measure the species frequency of this area found in **Curtis and McIntosh (1951)**. Finally, the threatened levels of plant species of the survey area are checked and mentioned in accordance with “*The IUCN Red List of Threatened Species, 2017*” (<http://www.iucnredlist.org/details/199856/0>).

$$\% \text{ Frequency} = \frac{\text{Total number of quadrats in which species occur}}{\text{Total number of quadrats studied}} \times 100$$

4.4.8 Classification of Impact Levels

Impacts caused by the project activity are classified into four categories: Small, Moderate, Large and Very large followed by the Bureau of Land Management by the US (2016).

Table 4-44 Classification of Impact Levels and Caused Event on Biodiversity

No.	Impact level	Caused events
1	Low (L)	This is an impact that is limited to the immediate project area, affects a relatively small proportion of the local population (less than 10%), and does not result in a measurable change in carrying capacity or population size in the affected area.
2	Moderate (M)	This is an impact that extends beyond the immediate project area, affects an intermediate proportion of the local population (10 to 30%), and results in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area.
3	High (H)	This is an impact that extends beyond the immediate project area, could affect more than 30% of a local population, and could result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area.
4	Very High (VH)	This is an impact that extends beyond the immediate project area, could affect more than 50% of a local population, and could result in a very large, measurable, and destabilizing change in carrying capacity or population size in the affected area.

4.4.9 Impact Analysis about Biodiversity

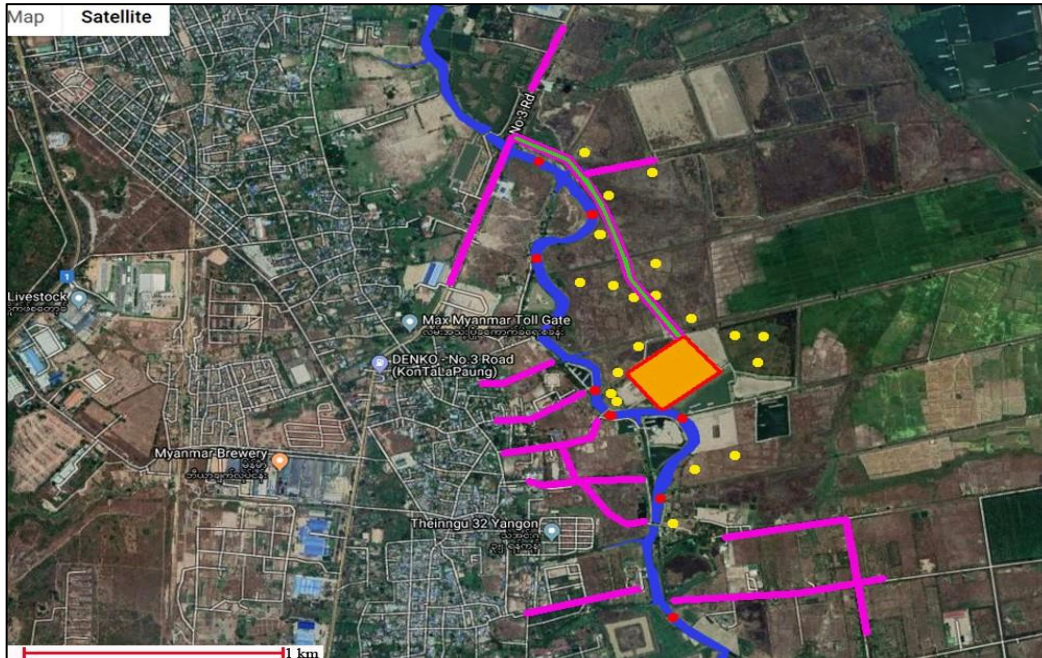
Impacts caused by the project’s activities can become the significant points on existing flora and fauna in and around the project area. They are anticipated followed by the Bureau of Land Management by the US (2016). According to the Bureau, the following factors are used in determining impact significance and magnitude. These factors are:

- Area of influence,



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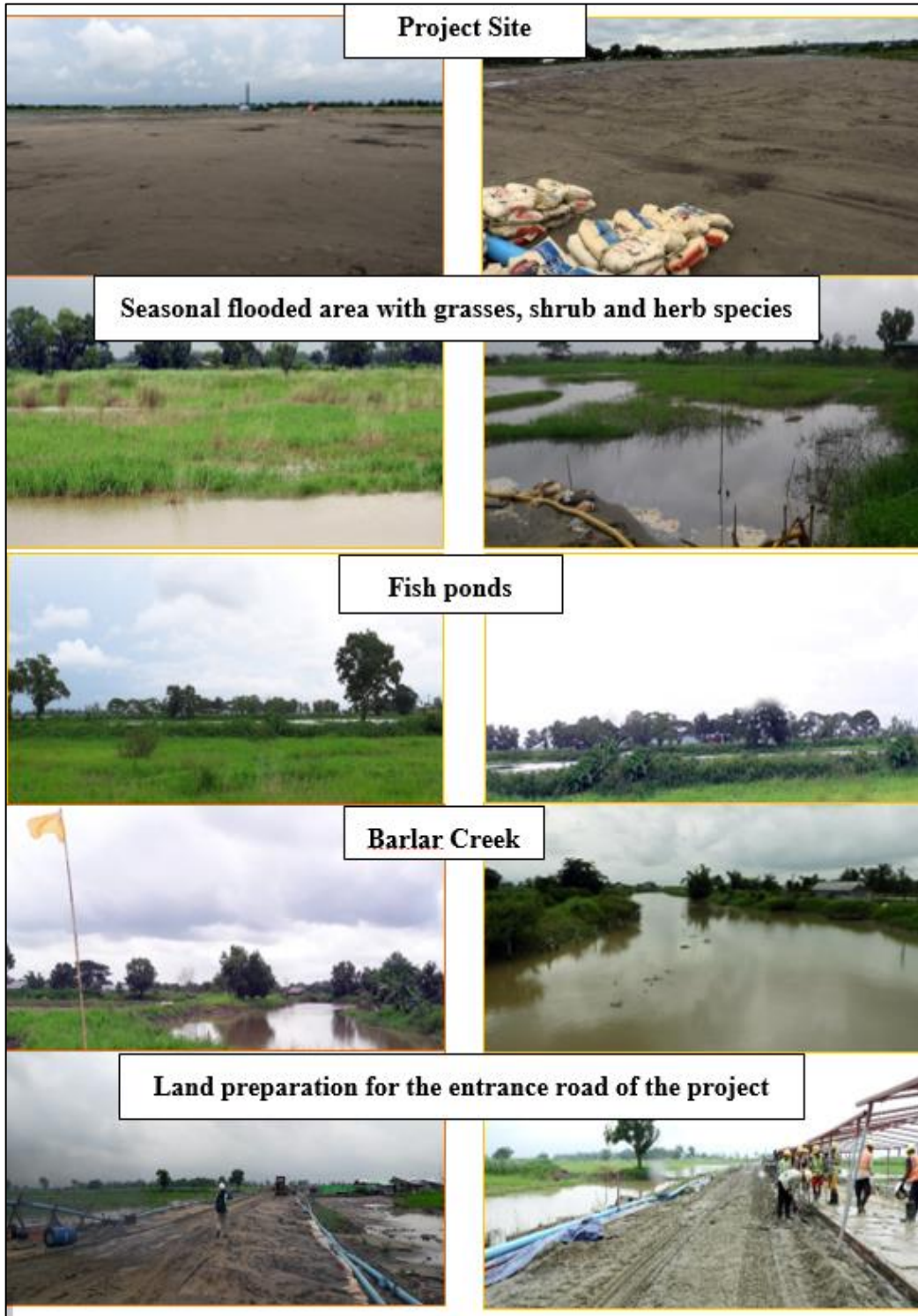
- Percentage of resource affected,
- Persistence of impacts,
- Sensitivity of resources,
- Status of resources,
- Regulatory status and
- Social values.



Legends:

- A total of (20) sampling points (3m x 3m quadrate size) for flora and fauna observation
- A total of (8) sampling points in the Barlar creek for flora and fauna observation
- Survey tracks for flora and fauna observation
- Barlar creek

Figure 4-70 Map of Survey Points, Tracks for Flora and Fauna Observation



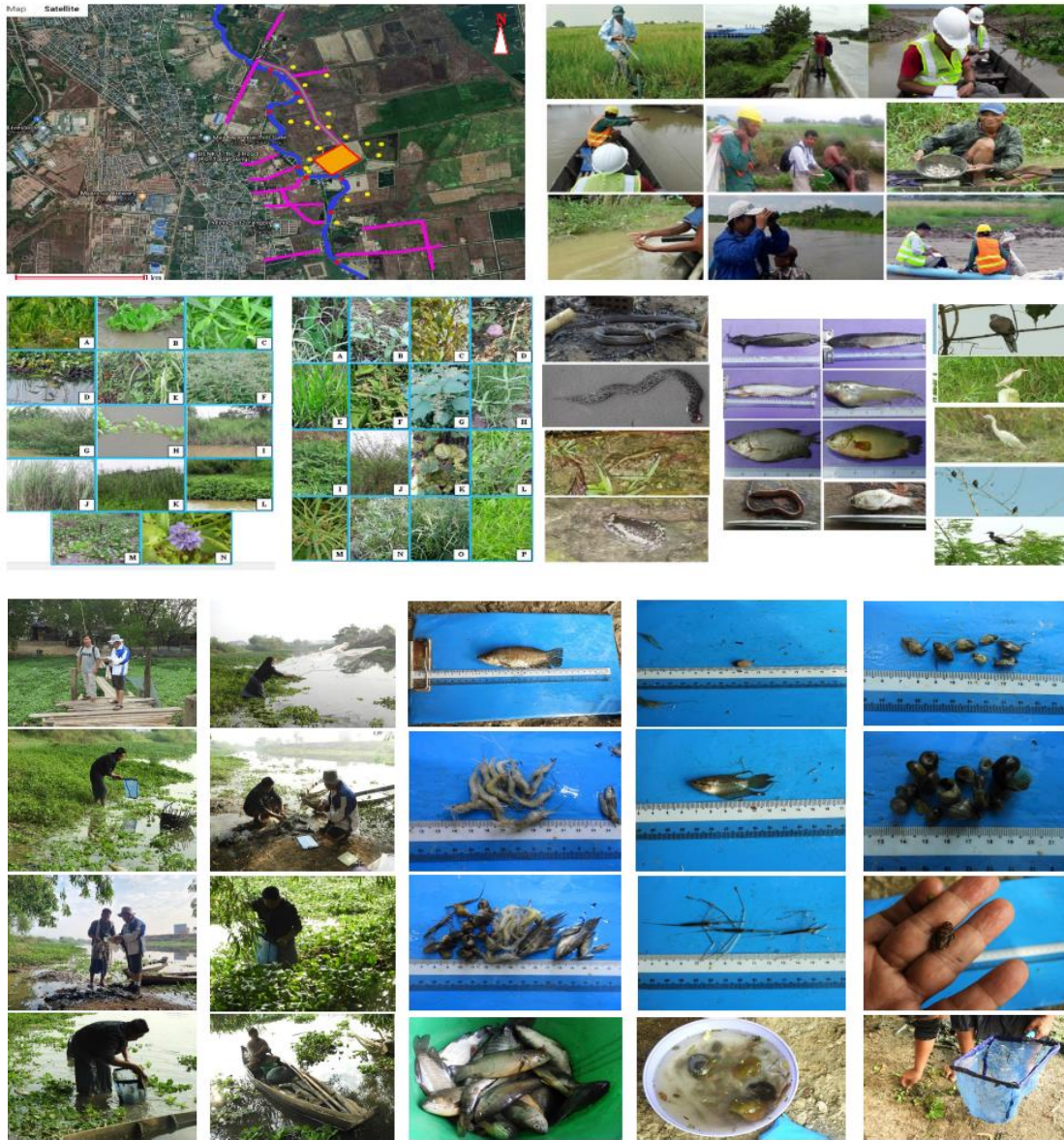


Figure 4-71 Project Site and Its Presently Surrounded Environment

4.4.10 Discussion for Plants and Animals

The project area is aimed to implement the factory for the production of beverage. It can be released industrial wastes when operation starts. Bernatzky (1978) defined as any substance that is released intentionally or inadvertently by man into the environment that may have adverse effect on environmental health. The different forms of waste can be released into atmosphere and reached into the Barlar Creek through the channel of the project site. In this condition, plant species of the surrounding areas need to be prevented or filtrated from air and water pollutants released from the brewery industry.

At present situation, no vegetation was occurred in the project site and entrance road because of land preparation. According to flora survey, the two areas of the project site and

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entrance road are probably grasslands before this development. In fact, grasslands are characterized as lands dominated by grasses rather than large shrubs or trees. According to land cover classification, a total of 20 acre of grassland area has been used. Any forest structures and protected areas were not found in the surroundings of the project site. Actually, filtrated main vegetation of the project development site was mainly found in water logging areas, Barlar Creek, two nearest villages, fields, and along the No. (3) Main Road.

This Barlar Creek is considered as an important aquatic ecosystem and also for small scale fishery for local people for domestic consumption and their livelihood. Thus, this creek is important for local people which should be managed as much as their sustainability of fish resources by arranging wastewater management system from the factory release into the river.

Terrestrial flora and fauna is not abundant in and around the project area. Small freshwater fish species are mostly found. And the birds are found both terrestrial and aquatic lives.



စီမံကိန်းဧရိယာနှင့်ပတ်ဝန်းကျင် ဇီဝဝန်းကျင်အခြေအနေ (၂၀၁၈)



အပင်နှင့်သတ္တဝါ ဇီဝပတ်ဝန်းကျင် ကွင်းဆင်းလေ့လာမှုမှတ်တမ်းပုံများ ၂၀၁၈



ဘားလားချောင်းမှငါးဖမ်းကိရိယာများ



လေ့လာမှုရလဒ်

၁) အပင်မျိုးစိတ် (၅၃) မျိုး ရေပေါက်ပင် (၁၅) မျိုး

၂) သတ္တဝါမျိုးစိတ် (၄၁) မျိုး ငါးမျိုးစိတ် (၁၄) မျိုး

ဒေသမျိုးရင်းမဟုတ်သည့်အပင်မျိုးစိတ် (၃) မျိုး
ရေဆူးပုတ်၊ ဗေဒါ၊ မလေးရှားပိတောက်

ဒေသမျိုးရင်းမဟုတ်သည့်သတ္တဝါမျိုးစိတ် (၃) မျိုး

ရွှေခရု၊ စုတ်ခွက်ငါး၊ တီလားဗီးယား

ဒေသမျိုးရင်းမဟုတ်သည့်အပင်မျိုးစိတ် (၃) မျိုး ရေဆူးပုတ်၊ ဗေဒါ၊ မလေးရှားပိတောက်



ဒေသမျိုးရင်းမဟုတ်သည့်သတ္တဝါမျိုးစိတ် (၃) မျိုး

ရွှေခရု၊ စုတ်ခွက်ငါး၊ တီလားဗီးယား



လေ့လာမှုရလဒ်အပေါ် သုံးသပ်ချက်

၁) စီမံကိန်းပတ်ဝန်းကျင်တွင် ထိခိုက်လွယ်သည့် ဇီဝနှင့်ပတ်ဝန်းကျင်မတွေ့ရှိ

၂) အပင် သတ္တဝါမျိုးစိတ် တည်ရှိမှုနည်းပါးခြင်း

၃) ဒေသမျိုးရင်းမဟုတ်သည့်အပင် သတ္တဝါ မျိုးစိတ် များရှိနေခြင်း (သို့မဟုတ်) စီမံကိန်းမစတင်မီကထဲက ပတ်ဝန်းကျင် နှင့် ဒေသရင်းမျိုးစိတ် ကိုအန္တရာယ်ဖြစ်စေသည့် အပင် သတ္တဝါ မျိုးစိတ် များ ရှိနေခြင်း

၄) စီမံကိန်းဆောက်လုပ်မှုနှင့် လည်ပတ်မှုအဆင့်များတွင် ဇီဝပတ်ဝန်းကျင်ကို ထိခိုက်မှုရှိနိုင်သော်လည်း တည်ရှိဇီဝအခြေအနေကြောင့် သိသာထင်ရှားသည့် ဆိုးကျိုးသက်ရောက်မှုမရှိနိုင်ပေ

အကြံပြုချက်

၁) စက်ရုံမှထွက်သည့် ရေဆိုးများကိုအဆင့်ဆင့်သန့်စင်ပြီးမှ စွန့်ပစ်ရန်

၂) ငှက်အပါအဝင်သတ္တဝါများနေထိုင်ကျက်စားနိုင်ရန်ရေ၊ လေ၊ မြေ ပတ်ဝန်းကျင် သန့် စင်နိုင်ရန် စီမံကိန်းပတ်ဝန်းကျင်တွင် ဒေသ မျိုး ရင်း သစ်ပင်သစ်တော ထူထောင်ပေးခြင်း

4.4.11 Conclusions for Biodiversity

Plant density and species abundance are low in and around the project area. Grass and herbs vegetation types are mainly composing of land area. The proposed project area is slightly significant for biodiversity, but the surrounding area, aquatic environment Barlar Creek which is branch of Nga Moe Yeik Chaung is important for aquatic ecosystem and environmental values of fresh water sources.

There will be a direct impact on biological community especially to the existing aquatic organisms and vegetation. The extent of the impact on fauna and flora is investigated only in the site specific and the duration of the impact is assumed as long term which all depends on environmental management. Although, the project area is slightly significant for biodiversity, the emission of CO₂ from plants and disposal of wastewater into the creek lead to pollution.

Remarks on the finding significance of aquatic species (invasive species) in the water of Barlar Creek nearby the proposed project area

The proposed project area is on the low land and close to the Barlar Creek. The creek is one the branches of Ngamoeyeik Chaung/River. The water of Creek is shallow less than five feet depth and generally less than one meter and also the water is more turbid found during the study period before starting the project. Barlar creek is considered as already polluted in the water. Small numbers of fish and bird species were already observed, instead invasive species were largely encountered. They are *Mimosa pigra* (Ye-subok), *Pomacea canaliculate* (Golden Apple Snail) *Hypostomus Plecostomus* (Sucker-Mouth Fish). Those invasive species are dangerous for the native species means it can reduce and disappear the native species and also destroy the environment where they exist. This observation of invasive species in the Barlar creek is great concern as they can spread to the main river of Ngamoeyeik Chaung/river. But it may not relate by the Project activities. However, the project developer should be cooperated if there have a management plan to control/remove those invasive species.

4.5 Socio-Economic Characteristics

The (secondary data) natural environment and social environment facts are extracted from the data of regional facts by the general administration department of township and available wet site is www.gad.gov.mm.com.

4.5.1 Introduction for Socio-Economic

Socially sensitive areas around the proposed project are the residents from four villages. Within the 1.5km radius scope of the project, these affective villages are Kone Ta La Baund, Ta Kon Taing, Nwel Khwe San Pya, Yay Ta La Baund and Ta Kone Tine(Figure 4-72). The proposed project has been constructing in field land which is intended to use as industrial land.



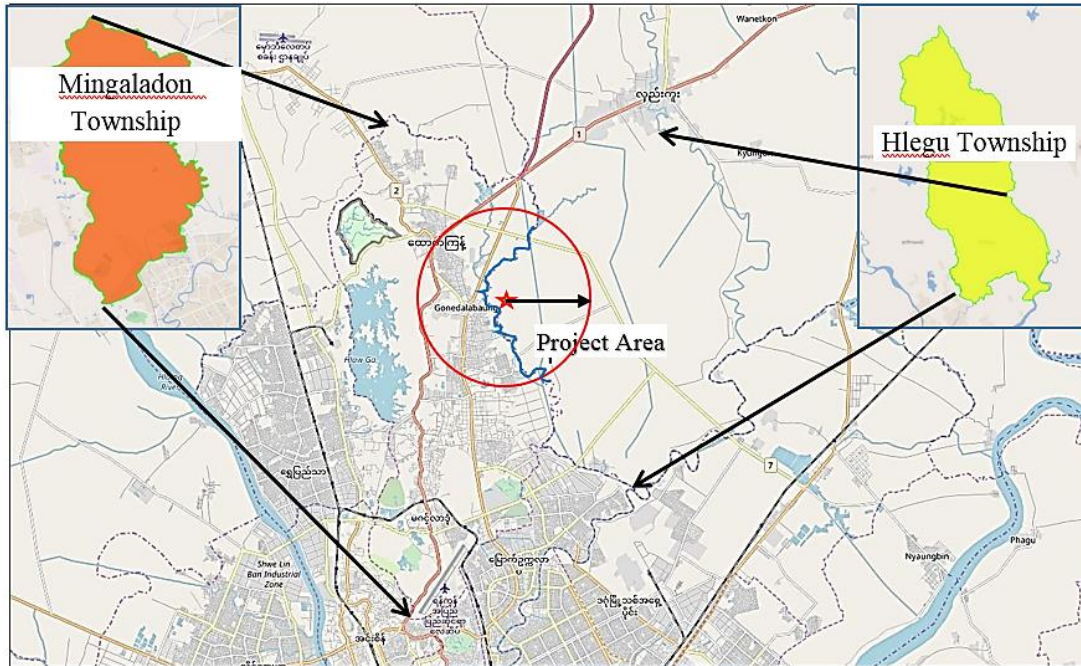


Figure 4-72 Project location Township and Affective Township within 1.5 km Radius Scope

No	Village Name	Reason for SIA Study
1	Yay Ta La Paung	Impact due to waste water because that village situated along the waste water discharge Line
2.	Kone Ta La Paung	Impact due to odour, increase in traffic, road accident and population influx
3.	Nwel Khwe	Impact due to increase in traffic, road accident and population influx
4.	Ta Kon Tine	Impact due to traffic, road accident and population influx

4.5.1.1 Socially Sensitive Area around the Proposed Project

According to the site investigation and studying of maps, important socio-economic settings around the proposed project are as follow:

(a) Local residents

Socially sensitive areas around the proposed project are the residents from Kone Ta La Baund, Ta Kon Taing, Nwel Khwe San Pya and Yay Ta La Baund.

(b) Nearest river

Nearest river is Barlar Creek and treated wastewater from the proposed project will be disposed into this.

4.5.1.2 Project Benefits

The followings are the direct and indirect benefits of the proposed project.



Table 4-45 Direct and Indirect Benefits

No.	Project Benefits
1.	<p><i>Revenue for the Government:</i> The national or regional government revenue will increase by the way of direct and indirect taxes, duties, etc.</p>
2.	<p><i>Job Opportunities:</i> The project will create direct and indirect short-term employment for people during construction phase and long term employment during operation phase of proposed project. According to the secondary data collection, there is considerable unemployment rate (14.84%) in Hlegu Township. Therefore, employment generation will be beneficial for local people.</p>
3.	<p><i>Potential to Regional Development and Economy:</i> The proposed project will have a potential to increase regional development by the following reasons:</p> <ul style="list-style-type: none"> - High capital investment in Hlegu region; - Most of the people can work in downtown and - CSR program of the developer will also help to improve local development.

4.5.2 Regional Socio-Economic Profile

The secondary data about the project are provided by the project proponent. Secondary data on demographic distribution of Hlegu Township are sourced from government records, official reports and internet resources. The regional socio-economic profiles resulting from secondary data collection are as follow:

Table 4-46 Overall Profile of Hlegu Township

Location	
Coordinates	Latitude 16° 59' to 17° 19', Longitude 96° 13' to 96° 25'
Adjacent Territory N/E/S/W	Bago Yoma / Bago and Kawa towns of Bago Region / Dagon Myo Thit and ThanyLine Townships of Yangon Region / Hmawbi and Tite Gyii Townships of Yangon Region
Areas	576.92 sq. miles
Above sea level	45.5 feet
Administrative Division	
Overall Township	1 township, 1 town, 5 quarters, 52 village groups and 167 villages
Household Information	



Location	
DwellLineg	47,095
Household	50,127
Population	23,3392

4.5.2.1 Demographic Details

Household information and population details of the overall township (up to the March, 2017) are described in Table follow. As indicated in the table, majority of township population live in rural area. Female population slightly outnumbered males.

Table 4-47 Household and Population of Overall Township

Residence	Older than 18			Younger than 18			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Urban	11591	14123	25714	5681	5918	11599	17272	20041	33713
Rural	60915	62740	123655	36830	35594	72424	97745	98334	196079
Total	72506	76863	149369	42511	41512	84023	115017	118375	233392

4.5.2.2 Administrative Division

Administrative division of Hlegu Township is comprised of 1 township, 1 town, 5 quarters, 52 village groups and 167 villages.

4.5.2.3 Land Used Pattern

Hlegu Township has 166,876 acres of cultivated land area, of which 94,675 acres are farmland and 72,201 acres are orchards.

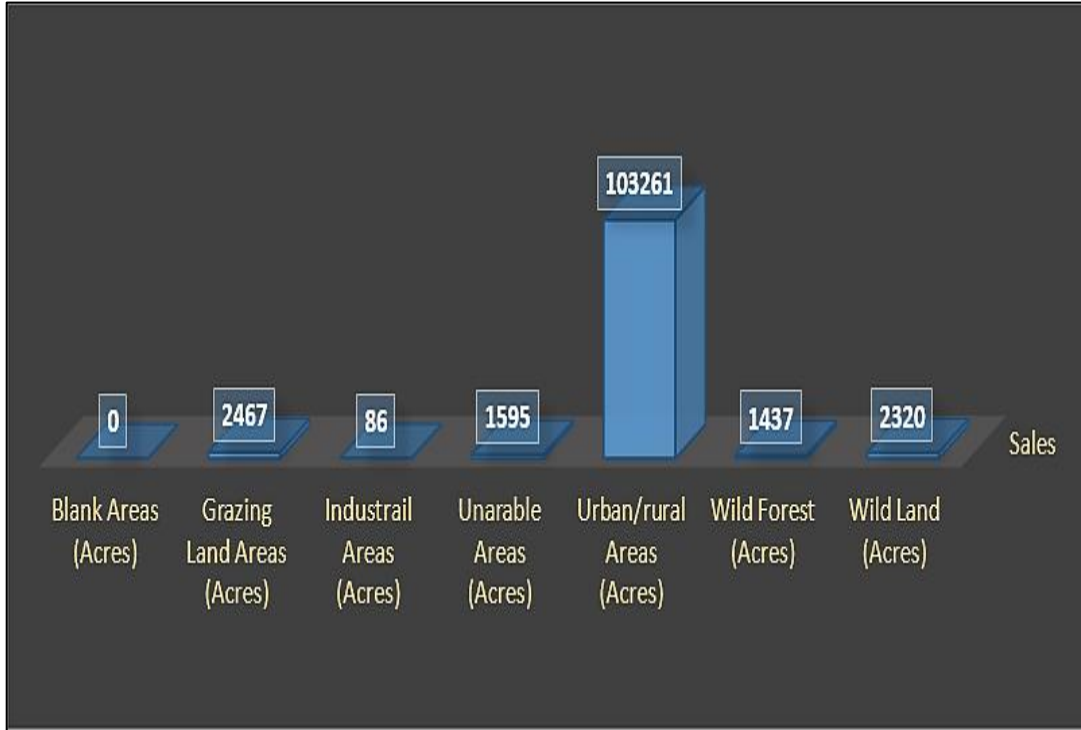


Figure 4-73 Land Used Pattern of Hlegu Township

4.5.2.4 Ethnicity, Language and Religion

According to official statistics (see following table), three major ethnic groups in Hlegu is Bamar (93.14%). Other ethnic minority groups include Kachin (0.13%), Kayah (only 2 people), Kayin (4.71%), Rakhine (0.13%), Chin (0.30%), Mon (0.11%), Shan (0.05%), and foreign nationalities (1.54%). Bamar is the common language used in Hlegu. The majority of local people are Buddhists (221856), followed by Christians (8765), Hindus (711), Moslems (1562) and others (498); and thus, only one religious group is dominating there.

Table 4-48 Ethnic and Religious Groups

Ethnicity	Population	Percentage
Kachin	31	0.13
Kayah	2	-
Kayin	10,842	4.71
Chin	571	0.30
Bamar	217,684	93.14
Mon	242	0.11
Rakhine	312	0.13
Shan	123	0.05
Foreign nationalities	3,585	1.54
Total	233,392	100



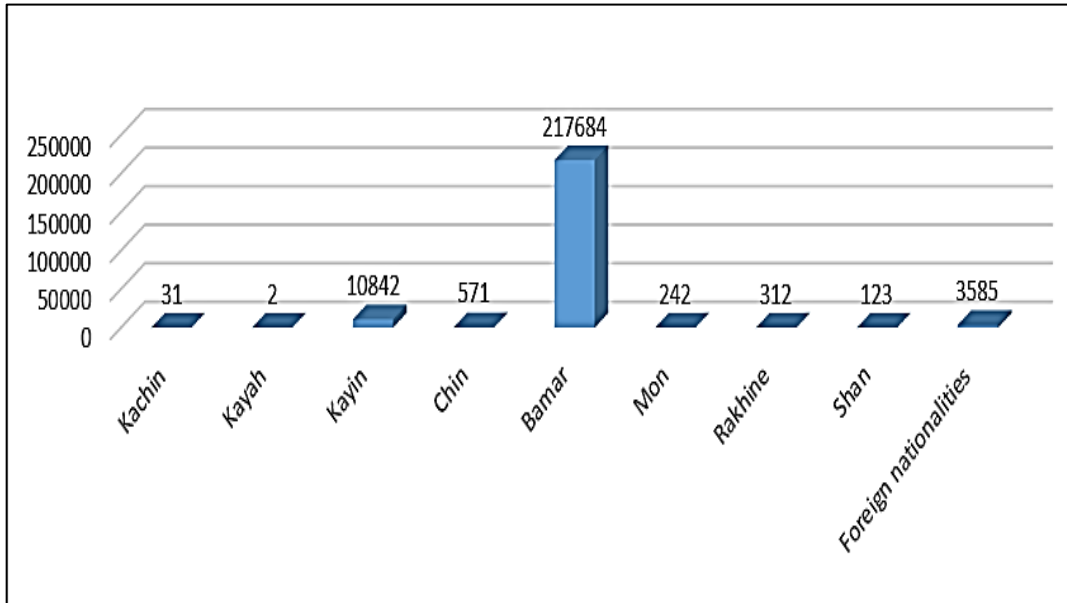


Figure 4-74 Ethnic Groups in Hlegu

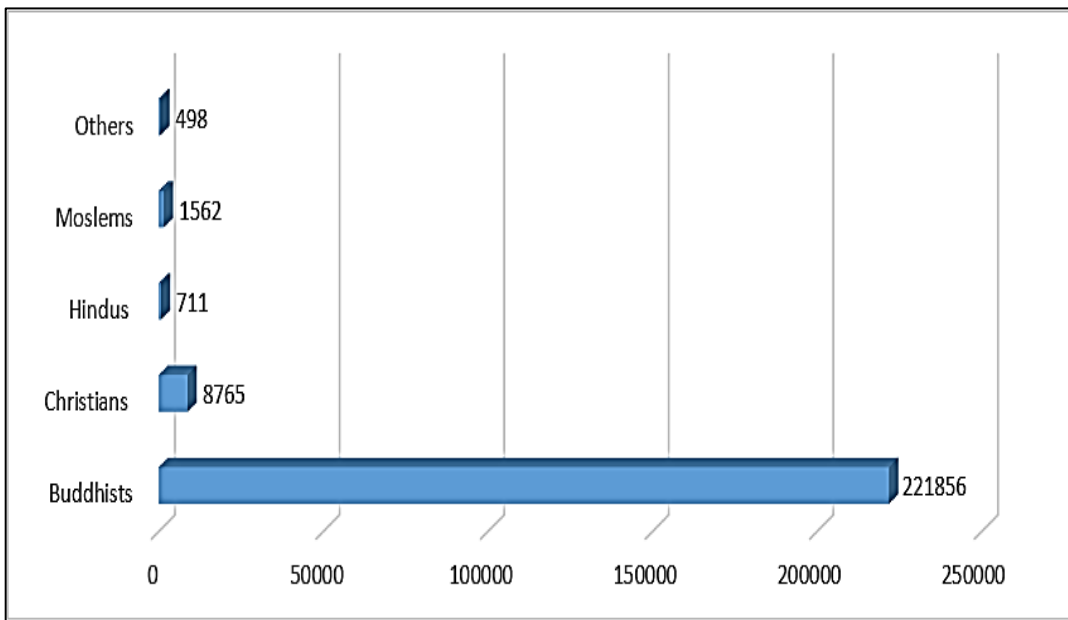


Figure 4-75 Religious Groups in Hlegu

4.5.2.5 Education

In primary education, school enrollment rate of 5-year-olds is 84.5% (up to 2016-17) in the overall township. Percentage of students pAssigning the matriculation is 28.62% (2016-17). Data on education and literacy report that literacy rate of persons 15 years and older in Hlegu Township was 100%.



Table 4-49 Educational Infrastructures

School	No. of Schools	No. of Teachers	No. of Students	Teacher/ Student Ratio
Higher Education	3	120	1906	1:16
BEHS	9	446	15,106	1:34
BEMS	18	382	10,695	1:28
BEPPS	157	1,115	36,729	1:33
BEPS	4	7	95	1:13
Monastic school	19	136	4,549	1:33

Table 4-50 School Enrollments

No. of 5 Yrs.-old children			Enrollment			Enrollment Rate
Male	Female	Total	Male	Female	Total	
2660	2663	5323	2286	2212	4498	84.5%

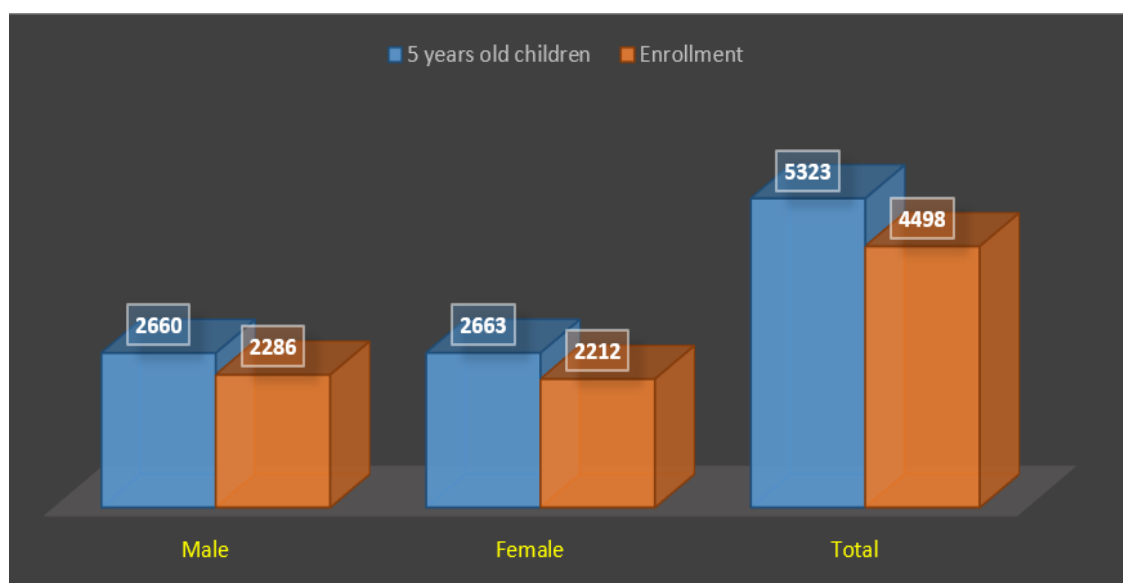


Figure 4-76 School Enrollment

4.5.2.6 Healthcare Services

In public health sector, the ratios of medical service personnel and local population indicate the existing conditions of the insufficient healthcare facilities particularly for rural people. As also noted in the table following, there are 7 hospitals and 25 clinics.

Table 4-51 Healthcare Infrastructures

No.	Number of beds at proposed hospital	Number of hospitals	Number of clinics
1.	50	2	-
2.	25	2	-
3.	16	3	
Total	198	7	25

4.5.2.7 Occupational Patterns

Hlegu Township is one of the township in the Yangon Division and the township with fair economic development. The residents in the township are mainly worked at cultivation sector and as other economy; livestock farming, orchards and trade. The local products are exported to other towns.

4.5.3 Social Impact Assessment

1. Introduction

1.1 Objectives of the Social Impact Assessment (SIA)

This SIA Report provides the assessment approach and execution for social impacts that could be caused by the proposed project. The approach is drawn to cover the operation phase. This SIA Report aims to:

- Determine the Area of Influence (AOI) which could be affected by the operation of the proposed project.
- Determine the Valued Environmental Components (VECs) within the above AOI.
- Explore the existing socio-economic situations of surrounding communities.
- Determine potential impacts by project activities on the local communities.
- Evaluate the social impacts and formulate the relevant and adequate mitigation measures for Environmental Management Plan (EMP)

1.2 Scope and Limitation of SIA

The assessment is based on the preliminary findings of scoping report, public and stakeholders concerns from the first and second Public Consultation Meetings (PCM), and issues raised by local communities during Key Informant Interviews (KII), Focal Group Discussions (FGD), and household surveys.

The above assessments have been taken within the potential affected areas identified in scoping phases between February to August 2023.

2.Social BaseLine Environment

2.1 SIA Study Area



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The overall study area is followed to the areas defining in scoping phase. The detailed assessments are focus on the AOI which is defining in second PCM according to the public participation and final field assessment results, which are described in Map 1 and Table 1.

Map 1: AOI Map with Social Aspects



Table 1: List of AOI

ID	Description
1	Settlement area from Kaung Ta La Paung Village

2	Monastic Compound
3	Ancient Temple
4	Monastic Compound
5	Monastic Education School
6	Graveyard
7	Informal Settlement Areas
8	Settlement area from Yay Ta La Paung Village

2.2 Methodology and Approach

2.2.1 Materials and Methods

The SIA Team uses household questionnaires to conduct the socio-economic conditions of local communities. The EIA consultant firm invites all-inclusive stakeholders to participate in the series of PCM. The SIA Team follows-up to investigate their concerns through the appropriate KIIs and FGDs at community level. The necessary brainstorming sessions are arranged with the EIA Team for technical aspects, with the project proponent for operation issues, and with the local communities to get resolutions for their concerns.

2.2.2 Desktop Assessment

The SIA Team reviewed the scoping report and extracted the key points which are required to consider during the SIA stage. The expert team made brainstorming to determine the impacts based on preliminary findings in scoping phase, technical concerns by EIA consultants, and public concerns by various stakeholders and developed concept maps for mitigation measures.

The social team drives the quantitative and qualitative data from surveys statistically to determine the socio-economic conditions and degree of their concerns for impacts calculations.

2.2.3 Field Assessment

The SIA Team visited all four villages to follow-up for the issues and concerns raised within scoping assessments and the second PCM. During these visits, the social expert meets with the community representatives, key informants, and some residents to discuss their desires and concerns about the proposed projects. The social survey team takes household surveys to explore the socio-economic conditions of residents. The experts meet with stakeholders again in the third PCM to draw the social impacts and implementation of mitigation measures in operation phase.

The social team observes and makes windshield survey along the Bar Lar Creek to explore the livelihood activities and water utilities of the creek.



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Plate 1: Photo Evidence for SIA Study

2.3 Social BaseLine Results

2.3.1 Assessment Geography

The social setting associated with the location and activities of the proposed project had been explored within the Scoping Phase and determined the SIA study areas as described in Table 2.

Table 2: Determination of Study Areas

No.	Village Name	Reason for SIA Study
1	Yay Ta La Baung	Impact due to wastewater because that village situated along the wastewater discharge Line.
2	Kone Ta La Baung	Impact due to odor, increase in traffic, road accident and population influx.
3	Nwel Khwe San Pya	Impact due to increase in traffic, road accident and population influx.
4	Ta Kon Taing (Insein)	Impact due to traffic, road accident and population influx.

Reference: Scoping Report Section 5.4.12 and Figure 4-7

The continuous study for SIA Phase is conducted to cover all communities who are living in the above villages.

2.3.2 Methodology and Approach

To explore the socio-economic baseLine conditions of these communities, the first household survey is conducted with convenience surveying methods in 2018 and the corresponding respondents are as described in Table 3.

Table 3: Summary of respondents for first surveying

Village	No. of respondents	Percent of respondents
Kone Ta La Baung	107	36%
Yay Ta La Baung	11	4%
Nwel Khwe San Pya	123	41%
Ta Kon Taing (Insein)	57	19%

Source: SIA survey team

The SIA study is taken in 2023, five years after the scoping study, therefore the follow-up household survey is conducted in March 2023. The sample size for individual village is redesigned based on degree of potential impact receipting, proximity and buffer with project location and situational availability, as described in Table 4.

Table 4: Summary of respondents for second surveying

Village	Male	Female	Total Respondents	% of First Survey
Kone Ta La Baung	10	6	16	15%
Yay Ta La Baung	13	7	20	182%



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Nwel Khwe San Pya	23	14	37	30%
Ta Kon Taing (Insein)	11	19	30	53%
Total	57	46	103	35%

Source: SIA survey team

Now the project is in operating phase and Yay Ta La Baung village is traced as the first receptors of the project according to the flow of Bar Lar Creek. Therefore, the more respondents have been conducted in this survey and it is about 45% of the village households. The northern area of Kone Ta La Baung is also traced as the nearest receptor according to noise, vibration, and air flow, where no potential effect is traced on other areas of this big village. Therefore, the survey is more focused on the northern area and some middle areas as the reference, the sample size is reduced a certain amount. Ta Kon Taing (Insein) is located a few far distance in upstream area but it is administrative host for the village, and the sample size has been reduced also. Ngwe Khwe San Pya is located a significant distance from the project and other industrial activities are exist in and round the village. Therefore, the sampLineg size has also been reduced to record some updated information.

2.4 Socio-Economic BaseLine Conditions (as of 2018)

2.4.1 Household Information

Almost of the households are recorded as Bamar and Buddhist, and minority of them are found as Christian, about 1% each in Kone Ta La Baung and Ta Kon Taing (Insein) villages. The levels of highest education for household-heads and household-members are described in Figure 1 and Figure 2 respectively. It can be argued that the education status of successors has been improved than generation of household-heads, especially for households from Yay Ta La Baung and Nwel Khwe San Pya villages.

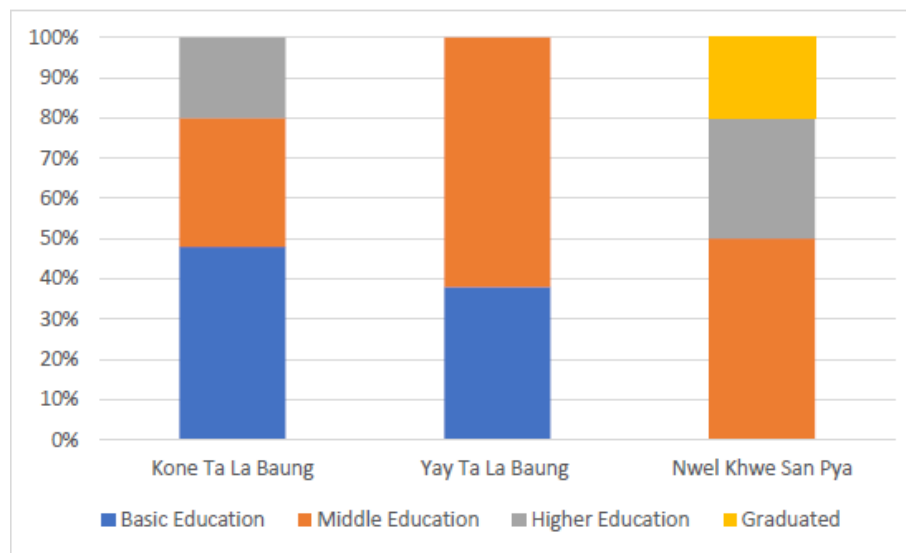


Figure 1: Level of Highest-Education for Household-Heads



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Source: SIA survey team

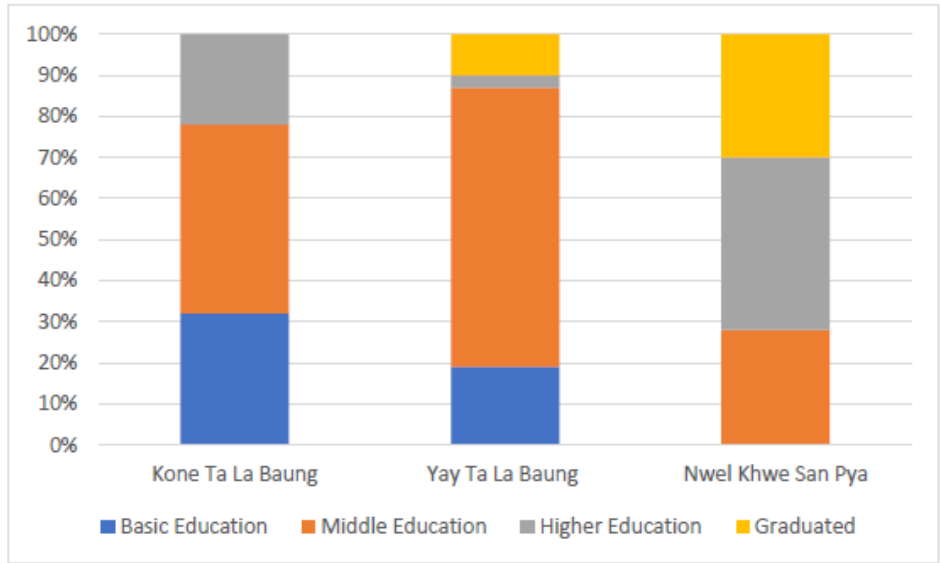


Figure 2: Level of Highest-Education for Household-Members Source: SIA survey tea

The main occupational sectors of heads from responding households are found as described in Figure 3. It is significantly found for Kone Ta La Baung Village that there are various types of occupations for the residents. As 24% of them are factory workers and the other 14% are running hostel business, it is indicated that the residents would be familiar with industrial sector and the migrants already exist in their village. Another significant finding is about the livelihood of respondents from Yay Ta La Baung and Ta Kon Taing (Insein) villages as all of them are from agriculture sector of cultivation and livestock breeding.

The respondents from Yay Ta La Baung Village cultivate the water grass and shame plants in the Ba Lar Creek seasonally from October to May.

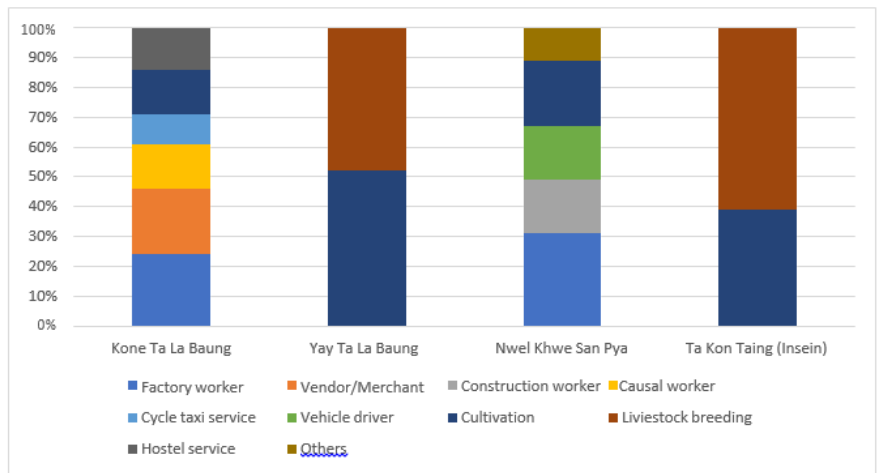


Figure 3: Occupations of Household-Heads

Source: SIA survey team



2.4.2 Energy Sources and Utilizations

Kone Ta La Baung, Ngwe Khwe San Pya, and Ta Kone Taing(Insein) villages have public electricity supply, but Yay Ta La Baung depends on the private electricity supply. They use various types of heating-energy sources for cooking purposes as described in Figure 4. Among these four villages, the rate of firewood usage in Yay Ta La Baung Village is found higher than in other villages.

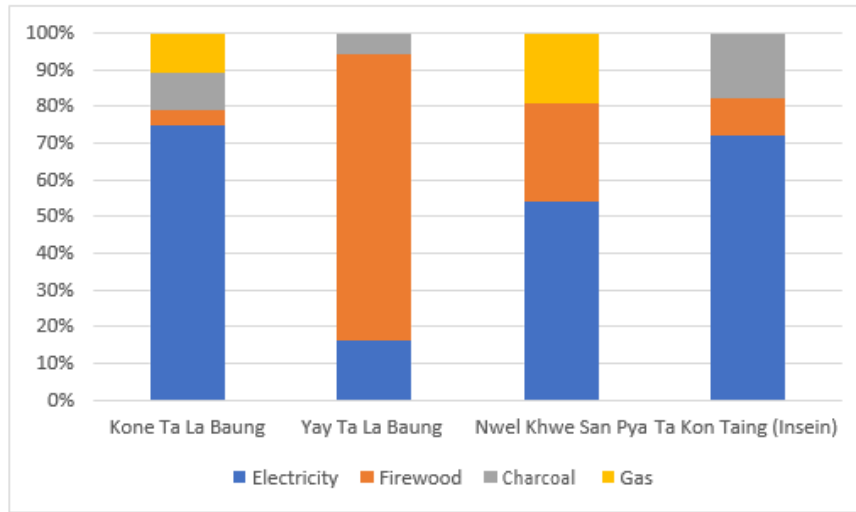


Figure 4: Energy Sources for Cooking

Source: SIA survey team

2.4.3 Water Sources and Utilizations

The sources for domestic water and drinking water are described in Figure 5 and Figure 6. According to this survey result, it is found that the main sources for domestic water are pumped water and tube wells, and some of the households use water from Barlar Creek. For drinking water, it is found that the main sources are pumped water and bottled water. Some of the respondents answered that there is some odor in the water and some respondents from Yay Ta La Baung and Nwel Khwe San Pya villages described that they are suffering the itching because of water. Some respondents from Kone Ta La Baung Village said that the water from tube well is high in iron although the result of laboratory test for Total Iron is in permissible range of World Health Organization standard.



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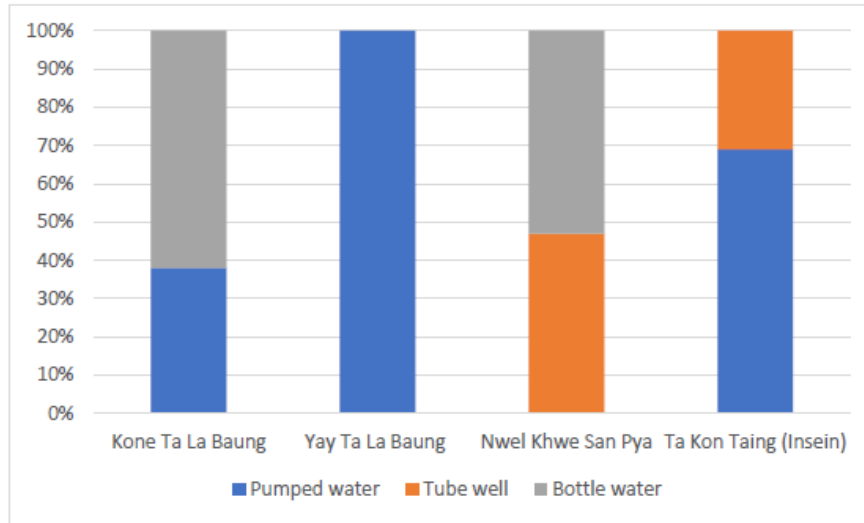


Figure 5: Sources for Domestic Water

Source: SIA survey team

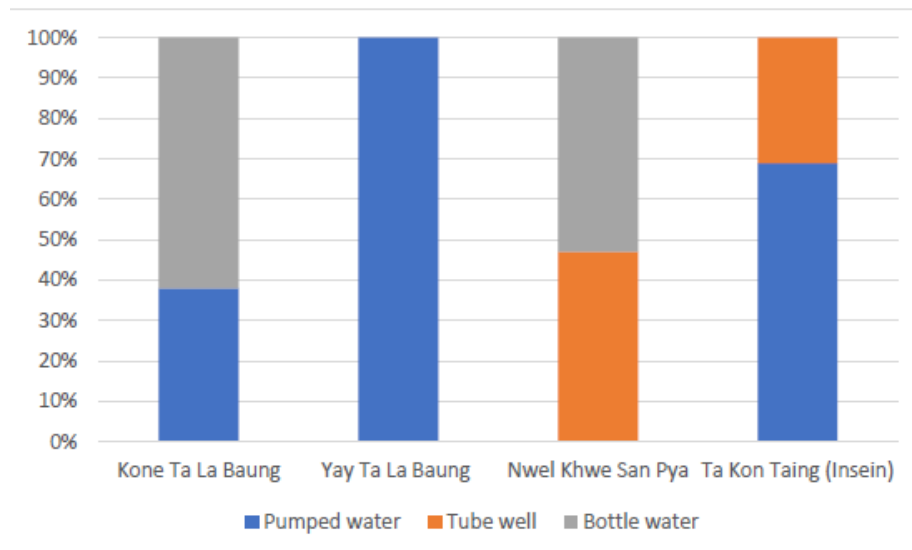


Figure 6: Sources for Drinking water

Source: SIA survey team



2.4.4 Sanitation and Waste Management

All the respondents are using either fly-proof toilets and flush-toilets and the proportions are described in Figure 7. When studying their practices of solid-waste management, some of environmental unfriendly manner such as throwing in creek, burning, and dumping are found in villages except Kone Ta La Baung.

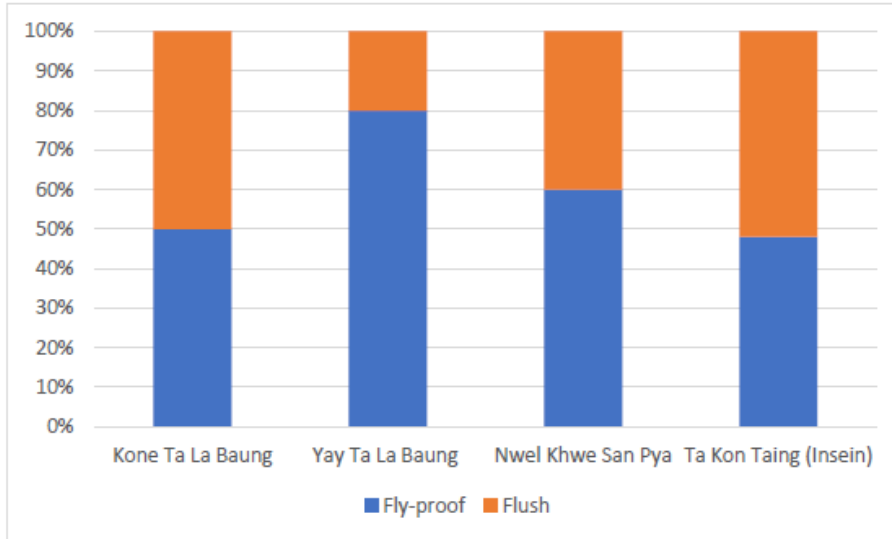


Figure 7: Toilet Type

Source: SIA survey team

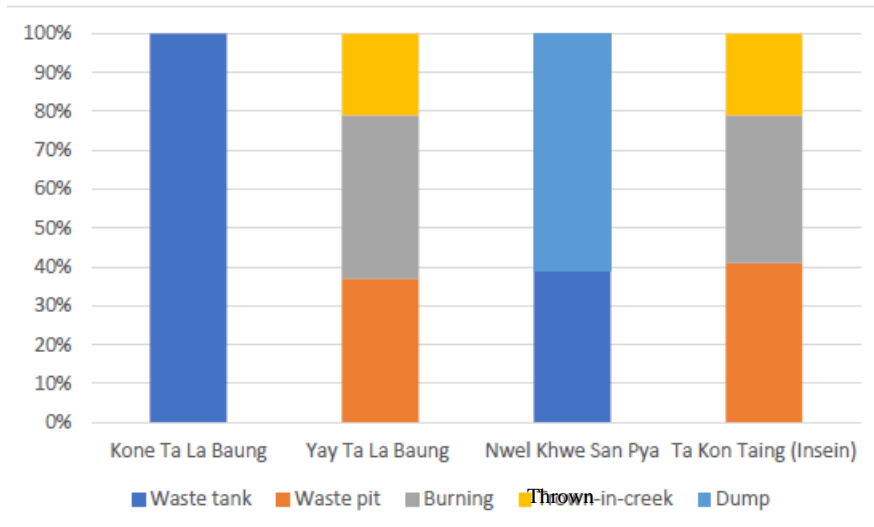


Figure 8: Waste Deposal Practice

Source: SIA survey team



2.4.5 Types of housing-Units

According to the survey results, it is found that the respondents are living in various types of housing-units, especially in Kone Ta La Baung Village. Among them, 9% of respondents from Kone Ta La Baung and 58% from Ta Kon Taing (Insein) villages are living in bamboo houses; this type of building material could be classified as poor infrastructure and more vulnerable to hazards rather than other types. Again, 18% of respondents from Kone Ta La Baung and 30% from Nwel Khwe San Pya villages are found as living in apartments; if these apartments are rooms of hostels, it could be argued that these respondents are migrant probably.

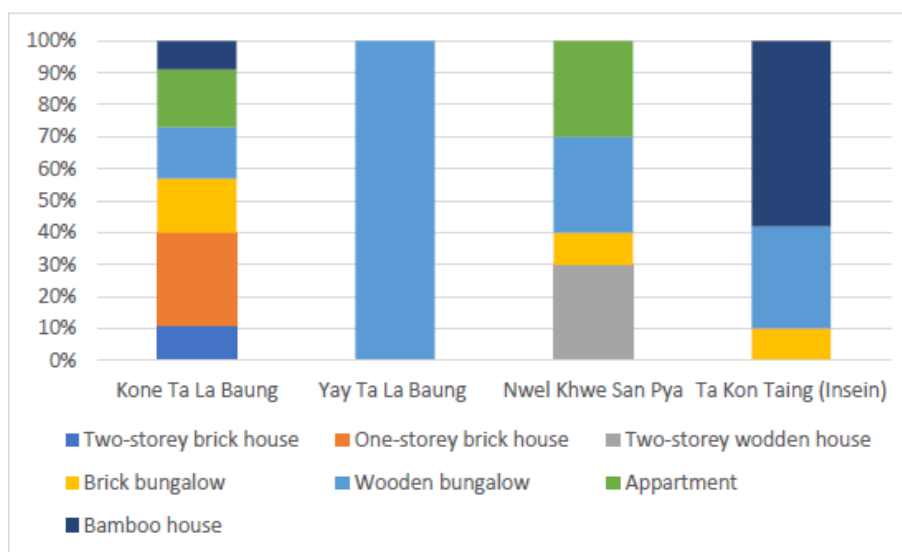


Figure 9: Types of housing-units

Source: SIA survey team

2.4.6 Transportation

According to the responds from these villages as described in Figure 10 the common vehicle is found as motorcycle and only one-fourth of respondents from Kone Ta La Baung Village use public transportation. 48% of respondents from Yay Ta La Baung Village said that they are using the boats.

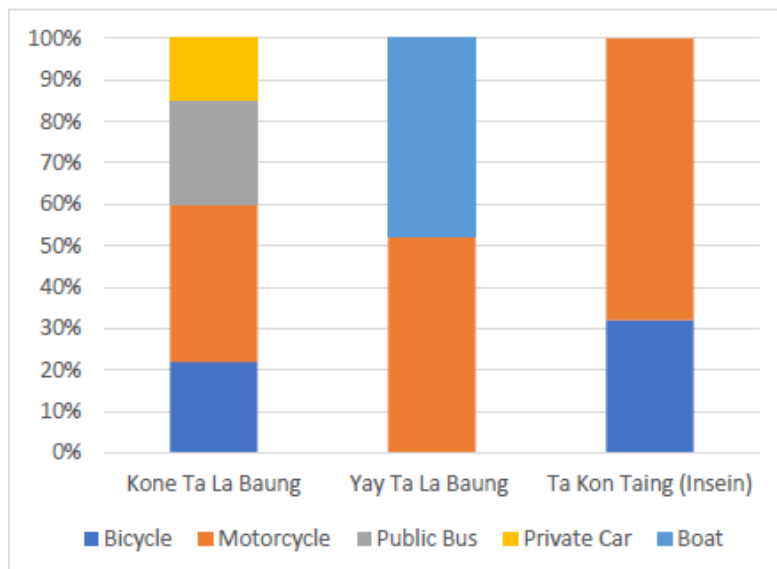


Figure 10: Types of transportation

Source: SIA survey team

2.5 Socio-Economic BaseLine Conditions (as of March 2023)

2.5.1 Household Information

Among these respondents, 49.5% are household-heads. This survey can explore that there would be about 10% of female-headed households in Ngwe Khwe San Pya and Ta Kone Taing (Insein) villages.

Again, the marital status of these respondents are described in Figure 12.

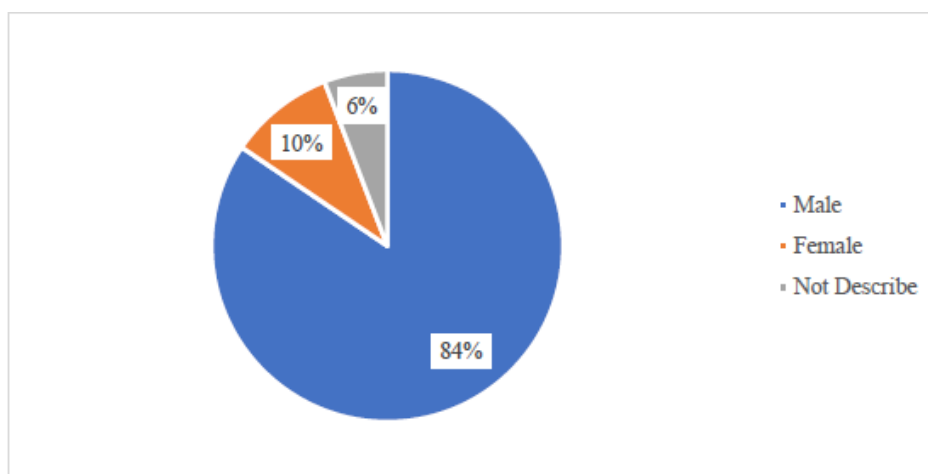


Figure 11: Gender Status of Household-Heads

Source: SIA survey team

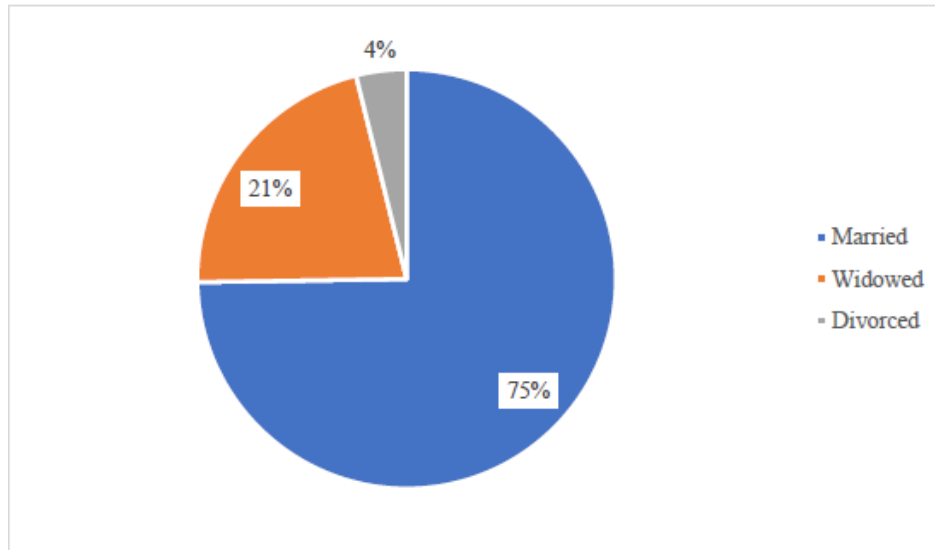


Figure 12: Mairtal status of respondents

Source: SIA survey team

The update status of highest education of household-head and household-member are found similar as 5-year before. The chart described in Figure 13 would be valuable information for project to implement educational CSR activities in future.

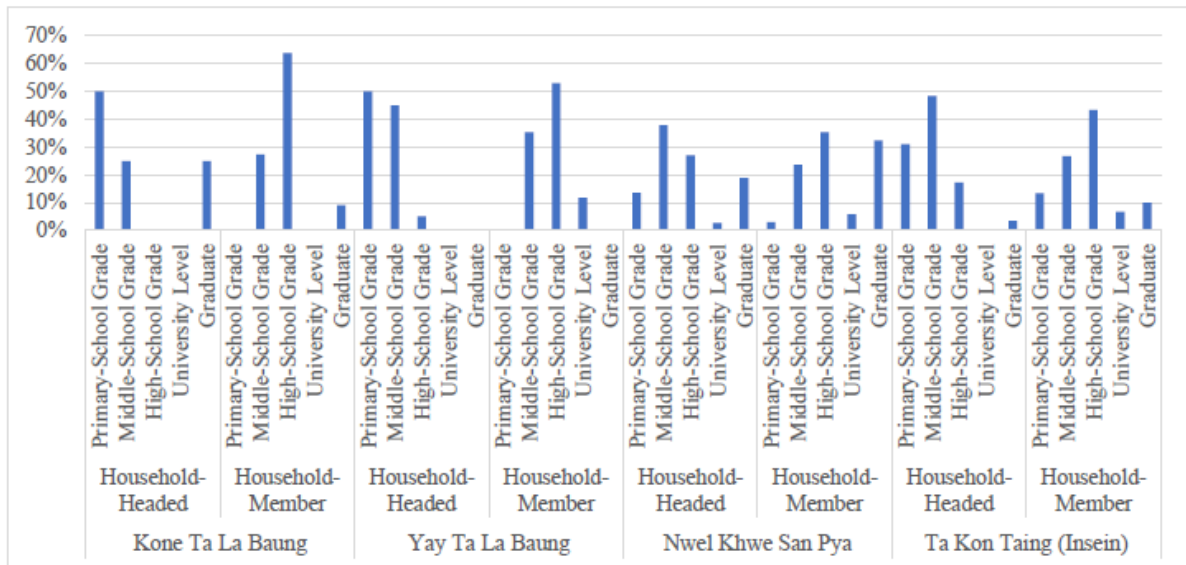


Figure 13: Comparision on Education Status by Generation

Source: SIA survey team

2.5.2 Economic Status

The study explores the occupations of household-heads, and the update result is found as described in Figure 14. The changes of occupational patterns (the 2023 findings in compairng with 2018 findings) according to the village are summarizred in Table 5.



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According to the survey limitations in 2023, the exploring for Kone Ta La Baung Village would not have the strong evidence, but the exploring for other three villages have the sufficient evidence for the comparative studies. Therefore, it can be argued that the occupations of residents from Yay Ta La Baung and Ta Kon Taing (Insein) villages have been changing with 2018 and 2023, significantly for the cultivation and livestock breeding.

For Yae Ta La Baung Village, substitute occupations are found as factory and construction workers as well as casual and other jobs. For Ta Kon Taking (Insein) Village, the substitutions are found as vendor/merchant as well as causal and other jobs.

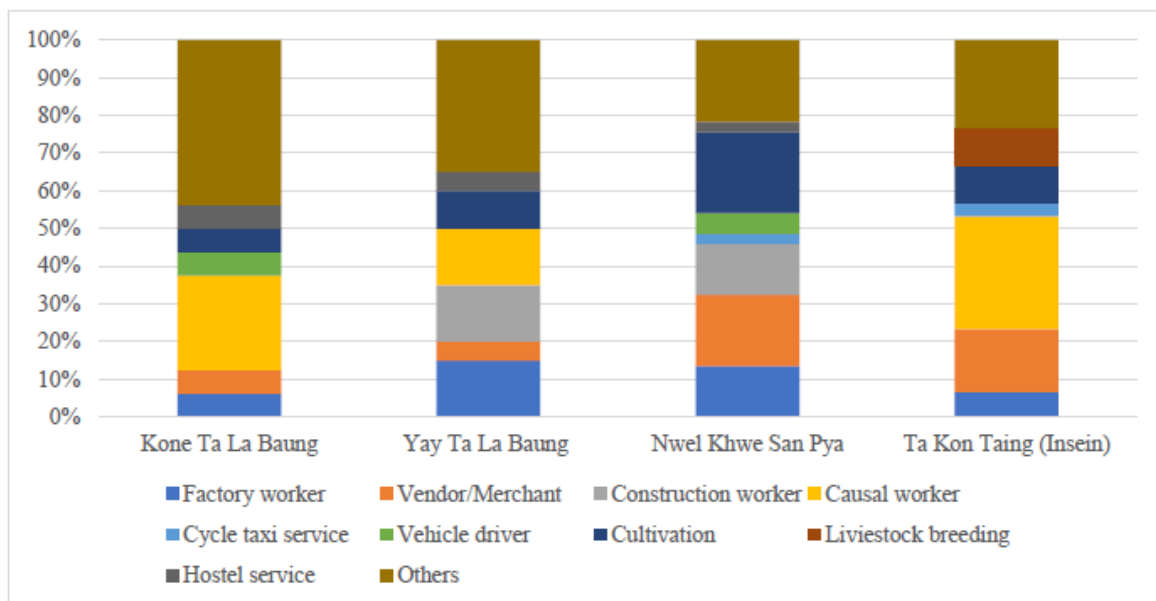


Figure 14: Occupations of Household-Heads
Source: SIA survey team

Table 5: Changes of Occupational Patterns

Changes Pattern	Kone Ta La Baung	Yay Ta La Baung	Nwel Khwe San Pya	Ta Kon Taing (Insein)
Factory worker	➡ -18%	⬆ 15%	➡ -17%	➡ 7%
Vendor/Merchant	➡ -16%	➡ 5%	⬆ 19%	⬆ 17%
Construction worker	➡ 0%	⬆ 15%	➡ -4%	➡ 0%
Causal worker	➡ 10%	⬆ 15%	➡ 0%	⬆ 30%
Cycle taxi service	➡ -10%	➡ 0%	➡ 3%	➡ 3%
Vehicle driver	➡ 6%	➡ 0%	➡ -13%	➡ 0%
Cultivation	➡ -9%	⬆ -42%	➡ 0%	⬆ -29%
Livestock breeding	➡ 0%	⬆ -48%	➡ 0%	⬆ -51%
Hostel service	➡ -8%	➡ 5%	➡ 3%	➡ 0%
Others	⬆ 44%	⬆ 35%	➡ 11%	⬆ 23%

Source: SIA survey team

2.5.3 Source of Hygiene

The private artesian wells are common source three villages except Yay Ta La Baung in which residents are relying on the public artesian well for their domestic water uses. For



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drinking water, the households from Kone Ta La Paung purchase bottle water, but the other three villages have been using the ground water. Almost all households practice to treat the raw water for drinking purposes, commonly the filtering method.

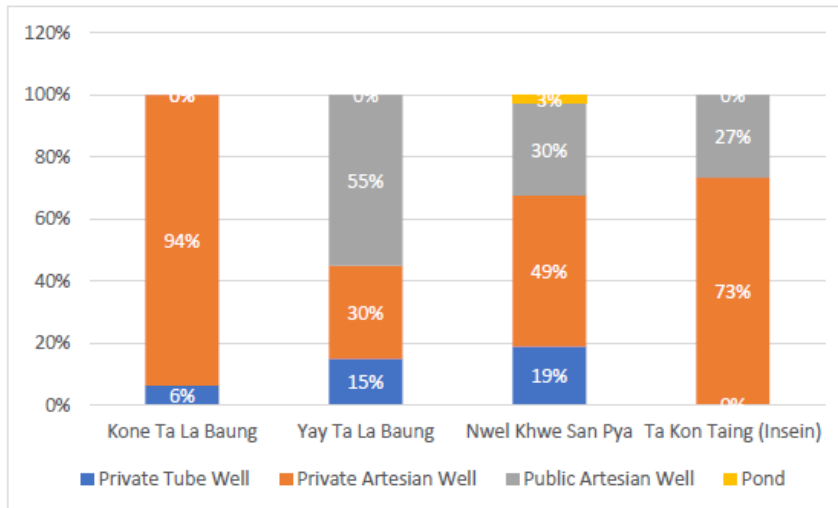


Figure 15: Sources for Domestic Water
Source: SIA survey team

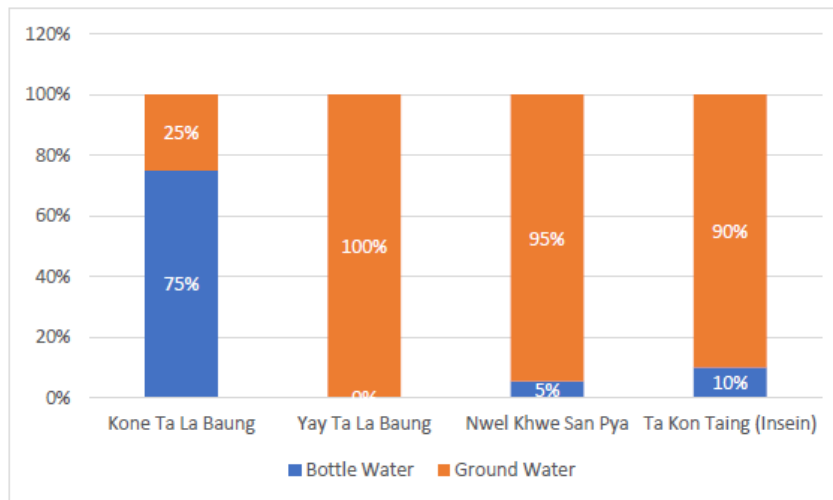


Figure 16: Sources for Drinking Water
Source: SIA survey team



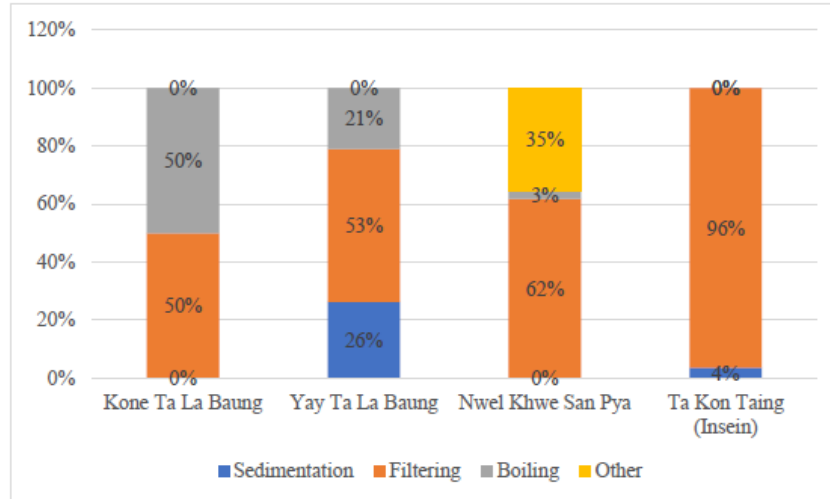


Figure 17: Water Treatment Method
Source: SIA survey team

2.6 Livelihood Activities along the Bar Lar Creek

In the last decade, the local people can do fishing and cultivating along the creek as one of the main income sources especially in dry season. Their average income for the whole season varied between 1,000,000 Kyats and 3,000,000 Kyats per household. In the previous five years, the quality of the creek has degraded; rapid growth of hyacinth and some anthropogenic activities. These anthropogenic activities include the proposed project but also other activities. The quality degradation has occurred in the downstream stretch of No. (3) Highway Road and the households from the downstream areas are losing their habitats of fishing and planting watergrass and shaming plants. The root cause and its consequence effects are traced with public participation method and the whole picture can be evaluated as described in Figure 18 and Figure 19.

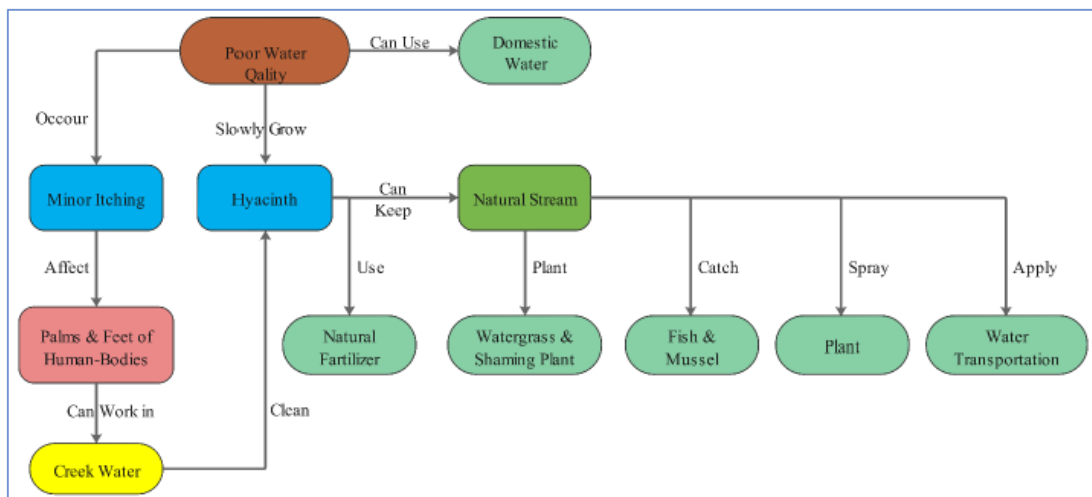


Figure 18: Concept Map for Conditions of Before 2018



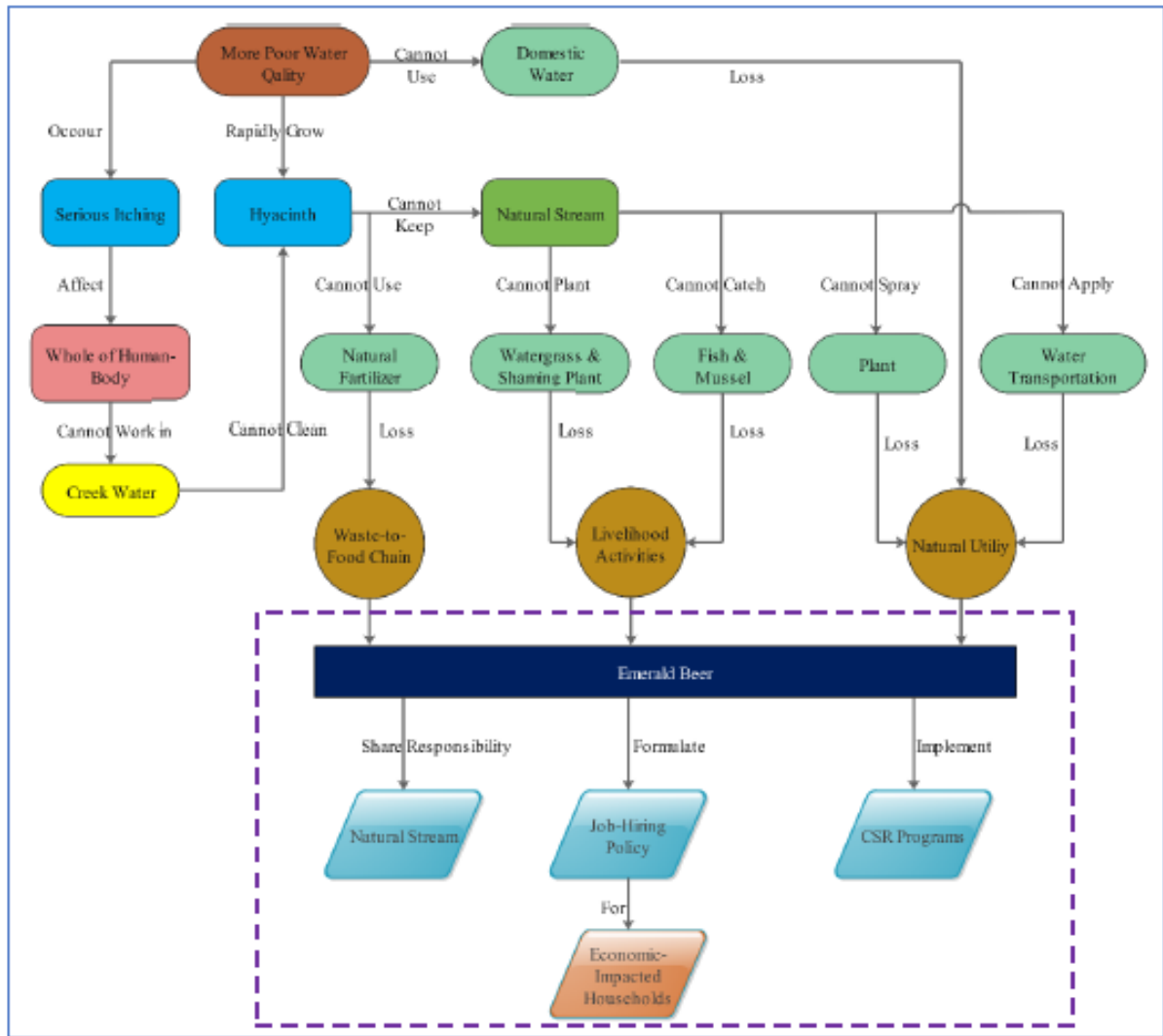


Figure 19: Concept Map for Conditions of 2018 Onwards and Recommendations

3.0 Potential Impact Assessment and Mitigation Measures

3.1 Impact Assessment Methodology

The significance of the impacts that will occur by the proposed project in aspects of social and economic have been identified by the matrix method. In the identification process, the criteria and their rating scales have been used as described in the section of Methodology in Assessing Impacts to be consistent.



3.2 Impact Assessment

3.2.1 Identification of Sources of Potential Impacts

The unique source that could be harmful to social and economics of surrounding environment is effluent wastewater; it occurs the bad odor, nutrient pollution to grow hyacinth.

The factory effluent the wastewater into the Bar Lar Creek after pAssigning its Wastewater Treatment Plant (WTP). The effluent water could not flow sufficiently as the existing of hyacinth blocks as close valve. Due to temperature changes over time, the odor would occur from the hyacinth areas adjacent to the factory. The residential people from AOI (1), (2) and (3) suffer these odors, but not always.

The nutrient pollution would affect on livelihood activities as the indirect impact of the project operation as described in above Figure 19.

At the same time, the factory operated by the proposed project could create job opportunities for local people.

3.2.2 Evaluation of Impacts

Type of Impact	Nature of Impact	Significance Evaluation					
		Spatial	Temporal	Severity	Likelihood	Significance	Level of Risk
Bad odor	Negative	Local (3)	Long (4)	Very Low (1)	Likely (6)	48	Minor
Nutrient pollution	Negative	Local (3)	Long (4)	High (4)	Very Likely (8)	88	Moderate
Livelihood loss	Negative	Local (3)	Medium (2)	High (4)	Very Likely (8)	72	Moderate

3.3 Mitigation Measures

- To reduce the odor suffering, the project proponent shall plant the native plants as the wind shield on the west bank of the Bar Lar Creek.
- The project proponent shall follow recommendation measures as describe in Figure 19 to
 - Take share responsibility to keep natural conditions of Bar Lar Creek such as participating in hyacinth cleaning,
 - Formulate job hiring policy for local people to implement livelihood substitution plan, and
 - Implement effective Corporate Social Responsibility (CSR) plan for local needs.

4.5.4 Conclusion Upon Social Impact Assessment

From the paragraph 4-5-3 as social impact assessment, there are three main negative impact as

- Bad odor (Minor)
- Nutrient pollution [the growth of hyacinth -] [moderate]
- Livelihood loss (moderate)

Bad odor can be mitigated by EoP and EMP procedure and plant the nature plants as the wind should on the back of Barlar creek.

Nutrient pollution should be considered the other causes on

- Unknown inlet sources to creek
- Farming (kettle, chicken, duck breeding, fish farming)
- Agriculturing
- Invasive species (plant, animal)
- Throwing the household debris

However project should participate the mitigation action and livelihood loss should be mitigated by assigning the appropriate villagers when matching the qualifications and requirement.

4.5.5 Facts about Social Condition of Hlegu Township

4.5.5.A Hlegu Township

- Average per capita income

Average per capita income was shown of Hlegu Township as follow.

Average per capita income

Sr.No	Purpose	Unit	2016-2017	2017-2018
1	Average per capita income	MMK	966,166	1,099,779

Number of employment and unemployment in Hlegu

The number of employment and unemployment for Hlegu were shown as following.

Employment and unemployment for Hlegu

Sr.No	Workable person	Employment	unemployment	Percentage of employment
1	156,887	148,851	8,023	5.11%

4.5.5.B Mingalardon Township

- Average percapita income

Average percapita income was shown of Mingalardon Township as follow.

Average percapita income

Sr.No	Purpose	Unit	2016-2017	2017-2018
1	Average percapita income	MMK	1800000	3100889

-Number of employment and unemployment in Mingalardon

The number of employment and unemployment for Mingalardon were shown as following.

Employment and unemployment for Mingalardon

Sr.No	Workable person	Employment	unemployment	Percentage of employment
1	129141	103409	25232	19.53%

4.6 Cultural Heritage Impact Assessment (CHIA)

The project area is in the Hlegu Township of Yangon Region area. The location can be considered that is very close to the settlement area of local community. In this way, it could be related to the religious complexes like monasteries and religious temples or pagodas. Sometimes it will be faced with the festivals ceremonies and other ceremonial events. Therefore, the assessment must be carefully to measure the potential cultural sites and degree of impacts depending on the sociocultural and socioeconomic information.

4.6.1 Assessment Strategy

For the assessment strategy, there are suitable methods of CHIA field works as follows-

- (4) Material cultural analysis
- (5) Intangible cultural heritage
- (6) Pollutants discharged by the project operation stage

4.6.2 Terms of Reference

Area of CHIA is mostly concerned with religious complexes and the local intangible cultural heritages. There are three portions for the priority of CHIA for the project area as follows_

- (4) *The significance of religious complexes must be assessed with the correlation of sociocultural and socioeconomic condition of the villages around the project area.*



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- (5) *The potential impacts must be measured with the references of the development and technical assistance of the Township including the project area.***
- (6) *The relationship between the project area and the local religious traditions or festivals that can be celebrated inside and around the associated places of religious complexes must be assessed to be able to draw the suitable mitigation process.***

CHIA works shows the significance of religious complexes and the association of local community. Then, CHIA process must be covered to reduce the challenges for the local religious traditions and festivals depending on the seasons.

4.6.3 Potential Places for Cultural Heritage Impact Assessment Process

In the assessment area, the nearest place of the *potential cultural heritage site* (PCHS) is located c.100m away from the Boundary of project area and the outermost place is c.3.6km away. Within the parameter c.3km distance away from the project territory, the potential places are (13) places concerning the religious complexes. (See Map. 1)

This study area is adequately efficient to investigate the cultural heritage and its association around the project area where located on the eastern bank of *Barlar* Creek. Therefore, the scoping had been considered as the three portions such as upstream, downstream and neighboring. To be coverage of the studying area, the distance from the territory of the project had been demarcated as 3km diameter ring at the center of project Boundary. The eastern part is simply with the rice fields. Therefore, the north, south and west are potentially emphasized. The western neighbouring at the opposite site of the project area is the cradle of study area. Therefore, the main study was surrounded by the 1.5 km radius ring (3km diameter) to encompass the potential cultural heritage places. It is practically workable for the assessment of cultural heritage associating the project area.

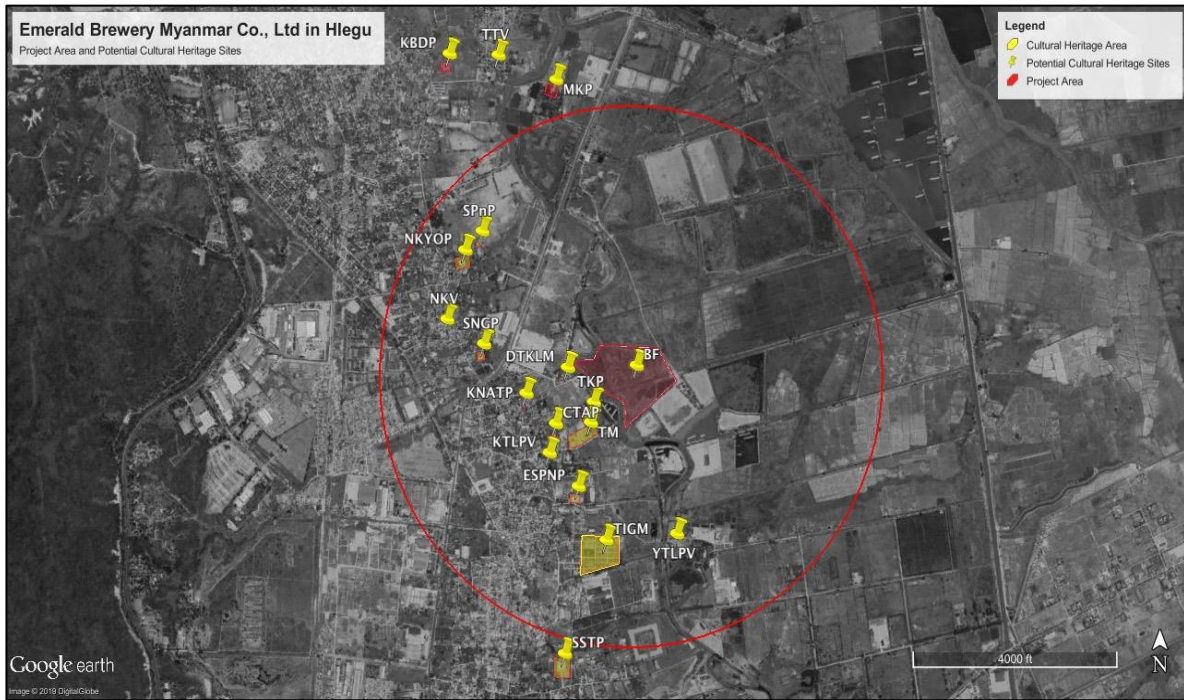


Figure 4-77 The Project Area and Potential Cultural Heritage Sites (Map 1)

Yellow area is potential places of local religious edifice for cultural heritage impact assessment. Red area is the parameter of project area.

KBDP=Kyeik Boddhi Pagoda, TTV=Ta Kon Taing Village, MKP=Moe Kaung Pagoda, SPnP=Shin Punnya Pagoda, NKYOP=New Khwe Ywar Oo Pagoda, NKV=Newl Khwe San Pya Village, SNGP=Shwe Nat Gu Pagoda, DTKLM=Dhamma Thiddhi Kaw Line Monastery, KNATP=Koe Nawin Aung Thiddhi Pagoda, TKP=Thai Kyaung Pagoda, KTLPV= Kone Ta La Paung Village, CTAP=Chan Thar Aye Pagoda, TM=Thai Monastery, ESPNP=Eissa Punna Pagoda, TIGM=Thae Inn Gu Monastery, YTLPV=Yay Ta La Baund Village, SSTP=Shwe Se Ti Pagoda

4.6.4 Villages around the Project Area

There are four villages within the assessment area around the project Boundary. They are Kone Ta La Baund, Ta Kon Taing, Nwel Khwe San Pya and Yay Ta La Baund. In Ta Kon Taing village, there are *two* religious places; Kyeik Bodhi Pagoda and Moe Kaung Pagoda. In Nwel Khwe San Pya village, there are *three* places; Shin Punnya Pagoda, Nwel Khwe Ywar Oo Pagoda and Shwe Nat Gu Pagoda. Kone Ta La Baund village, there are *eight* places; Dhamma Thiddhi Kaw Line Monastery, Koe Nawin Aung Thiddhi Pagoda, Thai Kyaung Pagoda, Thai Monastery, Chan Thar Aye Pagoda, Eissa Punna Pagoda, Thae Inn Gu Monastery and Shwe Se Ti Pagoda.

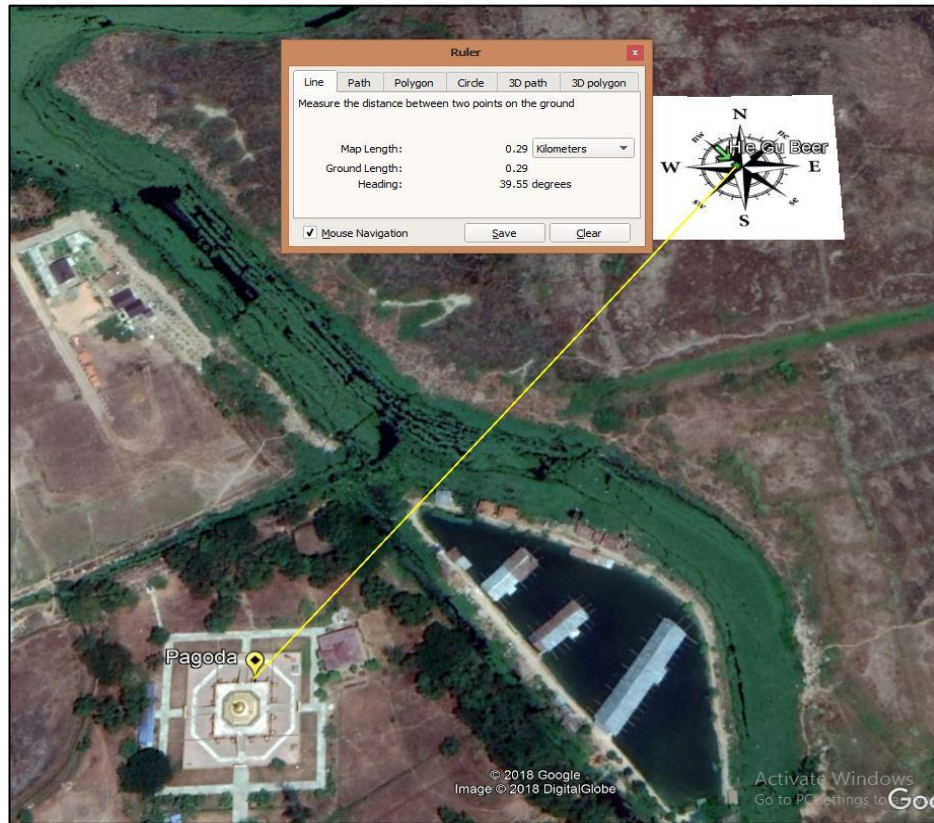


Figure 4-78 Nearest Pagoda (0.29 km) away from Project site



Figure 4-79 Second Nearest Pagoda (0.72 km) away from project site

Photos above cultural and heritage are shown as following.

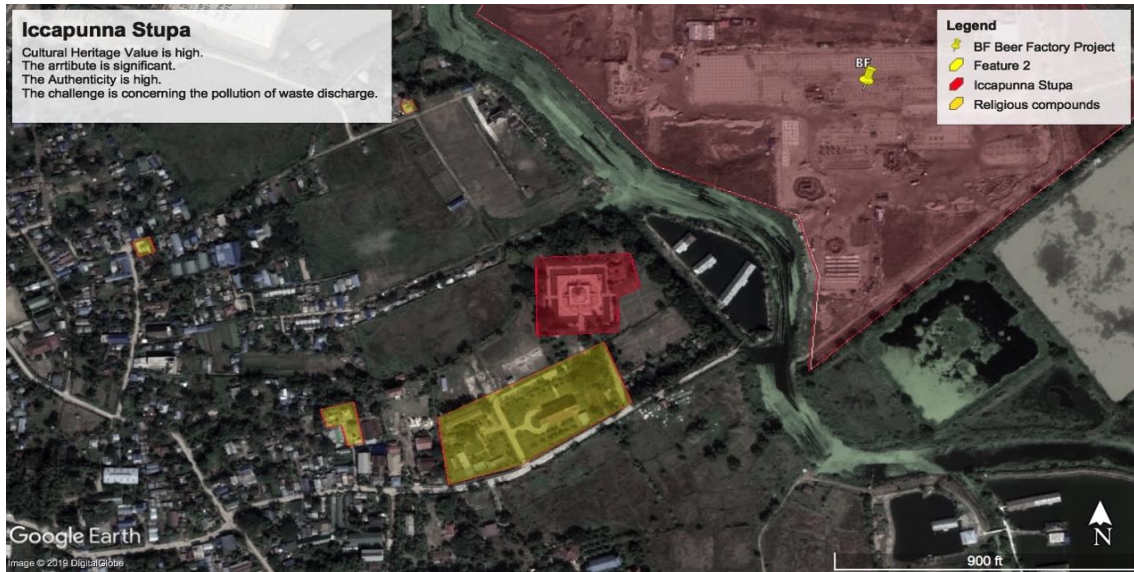


Figure 4-80 The photo of most important of culture and heritage iccapunna stupa

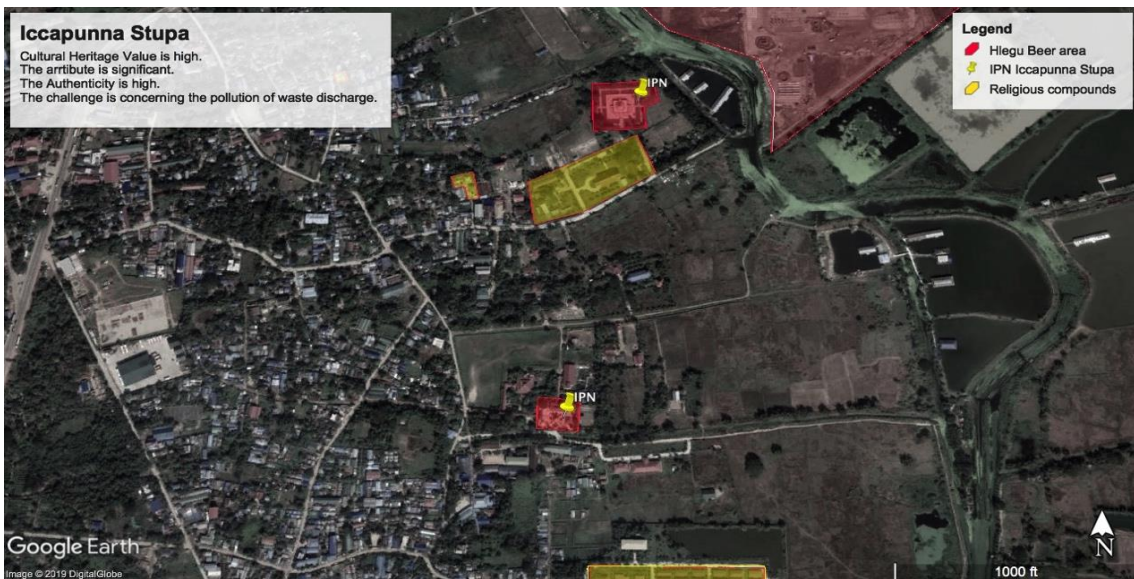


Figure 4-81 Photo of two iccapunna stupa

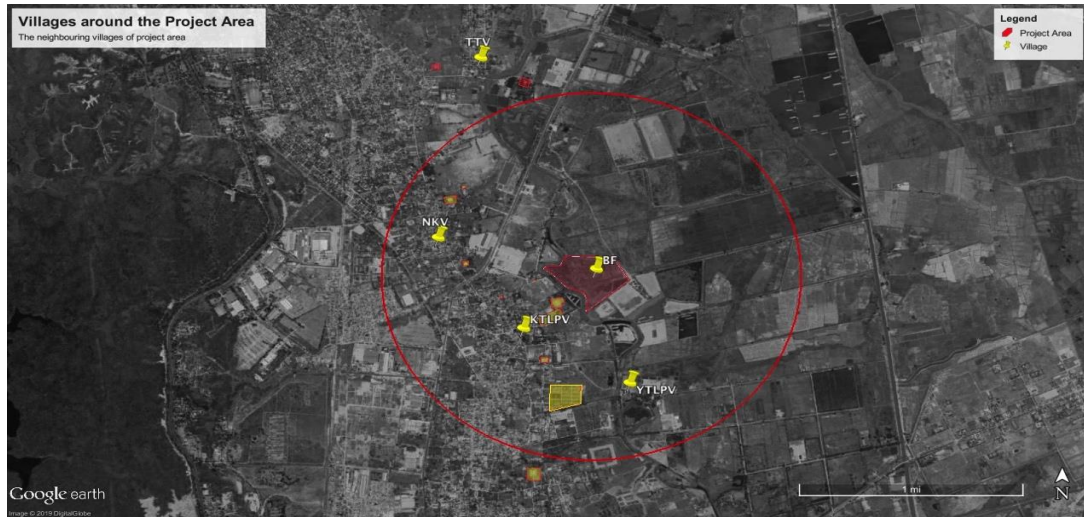


Figure 4-82 Photo of the neighbouring village



Figure 4-83 Photo of North Iccapunna Stupa



Figure 4-84 Photo of The Façade of Amaravati Monastery Complex (Thai Kyaung Monastery)



Figure 4-85 Photo of Interior view of Iccapunna Stupa in original brick structure preserved by encasing with new RC structure



Figure 4-86 Original brick top of North Iccapunna Stupa encased by the new RC structure



Figure 4-87 Original brick top of North Iccapunna Stupa encased by the new RC structure



Figure 4-88 The Façade of South Iccapunna Stupa including the chronicles of ten pagodas



Figure 4-89 South Iccapunna Stupa viewed from the west



Figure 4-90 Detail of South Iccapunna Stupa



Figure 4-91 Photo of Kyaik Boddhi Stupa

4.6.5 Conclusion of Cultural Heritage Impact Assessment for EIA

Within the project territory, there are many religious complexes. The potential impacts might be challenged as some pollutants for the visual and ventilation as well as accessibility to the Religious complexes. Therefore, the study area for Cultural Heritage Impact Assessment work is mainly focused on the religious complexes and associated local community of neighboring villages around the project area.

If some archaeological remains and cultural significance will be come out in assessment process, it will be reported to the heritage authority of Department of Archaeology and National Museum, Ministry of Religious Affairs and Culture. Moreover, every part of assessment process will follow the legal requirement; The Protection and Preservation of Cultural Heritage Regions Laws and Rules (1998).

4.7 Health Impact Assessment

This health impact assessment will be conducted as a part of study to access the health impact of *Emerald Brewery Myanmar Limited*. This study is intended to provide the information regarding the existing health status of the community (villages/wards) around the project area and the potential health impacts that are likely to be affected by the project.

The main goals of this health impact assessment study include:

- To assess the baseLine community health conditions of the people residing in the area
- To identify the key health issues that may result from project activities,
- To evaluate the potential health risks and impacts of the project, and
- To propose mitigation measures to minimize or avoid potential negative health impacts on people in the project-affected area.

To assess potential health impacts that may turn out from the project, this study employed both quantitative and qualitative approaches. Under the quantitative approach, desk review of relevant official statistics, records, literature, and relevant planning and policy framework at local, district, and national levels will be performed. Household survey designed will use to evaluate baseLine community health conditions of the project affected area. Key informant interviews need to be conducted through key informant in the area

surrounding.

Questionnaire will be conducted in this study is targeted to reach the sample ratio of 10% to 30% in each community (villages/wards) of surround. Random sample procedure needs to use for the quantitative survey.

The household survey questionnaire is constructed to access the following existing conditions and characteristics:

1. Household demographics and their socioeconomic status including education, occupation, and income and expenditure,
2. Healthcare service facility
3. Diseases condition
4. Personal behavior
5. Medical examination and immunization status and
6. Health education and opinion on healthcare services available.
7. Environmental conditions that can affect the health status

It is formulated according to the need of the health care status of the township's health profiles and health condition of the villages in the surrounding area.

4.7.1 Survey Range on Health Impact Assessment

Survey range on Health Impact Assessment for a proposed project, Manufacturing and Distribution of Beer in Hlegu Township was assigned about 1.5 km radius from core area of the project site with these reasons,

According to pre-survey,

- Terrestrial environment of the proposed project area is open land existing few common species of small trees, shrubs, birds, amphibians and reptiles, flying insects such as butterfly and dragonfly occur, considered as not biodiversity significant area and have also no connection with any other wildlife protected/conservation areas.
- This study was intended to provide the information regarding the existing health status of the community around upcoming Emerald Myanmar Brewing Co., Ltd. area and the potential health impacts that are likely to be affected by the project.
- The project shall carry out an environmental impact assessment, a social impact assessment and health impact assessment and prepare Environmental Management Plan according to the legal, administrative and legislative frame work,

The Union of Myanmar Public Health Law (1972)

Section 278 of the Penal Code (1948)

Environmental Conservation Law (2012)

Environmental Conservation Rules (2014)



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- The brewing factory will give some potential risk to adverse health impacts on the surrounding community based on the type of factory or operation. It will be based on the type of factory and operation plan that the project developer will conduct. Potential impacts that may result from the project operation were assessed and mitigation measures were proposed to ensure that these potential negative impacts are reduced and minimized. Following are some results;

- Air quality control results were presented with no obvious highlight and no sign of immediate harm to the surroundings.

- The steps of brewing and list of raw materials for brewing follows the standard guideline of brewing globally.

- Regarding with the water quality,

According to the developer of the project, water treatment will be used to treat the water source from tube wells. For wastewater (sewage water treatment) system will be installed in accordance with the international and national standard. It will effectively decrease the water related diseases and minimize the water pollution.

- The creek known as Barlar Chaung (a branch of Ngamoeyeik Chaung/River) beside the project site which is considered as point source of discharge-water body from the Beer Plant/industry. The creek is not significant area for biodiversity. Few common water plants, fish (small fish), bird and other common species are observed. No IUCN Red list species are found. The creek is not connected to any other protected wetland areas or sensitive aquatic ecosystem.

- Treated-Discharged water from BEER Plant will be sunk or deposited nearby the water of the creek, as the water current is very slow in the creek. The effect of discharged water on surrounding area can be reduced by the waste water treatment plant.

4.7.2 Health Impact Assessment

Health impact assessment is shown as following.

1. Overall Introduction

Health has become prominent in recent years as a focus for public debate, not only in relation to personal risk behavior and medical care, but also as an outcome of a range of types of policy. In particular, air pollution and food “scars” including BSE (Bovine Spongiform Encephalopathy) have become major political issues, and other aspects of health are frequently in the news. More broadly, the need for Health Impact Assessment (HIA) has been acknowledged by a succession of official documents, including the white paper on public health in England, the Acheson report on social inequalities in health and the London Health Strategy. At the supranational level, the Amsterdam Treaty of the European Union states that “A high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities.”



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HIA has been defined as “a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” HIA is usually suggested for policy areas other than health services, for example transport, housing or social inequalities, because health has tended to be neglected in policy development. It is applicable to policies in these areas whether they are motivated by the desire to improve or protect health, such as traffic calming schemes, or for other purposes. HIA can also be applied in the context of health services, to assess the result of policies or the contribution of different components of care to a change in health status Although HIA has largely been applied to policies that primarily affect the public sector, the same approach is equally applicable to private sector activity. In all cases, a broad range of effects needs to be examined, including undesirable and/or unintended consequences. The idea has much in common with social or environmental impact assessment; in the latter case, it is more similar to Strategic Environmental Assessment, which examines policies, program and plans, than to project based Environmental Impact Assessment, which is longer established. Progress in implementing HIA has been made in the past few years, and a number of guideLines and reviews have become available. Much of the recent activity has been aimed at ensuring the incorporation of HIA into policy making at the local level. These advances have primarily focused on improving policy engagement and involvement of both the community covered by the proposal and of other key stakeholders that is, on the process, using existing knowledge.

However, it is generally acknowledged that there are serious gaps in the evidence base required to carry out a rigorous HIA. Already, the lack of good and complete information is a serious limitation on HIAs. In the long run, if HIAs are to be effective, they will need reliable evidence that covers all aspects of the work. At present, such information is patchy.

2. Health impact assessment

Health impact assessment is a means of evidence-based policy making for improvement in health. It is a combination of methods whose aim is to assess the health consequences to a population of a policy, project, or program that does not necessarily have health as its primary objective.

Health impact assessment is a multidisciplinary process within which a range of evidence about the health effects of a proposal is considered in a structured framework. It considers the opinions and expectations of those who may be affected by a proposed policy. Potential health impacts of a proposal are analyzed and used to influence the decision-making process.

2.1 Potential users

A health impact assessment is based on a broad model of health, which proposes that economic, political, social, psychological, and environmental



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factors determine population health. This refers to the need to undertake health impact assessment of both national and local policies. Initially this will have greatest implication for those working in health improvement at a local level, particularly in health and local authorities. Assessment is, however, a flexible process that can be used by decision makers in all sectors for evaluating policy that may have an impact on health and wellbeing.

2.2 Development

The basic concepts of health impact assessment are not new and will be familiar to those working in public health. It can be seen as a development of public health practice since Victorian times aimed at creating healthy public policy. It builds on and brings together methods including policy appraisal, health consultation and advocacy, community development; evidence-based health care and environmental impact assessment. Building healthy public policy was a key component of the Ottawa charter for health promotion. The concept includes policies designed specifically to promote health (for example, banning cigarette advertising) and policies not dealing directly with health but acknowledged to have a health impact (for example, transport, education, economics). Accepting a broad model of health suggests that virtually any area of public policy can have health impacts. Therefore, all policy development could be subjected to some method of health impact assessment. In the United Kingdom the wider health implications of public policy have become increasingly important in public health. The Health for All by the Year 2000 program (1977) and the WHO's healthy cities program (1987) stimulated interest in the important part local authorities and communities can play in improving health, including urban regeneration strategies.

2.3 Methods of assessment

Those looking for an established analytical framework for considering health impacts will be disappointed. Currently there is neither an accepted gold standard nor even a simple, reliable, and evaluated method for carrying out health impact assessment. Only a few assessments have been completed and these used several approaches. Health impact assessment should be thought of as a group of research activities being developed to identify health impacts of projects and policies both prospectively and retrospectively. It is a structured way of bringing together evaluation, partnership working, public consultation, and available evidence for more explicit decision making.

2.3.1 Types of HIA

(1) Desktop HIA

The desktop HIA is a qualitative assessment and is most appropriate for projects with few anticipated health impacts. The HIA team often does not pursue extensive stakeholder engagement although some involvement is usually required.



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(2) Rapid Appraisal HIA

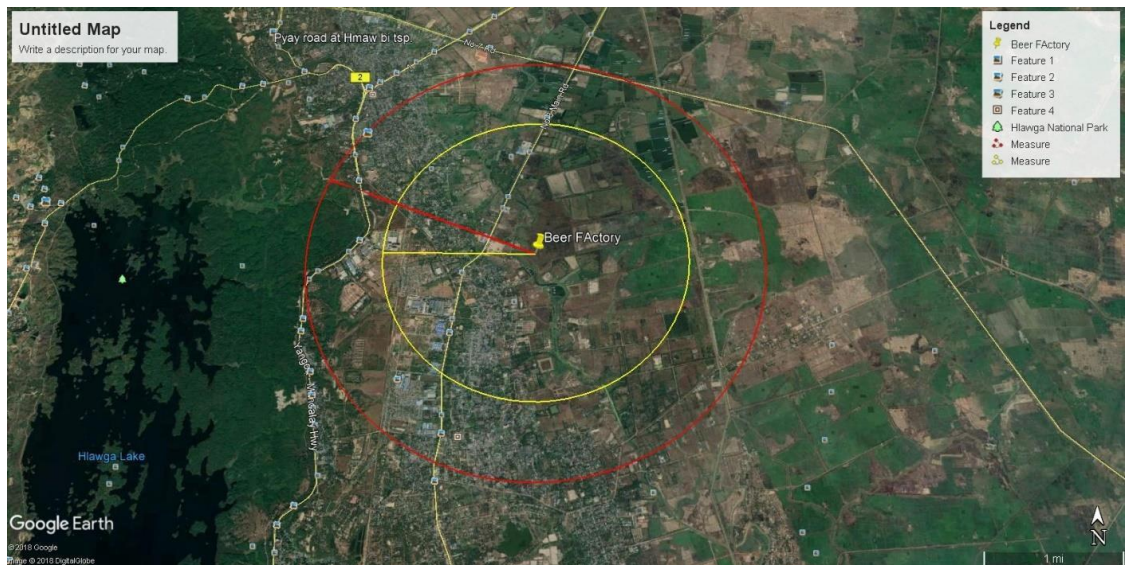
A rapid appraisal HIA is considered to be a site-specific HIA that uses available health information without conducting new field survey work. Data sources may include peer-reviewed scientific literature, health department database and local private health service data sources. A rapid appraisal HIA may evolve into comprehensive HIA.

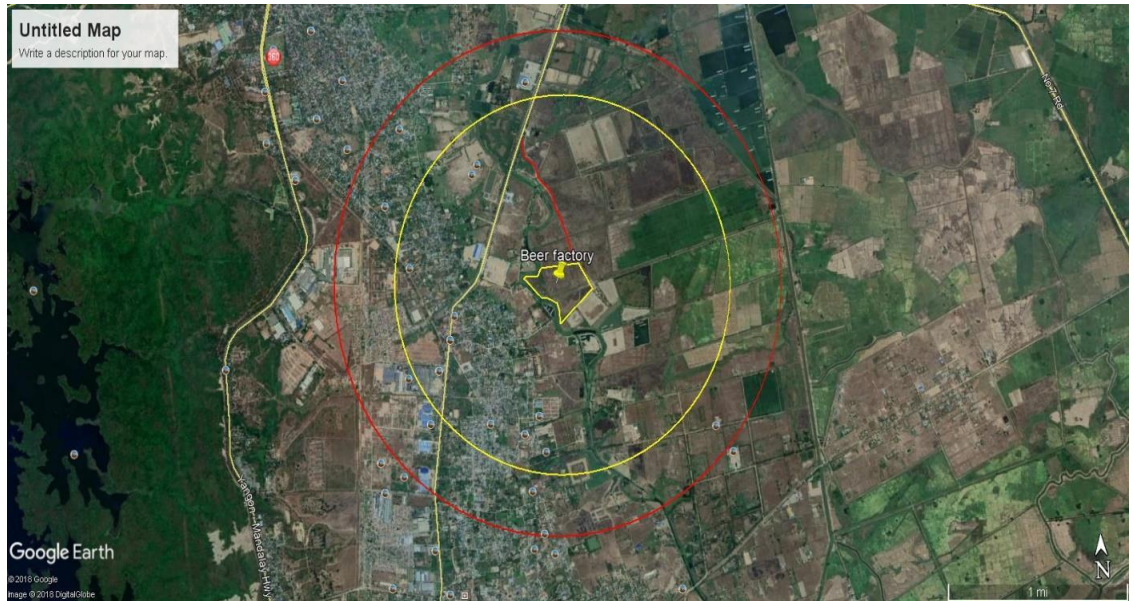
(3) Comprehensive HIA

The hallmark of the comprehensive HIA is collection of new data, to address critical data gaps identified during the scoping process. A comprehensive HIA also pursues extensive stakeholder engagement and may be appropriate for projects such as resettlement of existing communities, significant population influx, major disruption of subsistence practices, major impacts to key social determinants of health etc.

3. Background of Project and Study

Emerald Myanmar Brewery Co., Ltd. will be located beside the No.3 Main Road, Htaukkyant, Mingalardon and Hlegu Township, Yangon. (See the satellite image below) The project area will be 161.53 acres of land for brewing factory.





This health impact assessment was for Emerald Myanmar Brewing Co., Ltd. carried out in 2018. This study was intended to provide the information regarding the existing health status of the community around upcoming Emerald Brewery Myanmar ,Ltd. area and the potential health impacts that are likely to be affected by the project.

3.1 The main goals of this health impact assessment study include:

- To assess the baseLine community health conditions of the people residing around the area,
- To identify the key health issues that may result potentially from project activities,
- To evaluate the potential health risks and impacts of the project, and
- To propose mitigation measures to minimize or avoid potential negative health impacts on people in the project-affected area.

3.2 Scope of work of the study includes:

- Collection of secondary data for community health conditions of the project affected area from official records and publications
- Generate primary data on existing community health conditions through household survey and interviews
- Development of mitigation measures, management and mitigation plan to minimize negative health risks and impacts

To assess potential health impacts that may turn out from the project, this study employed both quantitative and qualitative approaches. Under the quantitative approach, desk review of relevant official statistics, records, literature, and relevant planning and policy framework at local, district, and

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

national levels was performed. Household survey designed to evaluate baseLine community health conditions of the project affected area was carried out.

Questionnaire survey conducted in this study was targeted to reach the sampLineg ratio of less than 30%. Systematic sampLineg procedure was used in this household survey. Households from 4 different communities (wards) around the upcoming factory were surveyed in this study.

The household survey questionnaire was constructed to tap the following existing conditions and characteristics:

- (1) Household demographics and their socioeconomic status including education, occupation, and income and expenditure,
- (2) Healthcare service facility
- (3) Diseases
- (4) Personal behavior
- (5) Medical examination and immunization (if possible), and
- (6) Health education and opinion on healthcare services available.

Items were formulated by the consultant and reviewed by health impact assessment team members as to clarity of item wordings and relevance to the community health condition measured.

4. Introduction

This health impact assessment was conducted as an initial study of the HIA study for Emerald Brewery Myanmar, Ltd. This study was intended to provide the information regarding the existing health status of the community in the Emerald Brewery Myanmar, Ltd. project area and the potential health impacts that are likely to be affected by the project.

4.1. Legal, Administrative and Legislative Framework

There are existing legislations at the national and local levels which contains provisions directly related to public health and air pollution. Laws relevant to this study for the Emerald Brewery Myanmar, Ltd Project are mentioned below.

Legislation	Relevance to the Project
The Union of Myanmar Public Health Law (1972)	The law mandates the Government to protect public health regulating atmospheric pollution to the environment. The project aligns with law to safeguard public health
Section 278 of the Penal Code (1948)	Section 278 of the Penal Code (1948) regulated atmospheric emissions that can be harmful to the people's health. The project shall consider



atmospheric emission standards in its EIA study and environmental management plan

Environmental Conservation Law (2012)

The project shall carry out an

Environmental Conservation Rules (2014)

environmental impact assessment, a social impact assessment and health impact assessment and prepare Environmental Management Plan

4.2. Objectives and Scope of Work

The main goals of this health impact assessment study include:

- To assess the baseLine community health conditions of the people residing around the area,
- To identify the key health issues that may result potentially from project activities,
- To evaluate the potential health risks and impacts of the project, and
- To propose mitigation measures to minimize or avoid potential negative health impacts on people in the project-affected area.

Scope of work of the study includes:

- Collection of secondary data for community health conditions of the project affected area from official records and publications
- Generate primary data on existing community health conditions through household survey and interviews

Development of mitigation measures, management and mitigation plan to minimize negative health risks and impacts

4.3. Study Methodology

To assess potential health impacts that may turn out from the project, this study employed both quantitative and qualitative approaches. Under the quantitative approach, desk review of relevant official statistics, records, literature, and relevant planning and policy framework at local, district, and national levels was performed. Case study review and collecting information from similar projects were also conducted. Household survey designed to evaluate baseLine community health conditions of the project affected area was carried out.

(i) Secondary Data Collection

The study team spent few days on collecting secondary data that reveal the existing community health conditions of the project vicinity from such sources as official reports and hospital statistics.



(ii) Quantitative Household Survey

The quantitative household survey was carried out to generate a baseLine description of community health conditions of the project area.

4.3.1 SampLineg Design and Sample Size

In designing the sample size, due considerations were given to the objectives of the study, scope of work, timeframe and resource limitations for the survey. According to data obtained from General Administrative Department, total number of villages estimated for the study was 4 villages.

Questionnaire survey conducted in this study was targeted to reach the sampLineg ratio of less than 30%. Systematic sampLineg procedure was used in this household survey. A total of 18 households were surveyed in this study.

4.3.2 Household Survey Questionnaire

The household survey questionnaire was constructed to tap the following existing conditions and characteristics:

- (1) Household demographics and their socioeconomic status including education, occupation, and income and expenditure,
- (2) Healthcare service facility
- (3) Diseases
- (4) Personal behavior
- (5) Medical examination and immunization, and
- (6) Health education and opinion on healthcare services available.

Items were formulated by the consultant and reviewed by health impact assessment team members as to clarity of item wordings and relevance to the community health condition measured.

4.3.3 Collection

The field survey data collection activities were performed by survey team consisting of required number of data enumerators and supervisors. Following a comprehensive plan the enumerators completed the field works within given timeframe using pre-designed questionnaire.

4.3.4 Observation Records

During field surveys, information obtained through household surveys and interviews was corroborated through direct observation by the study team aiming at assessing social health determinants and healthcare infrastructure existed in the project area and living conditions of people in the area.

4.3.5 Data Analysis

Quantitative data were coded and processed using social statistical package. Qualitative data were coded using standard methods.



5. Community Health Profile of the Surveyed Communities

Health survey was carried out in the project area and its surrounding villages. Table 1 describes sample household number of the survey conducted in this study.

Table 1- Population and Sample of the Survey

Sr.	Village	Surveyed Household
1	1	3
2	2	5
3	3	5
4	4	5
		18

5.1 The Existing Demographic Profile Related to Health Status

5.1.1 Occupational Patterns of Surveyed Communities

Agriculture is the major livelihood of the households in the community surrounding the area. Family occupation of nearly more than 10% of households surveyed in this study is self-employed.

5.1.2 Substance use habits

With regard to smoking habit, the respondents said that they had family members who smoke cigarette. More than half of households reported no smokers. It was also found that household members (26% of the total sample) have been smoking for more than five years. This prolonged continued smoking habit of the community can increase the excess morbidity and mortality caused by respiratory, cardiovascular and cancer diseases.

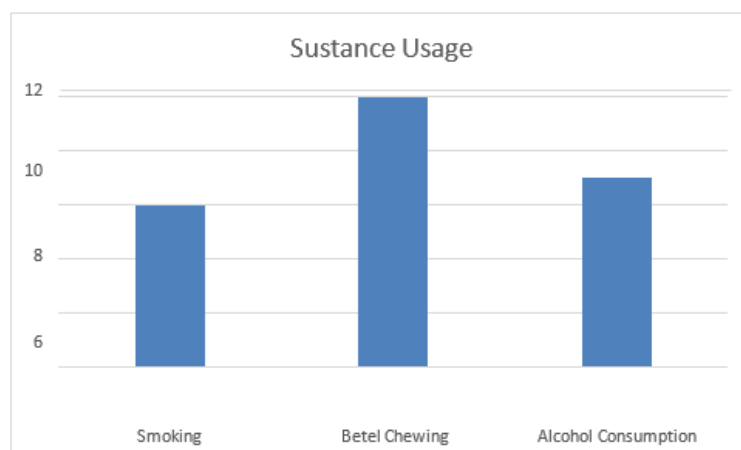


Figure 1 – Substance Used

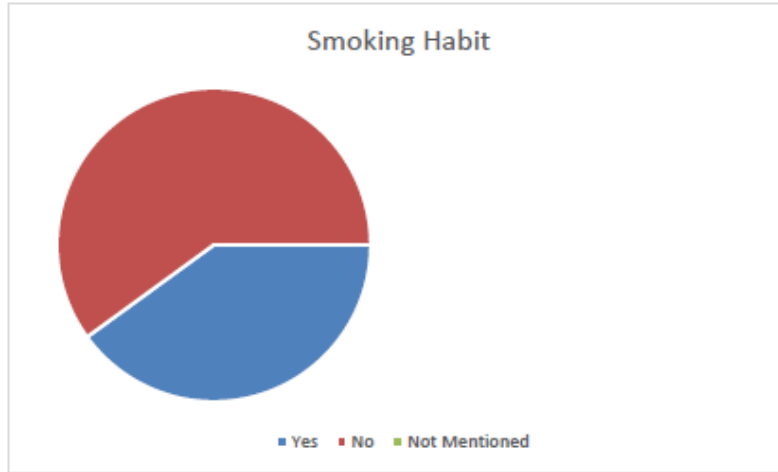


Figure 2 – Smoking

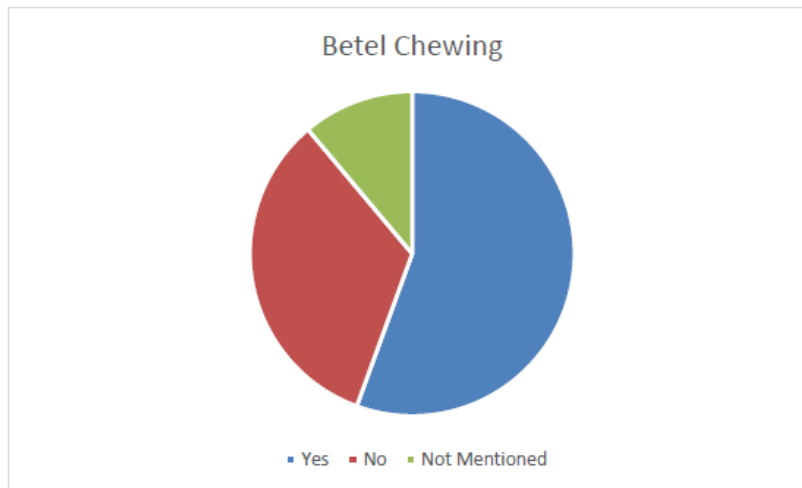


Figure 3 – Betel Chewing

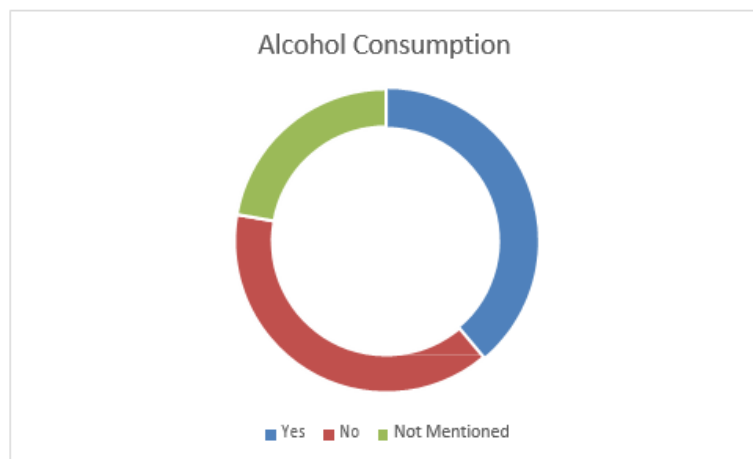


Figure 4 – Alcohol Consumption

6. HEALTH SERVICES

6.1 Nearest Medical Care

Regarding healthcare of local community, the nearest Rural Health Center and hospital are situated in 20 minutes-drive rural health center and Htaukkyant hospital. During health survey, the majority of respondents stated that they go to Htaukkyant Hospital and Pearl Hospital.

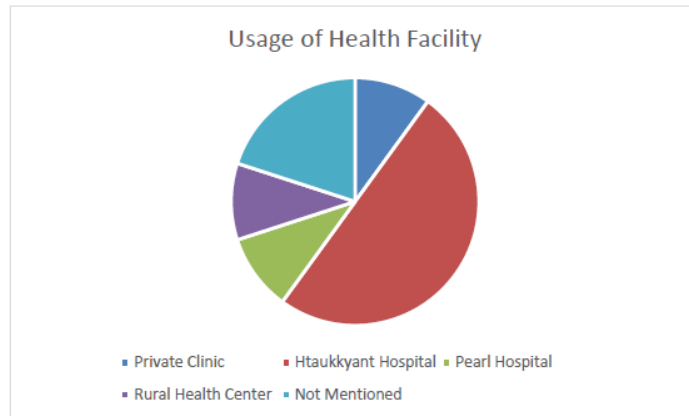


Figure 5 – Health Facility

6.1.1 Community Opinion on Healthcare Services

Of the total sample, majority suggested that more healthcare infrastructure and medical personnel are needed in their community. The remaining respondents provided no comments.

6.1.3 Major Diseases

It was found out that major health problem is due to hypertension followed by other disease.

(Remark: The responds are from community and interpretation from narrator)

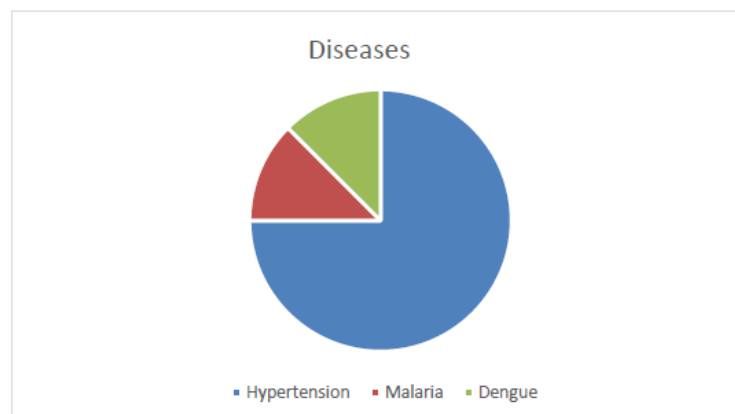


Figure 6 - Major Diseases

6.2 Health Education Program in Local Community

Health survey questionnaire includes a question regarding with local community's interest in health education that whether they have received health education program in their community or not and it is based on the village receiving health education.

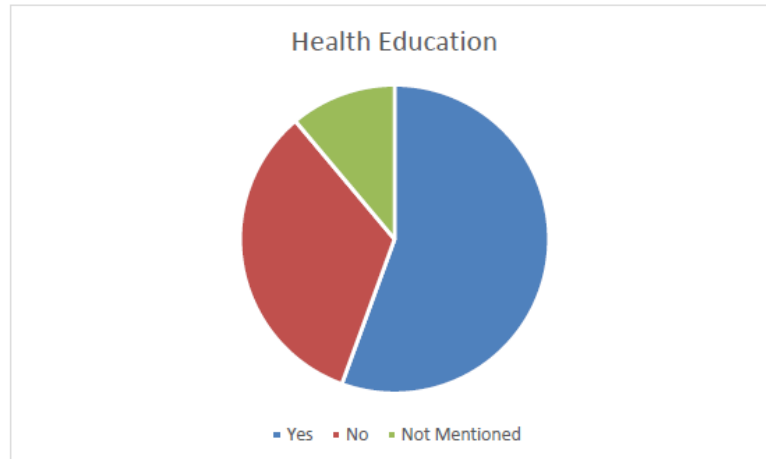


Figure 7 – Health Education

7. Potential Health Impacts and Mitigation Measures

The brewing factory will give some potential rise to adverse health impacts on the surrounding community based on the type of factory or operation. It will be based on the type of factory and operation plan that the project developer will conduct. (The project developer does not mention the type of factory or operation) Potential impacts that may result from the project operation were assessed and mitigation measures were proposed to ensure that these potential negative impacts are reduced and minimized. Following are some results;

Ambient Air Quality Report

Date: 16/10/18

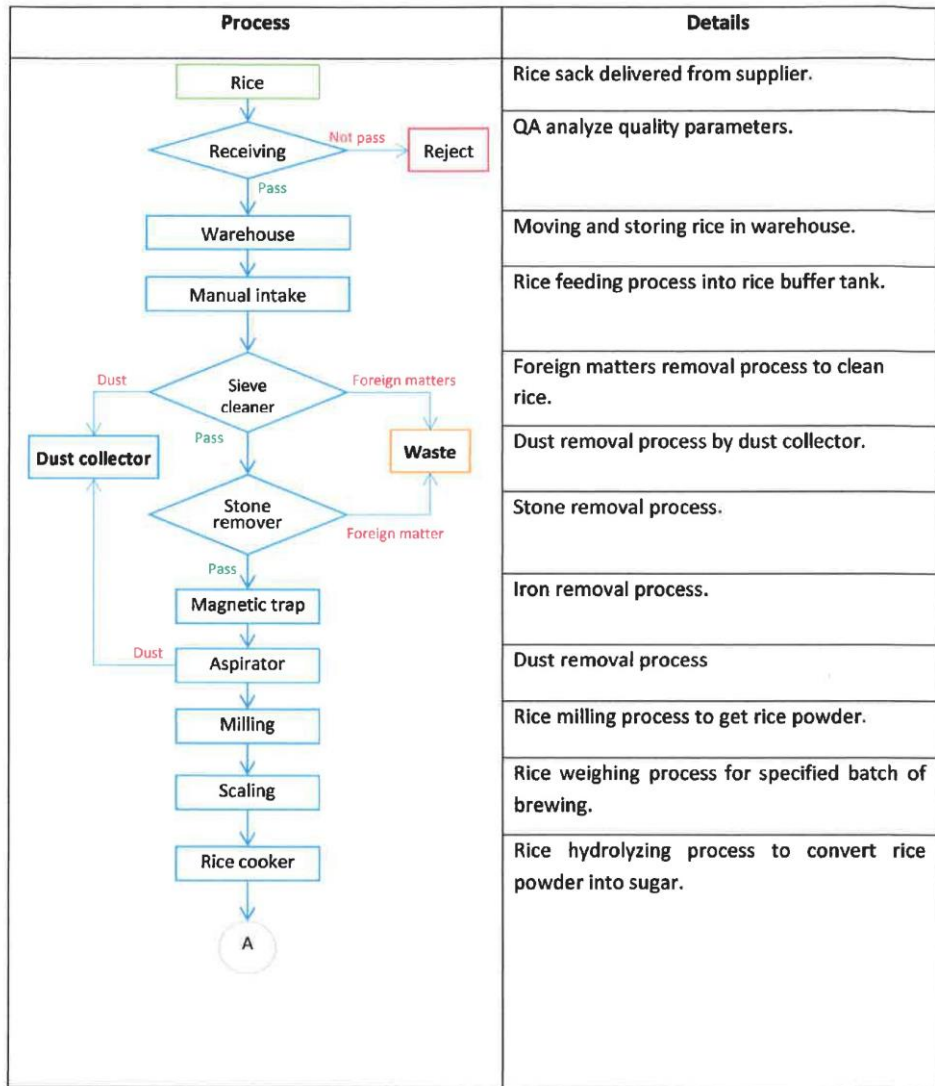
လေတိုင်းသည့်နေရာ Sample site	Emerald Brewery Myanmar Limited	လေနမူနာအမှတ်စဉ် Sampling I.D	EIA-002	
နေရာ(မြို့နယ်) Location (Township)	Hague	လတ္တီတွဒ် Latitude	17 ° 01' 07.404"	
		လောင်ဂျီတွဒ် Longitude	96 ° 09' 26.577"	
နေရာ(တိုင်းပြည်နယ်) Location (Region/State)	Yangon Region	နည်းစဉ် Method	Haz-Scanner Model-EPAS, Noise Meter	
		စက်တည်အမြင့်(မြေပြင်မှ) Station height (about ground)	5 ft	
တိုင်းတာလိုသူအမည် Name of customer;	Emerald Brewery Myanmar Limited	စတင်တိုင်းတာသည့်အချိန် (နေ့-အချိန်) Log on Time (Date, Time)	8.10.18	10:30
တိုင်းတာသည့်နေ့စွဲ Air Sampling Testing Date	8.10.18	တိုင်းတာပြီးသည့်အချိန် (နေ့-အချိန်) Log off Time (Date; Time)	9.10.18	10:30
ဆက်သွယ်ရန်လိပ်စာ Contact Address/Phone	Plot No.498, Yay Ta La Baund Village, Hlegu Tsp; Yangon	တိုင်းတာမှုကြာချိန် Logging Duration (hours)	24 hrs	















Comparison of Results Value and Guideline Standard

စဉ် No	အရည်အသွေး Parameters	ရလဒ် Result	ယူနစ် Unit	ပျမ်းမျှကာလ Measuring Avg. Period		ထုတ်လွှတ်မှုစံနှုန်း Guideline Value	ပျမ်းမျှ ကာလ Avg. Period
1	နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် Nitrogen Dioxide	21.96	μg/m ³	-	-	*40μg/m ³	1-year
				24	hours	*200μg/m ³	1-hour
2	Particulate matter PM ₁₀	84.84	μg/m ³	-	-	*20 μg/m ³	1-year
				24	hours	*50 μg/m ³	24-hours
3	Particulate matter PM _{2.5}	47.93	μg/m ³	-	-	*10 μg/m ³	1-year
				24	hours	*25 μg/m ³	24-hours
4	ဆာလဖာဒိုင်အောက်ဆိုဒ် Sulphur Dioxide	0	μg/m ³	24	hours	*50 μg/m ³	24-hours
				-	-	*500 μg/m ³	10 minute
5	အမိုးနီးယား Ammonia	23.8	ppm	24	hours	NG	-
6	ကာဗွန်ဒိုင်အောက်ဆိုဒ် Carbon Dioxide	331.59	ppm	24	hours	NG	-
7	ကာဗွန်မိုနောက်ဆိုဒ် Carbon Monoxide	0.19	ppm	24	hours	NG	-
8	အပူချိန် Temperature	27.38	°C	24	hours	NG	-
9	Volatile Organic Compound	0	ppb	24	hours	NG	-
10	လေတိုက်နှုန်း Wind Speed	4.16	mph	24	hours	NG	-
11	လေတိုက်ရာအရပ် Wind Direction	45	Deg	24	hours	NG	-
12	အိုဇုန်း Ozone	23.28	μg/m ³	24	hours	100μg/m ³	8-hour daily Maximum
13	အောက်စီဂျင် Oxygen	20.97	%	24	hours	NG	-
14	ဆူညံမှု Noise	51.3	dBA	24	hours	70	(Day Time)
		53.75				70	(Night Time)

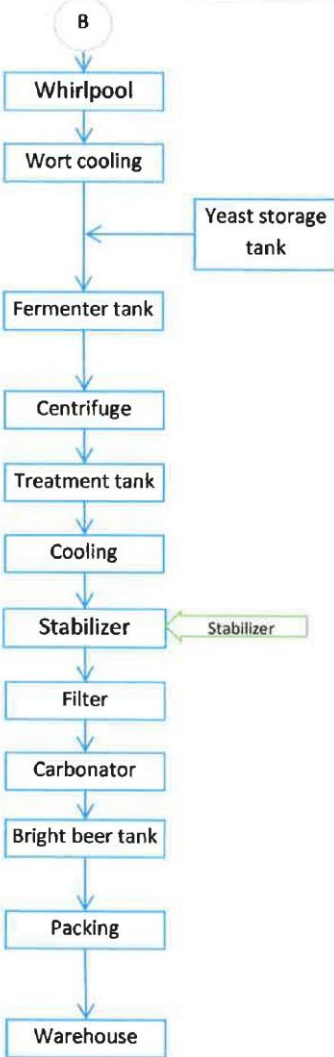


Brewery processing flow chart



Process	Detail
	Malt delivered from supplier.
	QA analyze quality parameters.
	Malt delivery process from truck into buffer.
	Foreign matters removal process to clean malt.
	Stone removal process.
	Storing cleaned malt prior being used in the brew house.
	Iron removal process.
	Dust removal process.
	Malt milling process to convert malt grain into grist.
	Malt weighing process for specified batch of brewing.
	Malt hydrolyzing process to convert malt into sugar (During this process, the sugar from rice cooker is transferred into this Mash kettle)
	Separation process to collect wort then remove spent grain and others into spent grain bin (being sold as animal feed).
	Wort collection and preparation processes for next step.
	Wort boiling process with hop addition during the process.



Process	Detail
 <pre> graph TD B((B)) --> Whirlpool[Whirlpool] Whirlpool --> Wort[Wort cooling] Wort --> Fermenter[Fermenter tank] Yeast[Yeast storage tank] --> Fermenter Fermenter --> Centrifuge[Centrifuge] Centrifuge --> Treatment[Treatment tank] Treatment --> Cooling[Cooling] Cooling --> Stabilizer[Stabilizer] Stabilizer --> Filter[Filter] Stabilizer --> Stabilizer Filter --> Carbonator[Carbonator] Carbonator --> Bright[Bright beer tank] Bright --> Packing[Packing] Packing --> Warehouse[Warehouse] </pre>	<p>Separation process to remove any precipitates or adulterants from wort.</p>
	<p>Cooling down process prior be transferred for further fermentation process.</p>
	<p>Yeast is added into the cold wort.</p>
	<p>Fermentation process to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.</p>
	<p>Yeast removal process from beer.</p>
	<p>Maturation process at low temperature to let yeast settling down to the bottom of treatment tank.</p>
	<p>Cooling down process to prepare the batch before filtration.</p>
	<p>Addition process of stabilizing agents.</p>
	<p>Filtration process for particle removal to clarify beer.</p>
	<p>Carbon dioxide adjusting process to appropriate carbon dioxide level.</p>
	<p>Storing bright beer prior be transferred to filling process.</p>
	<p>Filling process (bottle, can or keg containers) with pasteurization prior being packed in packaging and arranged on the pallet.</p>
	<p>Storing process of finished products in warehouse.</p>

SR NO.	DESCRIPTION	A/U
A	DIRECT RAW MATERIALS	
1	Barley	Kg
2	Malt extract	Kg
3	Hop Bitter pellet in alpha acid	Kg alpha
4	Hop Aroma pellet in alpha acid	Kg alpha
5	Hop Extract in alpha acid	Kg alpha
6	Beta - glucanase enzyme	Kg
7	Phosphoric acid	Kg
8	alpha-amalyse enzyme	Kg
9	Yeast	Kg
10	Black Malt	Kg
11	Beer Concentrated	Kg
12	Sodium Metabisulphite	Kg

B	INDIRECT MATERIALS	
1	PVPP (Single Use)	Kg
2	Std Supercel/Celite	Kg
3	Hyflo Supercel/Celite	Kg
4	Acid Cleaning Chemical Beer Proce	Kg
5	Acid Cleaning Chemical Brewhouse	Kg
6	Caustic Cleaning Chemical	L
7	Sanitation Chemical	L
8	Caustic additive Chemical	L
9	Filter bag/ Cartridge/Element	Piece
10	Silica Hydrogel	Kg

C	PACKAGING MATERIAL	
1	320 ml Glass Bottle	Pc
2	620 ml Glass Bottle	Pc
3	Crown Cap	Pc
4	Body Label	Pc
5	Neck Label	Pc
6	Cold Glue	Kg
7	Hot Melt	Kg
8	Empty Crate	Pc
9	Pallet	Pc
10	Keg	Pc
11	Keg Closure	Pc

Analysis of results

Air quality control results were presented with no obvious highlight and no sign of immediate harm to the surroundings. The steps of brewing and list of raw materials for brewing were seen as shown in the above and it follows the standard guideLine of brewing globally. The results were as of now and changes in the steps of procedure and raw materials can result in potential harm and it must strictly follow the mentioned procedures.

Regarding with the water quality, there was no data mentioned and it is difficult to tell on the source of water for brewing and how the wastewater will be managed. It will be better to have these results analyzed for more concrete interpretation of overall management.

7.1 Water Supply and Waste Treatment System

According to the developer of the project, the following steps of water treatment will be used to treat the water source from nearby river. For wastewater (sewage water treatment) system will be installed in accordance with the international and national standard. The lay out plan and potential system of wastewater treatment is mentioned as following diagram.

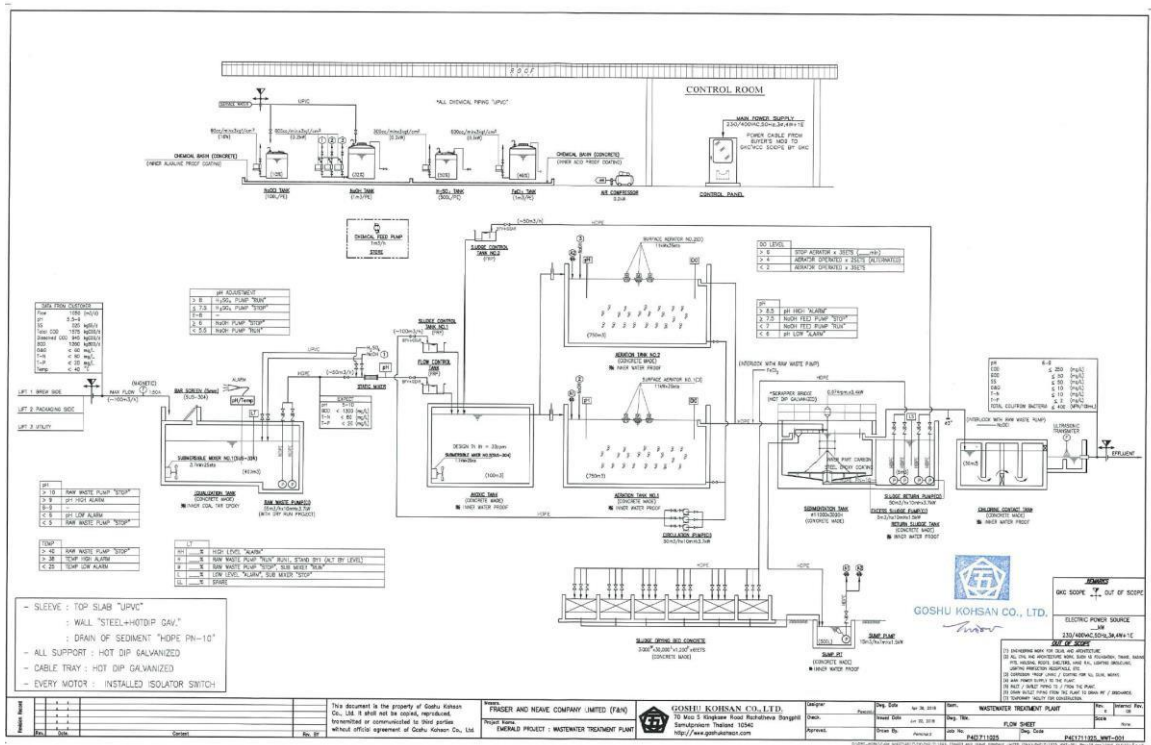


Figure 7 – Wastewater Treatment Plan



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The water supply and wastewater treatment systems are installed according to the plan mentioned; it will effectively improve the water related diseases and minimize the water pollution. The monitoring of the above-mentioned systems should be done at the start of the actual groundwork and throughout the process.

7.2 Noise pollution

The project operation will result in nuisance noise impact to the host community. If there is actual ground operation starts, there might be some construction and machinery, etc. are the major sources of noise and vibration.

7.2.1 Mitigation Measures based on the type of industry (heavy machinery)

- All rotating items should well lubricated and provided with enclosures to reduce noise transmission and extensive vibration monitoring systems should be provided to check and reduce vibrations.
- Noise-generating items such as fans, blowers, compressors, pumps, motors etc. should be specified as to limit their speeds to reduce noise levels if there will heavy machineries will be operating.
- Static and dynamic balancing of equipment should be carried out periodically, and acoustic dampeners in foundations and insulators in the interiors should be provided.
- The noise levels are monitored periodically within the area to check the exposure levels.
- The operation activities should avoid equipment and vehicles left running unnecessarily.
- Efficient schedule of deliveries to reduce traffic load and establishing and enforcing appropriate speed limits over village access roads will reduce these likely impacts.
- The project vehicles and those that dispatching should avoid using village access roads at night time.
- The access roads to the project area within the nearby villages should be widened and upgraded.
- Traffic management plan should be prepared and implemented.

7.3 Impact on Initial Planning and Lay out



Figure 8 – lay Out Plan

According to the lay out plan, it does not include all health and health related facilities required for the residence zone. One important thing is that it also needs to plan for nearby communities. Based on the lay out mentioned here, it will be good initial starting point and changes made will need to plan to overcome the health care need for community.

7.4 Community health impacts

There may cause environmental impacts at all stages of process in the area. This generates air dust particulates, fumes, and gases consisting of Nitrous Oxide (NO), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂) and Carbon Monoxide CO. (which will depend upon the type of factory) These emissions degrade the air quality in areas within 3-4 km radius periphery of the factory. In addition, some other activities associated with post-manufacturing stages, known as fugitive sources of emissions, like open air handling, loading and unloading etc. result in leakage of dust into the environment.

Such emissions can contribute to a wide range of health effects, especially respiratory diseases, lung cancer, cardiovascular diseases, brain damage, skin irritations, continuing to restricted activity/reduced performance, fatigue, headache, and nausea.

The magnitude of any health impacts due to air pollution depends on the density of population, volume and concentration of emissions, temperature, wind direction, rainfall pattern, geographical conditions, and biodiversity in the area. It also depends on the health stock of the people and their responses to pollution.

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It was found out in this study that majority of respondents reported symptom of cough. Other symptoms of lung and heart diseases were reported considerable amount of the sample surveyed.

7.4.1 Mitigation measures

- Systematic dust reduction technology should be applied.
- The efficiency and performance of de-dusting mechanisms of the factory such as filter bags should be instilled and checked continuously.
- Particulate matter in the stack gas should not exceed recommended emission standards.
(good quality rice, malt, prevent dust emission from rice milling, cleanig the rice and malt)
- Green belt should be developed to act as bio filter for the air pollutants, to safeguard the environment, and to control the increasing level of air pollution.
- The factory is better to focus on creating awareness and capacitating the local residents, especially on health and hygiene, development of the local community and promoting the efforts of the factory on controlling the problems to make good relationship with the community.
- Active CSR activities emphasizing public health sector should be carried out in the project-affected community.
- The industrial park's medical clinic should be provided enough medical personnel, facilities, and equipment and should provide services for its workers and community in the project area.
- The factory should design its own environmental standards and policy, should have environmental management team, and should adhere to and actively implement environmental management and monitoring plan resulting from the EIA study.

8. Health Impact Management and Monitoring Plan

The key components of a Health Impact Management and Monitoring plan consist of:

- (i) A list of identified impacts and issues
- (ii) A monitoring strategy- how management of the impact should be monitored,
- (iii) Responsibility for monitoring- documenting of the party responsible for the implementation of each monitoring strategy,
- (iv) Key performance indicators- informative, relevant, measure, useful, widely recognized, simple to report and easily understood
- (v) Pre assessment of basic health status of affected community should be in place before the start of the projects
- (vi) Medical clinic with assigned medical personals (Doctors or nurses) should be in place for checking and monitoring of surround communities on regular basis.



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- (vii) Medical touring should be done bi-annually with the health team from Emerald Brewery Myanmar.,Ltd together with Basic Health Staff from government side.
- (viii) Awareness session and health education talks must be done before the actual project for rising of health knowledge to surrounding communities.

Emerald Brewery Myanmar.,Ltd Developer is responsible for the operation and maintenance of the proposed project. Operation will be an environmental sound manner to ensure the compliance with the Union of the Republic of Myanmar's existing legislation. Emerald Brewery Myanmar.,Ltd Developer will form environmental management team to handle environmental, health and safety issue during the operation. The team will ensure that all necessary environmental protection measures are taken to avoid potentially adverse effects of overall operation on the environment and on the host community. The health impact management and monitoring plan for operation is shown in Table.



Table 2 - Health Impact Management and Monitoring Plan

Potential impact/issue	Management Action	Responsibility/ Implementation	Key performance indicators
Community health impacts due to potential factories and industrial and heavy machineries	<ul style="list-style-type: none"> • Regular evaluation of continuous health status of surrounding community. • Health promotion and awareness session to community regarding with environmental health issues • Medical touring together with BHS from government side • Routine and periodic medical checkup for community 	Procedure set-up and implementation by Emerald Brewery Myanmar.,Ltd developer	<ul style="list-style-type: none"> • Quarterly report on medical condition of community • Reports on collaboration of township and sub township medical department from government. • Compliance with national and international community health guideline • Medical clinic set up plan with assigned medical person • Community health survey (yearly)
Community relation and benefit sharing	<ul style="list-style-type: none"> • Initiation of Emerald Brewery Myanmar.,Ltd CSR activities in consultation with the project affected communities 	Set-up and implementation by Emerald Brewery Myanmar.,Ltd	<ul style="list-style-type: none"> • CSR programs set up and implemented together with the project affected communities • Monitoring and documentation of implementation and annual reporting • Regular assessment of community needs • Regular communication of CSR activities • Set up of distinct annual budget for CSR programs • Regular community meetings



			<ul style="list-style-type: none"> • Number of CSR projects identified and implemented
<p>Noise pollution, Air Pollution and Water pollution</p>	<ul style="list-style-type: none"> • Regular monitoring of workplace exposure noise on site and off-site community noise at defined locations • Upgrading public access roads in the project area • Traffic management plan in place • Optimization of operation in order to reduce the emissions • Ensure calibration of monitoring equipment • Passive sampling of NO and dust deposition sampling and analysis at defined • Implementation of water supply and waste water management system 	<p>Set up and implementation by Emerald Brewery Myanmar.,Ltd</p>	<ul style="list-style-type: none"> • Noise measurement • Compliance with local and international environmental noise standards • Air pollution monitoring report with baseLine, mid and end Line data • Water quality report of surrounding water source on bi-annual basis.



9. Limitation of the Study

1. The data (primary data) collection was done by staff member not the same with report narrator, interpreter, so there might be some gap in understanding of overall interpretation. There were only 18 HH interviewed for obtaining the primary data.
2. The secondary health data from Township Health Office was not obtained.
3. The generalization process of the report is solely based on the data obtained and there might be some gap in actual generalization.
4. The Emerald Brewery Myanmar., Ltd and there is still needing to define its operation plan for potential factory, housing apartment or other industries. Due to that reason, this report is only the baseLine health assessment for surrounding 4 villages.
5. No concrete plan was provided for actual project blueprint and could not summarize properly.

4.7.3 Health Component

4.7.3.A Health Component of Mingalardon Township

There are 5 numbers of government hospital, and 11 numbers of private clinic and 5 numbers of rural health services. Number of doctor, nurse, rural health services and ratio by population in Mingalardon Township are summarized as following.

Ratio of health care with population

No.of population	No.of doctor	Ratio of doctor and population	No.of nurse	Ratio of nurse and population	No.of rural health services	Ratio of rural health services and population
263798	8	1:32937	6	1:60633	4	1:65949

Major Disease in Region

Types of Disease									
malaira		Diarrhea		TB		Dysentry		Hapatists	
suffer	fatality	suffer	fatality	suffer	fatality	suffer	fatality	suffer	fatality
-	-	907	-	-	-	393	-	-	-

HIV/AIDS- Suffer/Fatality

2017-2018		2018-2019	
suffer	fatality	suffer	fatality
47	-	35	-



Health Indices of Mingalardon Township

No. of mater	No. of brith child	Base of 1000 person			
		Birth rate	Mater mortality	(Infant) mortality	Abortion
6186	5336	13.2	0.01	-	-

4.7.3.B Health Componet of Hlegu Township

There are 5 numbers of government hospital, and 22 numbers of private clinic and 12 numbers of rural health services and 37 numbers of rural health services (branch). Number of doctor, nurse, rural health services(assitant) and ratio by population in Hlegu Township are numemairzed as following.

Ratio of health care with population

No.of population	No.of doctor	Ratio of doctor and population	No.of nurse	Ratio of nurse and populaton	No.of rural health services	Ratio of rural health services and population
239458	12	1:19954	38	1:6301	12	1:19954

Major Disease in Region

Types of Disease									
malaira		Diarrhea		TB		Dysentry		Hapatists	
suffer	fatality	suffer	fatality	suffer	fatality	suffer	fatality	suffer	fatality
5	-	683	-	520	10	884	-	11	-

HIV/AIDS- Suffer/Fatality

2017-2018		2018-2019	
suffer	fatality	suffer	fatality
36	2	43	4

Health Indices of Hlegu Township

No. of mater	No. of brith child	Base of 1000 person			
		Birth rate	Mater mortality	(Infant) mortality	Abortion
5288	4615	19.1	1.1	4.6	3.1



4.8 Traffic Assessment Study

4.8.1 Methodology of Traffic Assessment Study

The traffic condition is normally assessed in terms of road capacity relative to traffic volume (V/C ratio). This ratio is considered as a baseLine traffic flow, which will be further utilized to evaluate the consequences of the project impact on local transportation. The calculation of V/C ratios follows the following steps:

- Convert the following vehicles from observation to Passenger Car Unit (PCU) by using Passenger Car Equivalents (PCE) factor specified for each type of vehicle as indicated in table.
- Select an applicable carrying capacity or “C” for the road (see table). The capacity can be estimated by following the highway capacity manual (HCM, 2000)
- Ratio of V/C can be calculated by using the following formula.

$$\text{V/C ratio} = \frac{\text{Traffic Volume}}{\text{Carrying Capacity of Respective road}}$$

V/C Ratio can be used to compare the values defined by the Division of Traffic Engineering (Thailand) for indication of present traffic condition.

Table 4-52 Passenger Car Equivalent Factor for Each Vehicle

No.	Types of Vehicle	Passenger Car Equivalent Factor (PCE)
1.	Passenger Car and Taxi	1.00
2.	Light Bus/Light Truck	1.50
3.	Medium Bus	1.50
4.	Heavy Bus	2.10
5.	Medium Truck (6 wheeled truck)	2.10
6.	Heavy truck (10 wheeled truck)	2.50
7.	Heavy truck (including trailer)	2.50
8.	Bicycle / Tricycle	0.33
9.	Motorcycle	0.33

Table 4-53 Traffic Condition with V/C Ratio

V/C Ratio	Traffic Condition
<0.6	Traffic free status
<0.6<0.9	Traffic on the move
<0.9<1.1	Appropriate Traffic
<1.1<3.1	Inappropriate Traffic
>3.1	Critical Traffic

As stated earlier, traffic conditions are normally assessed in terms of Road Capacity relative to Traffic Volume. V/C ratio is commonly used for the purpose. During the Project for the “Comprehensive Urban Transport Plan of the Greater Yangon” (YUTRA), Volume /Capacity Ratio of some of the existing main roads in



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downtown Yangon Area had been estimated by JICA Study Team (2013) and concluded that “Volume/Capacity Ratio (V/C Ratio) of >0.9 means that the road is “Saturated”.

4.8.2 Objectives of Traffic Impact Assessment

The objectives of traffic survey are -

- To understand the existing traffic condition of nearest road network of the project area
- To determine the existing traffic condition in prior stage of project’s construction and future traffic conditions including the project’s development in proposed site.
- To estimate the traffic condition with vehicles generated from the proposed project.
- To assess the impact of additional traffic on the existing and future road network system.
- To identify the improvements and changes of roadway according to the site plan and
- To minimize the traffic impact to the surrounding environment.
- To determine the traffic load due to the factory operation function.

4.8.3 Assessment Period

In general, the traffic study includes morning hour and evening hour base on the locations. Morning hour of weekday and weekend is 7:00 am to 12:00 noon and evening hour is 1:00 pm to 6:00 pm.

4.8.4 Scope of Traffic Study

In this traffic study, three stages of the proposed project; construction stage, operation stage and decommissioning stage, are considered to assess the impacts and condition of Traffic. Traffic survey for proposed project was studied at No. 3 Main Road, in front of the entrance of the project site for two days.

Date: Weekday and Weekend

Time: From 7:00 am to 12:00 noon for monitoring period and from 1:00 pm to 6:00 pm for evening section

4.8.5 Background Traffic Volume

Background traffic volume consists of existing volumes, accepted general growth of traffic, and traffic generated by previously approved new developments in the study area. The following diagrams show the background traffic volume, turning movement for roadways. Intersections in the study area must be included for each analysis horizon.

4.8.6 Traffic Volume Study Results

At present, the project site is in operation stage and there are finish goods carrying and raw material supply vehicles coming in and out of the project. Moreover,



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the ferry, employees' vehicles such as motor-cycles, visitor vehicles, etc. Some vehicles come into the factory from Yangon area and some from outside of the Yangon Area and some are going to Yangon and outside of the Yangon area from factory. As the No. 3 main road is used for both factory and local transportation, traffic usage is large.

According to the scoping stage recommended, GMES carried out the traffic surveying of the Emerald Brewery Myanmar Limited and local transportation. The surveying map is as shown in the following figures and surveying recorded is as shown in the following tables.



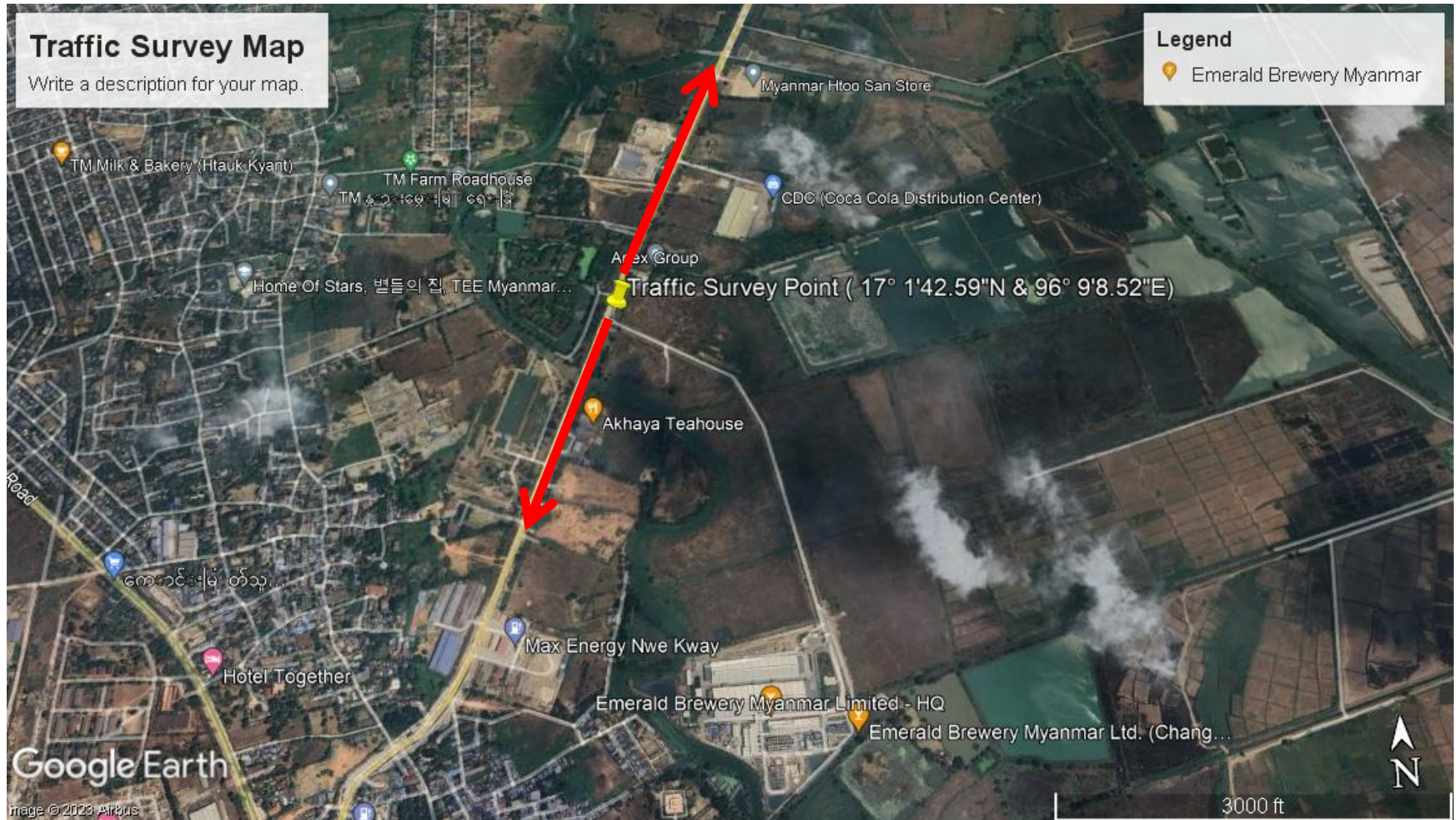


Figure 4-92 Traffic Survey Map of the Cross-over the No.3 Highway Road

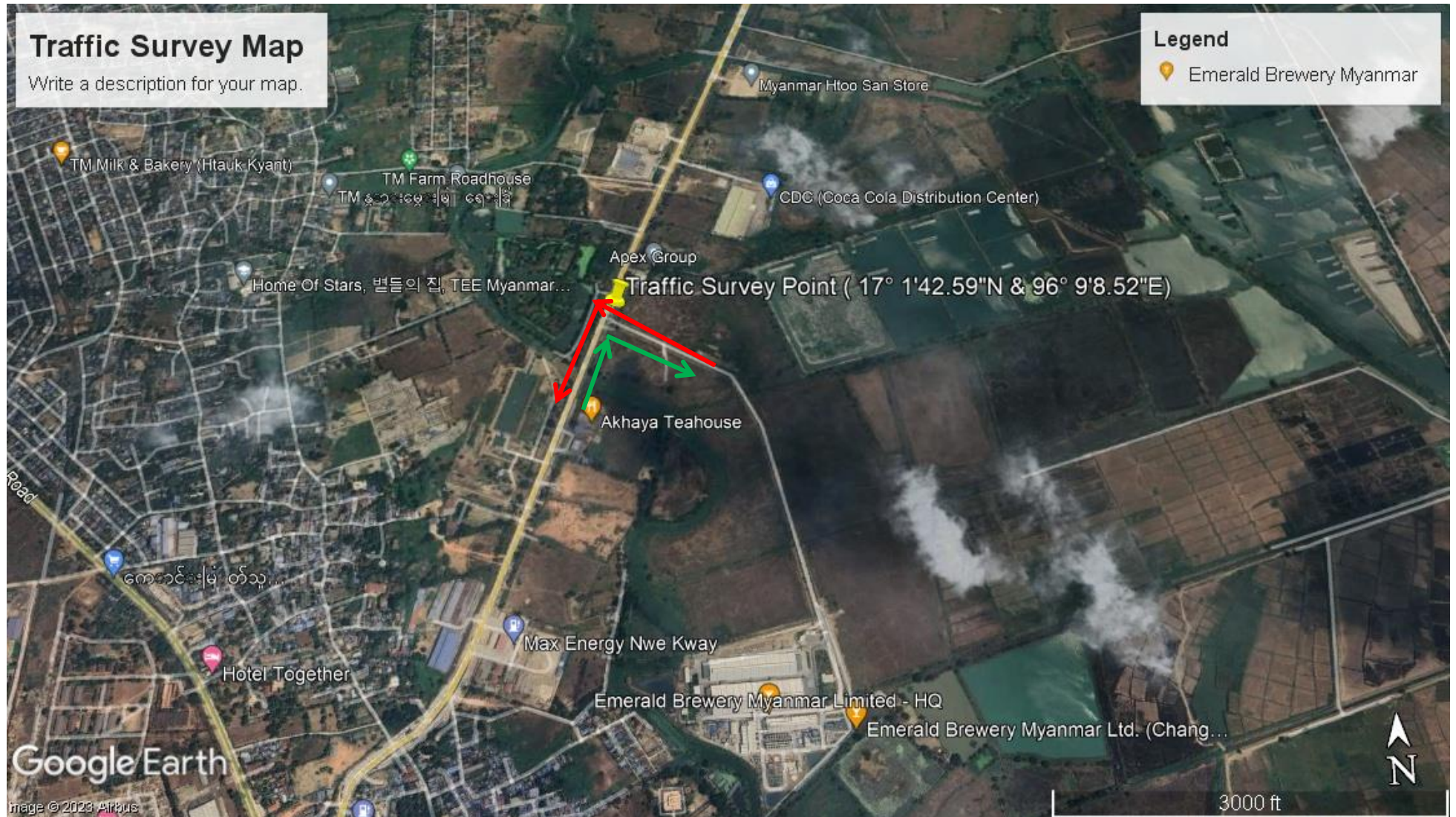


Figure 4-93 Traffic Survey Map of the in and out from the Factory to Yangon

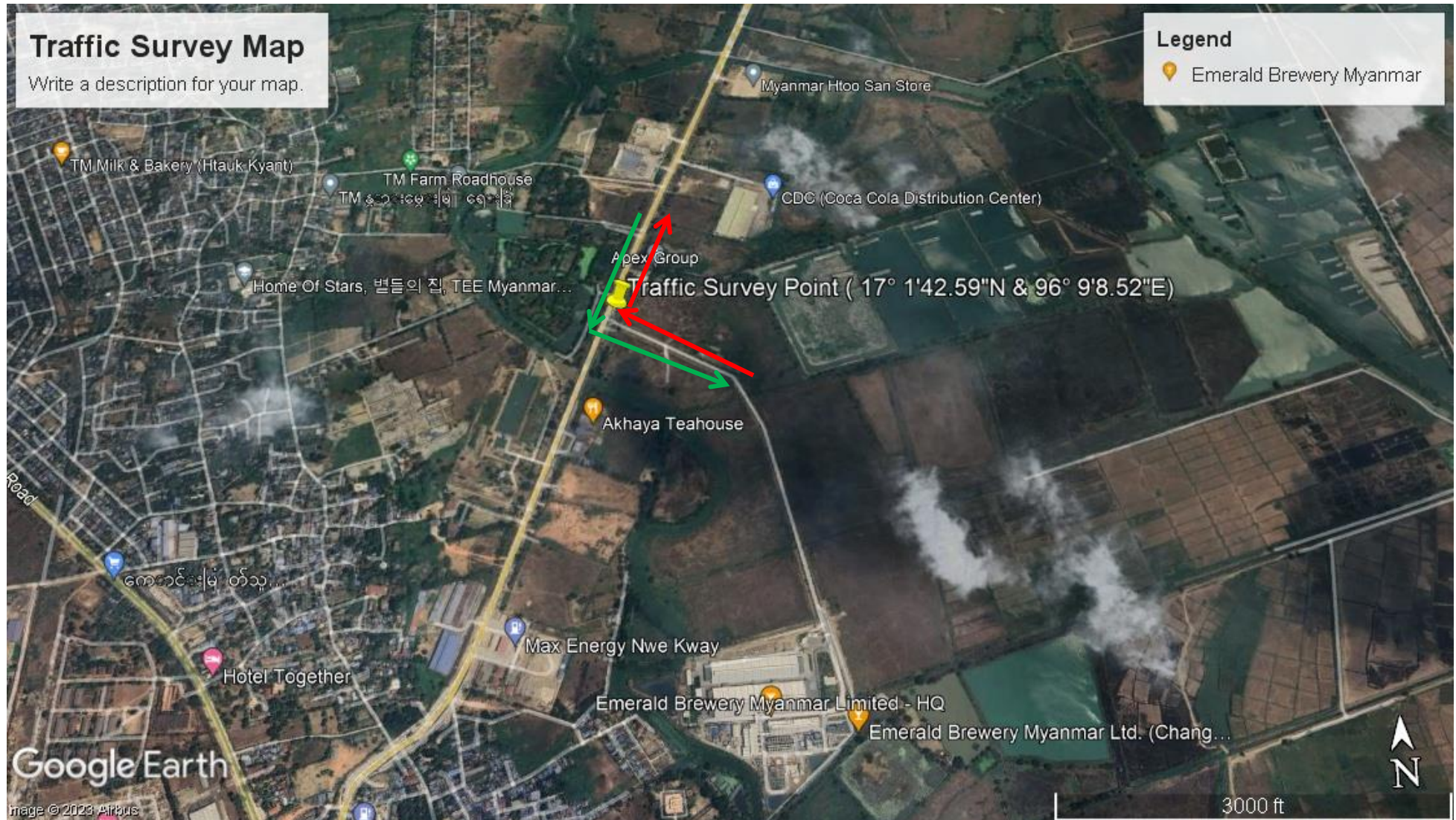


Figure 4-94 Traffic Survey Map of the in and out from the Factory to out of Yangon

Table 4-54 Traffic Count at 19.8.2023 form 7:00 am to 12:00 noon

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	246	250	25	19	15	5
2.	Passenger Car and Taxi	408	786	26	22	6	2
3.	Light Bus/ Mini Bus	71	118	7	8	-	1
4.	Express/ Medium Truck (6 wheeled truck)	120	129	13	6	-	1
5.	Heavy truck (10 wheeled truck and including trailer)	72	54	-	-	-	-
Total		917	1,337	71	55	21	9

Table 4-55Traffic Count at 19.8.2023 form 1:00 pm to 6:00 pm

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	245	215	22	41	9	20
2.	Passenger Car and Taxi	806	495	10	20	2	2
3.	Light Bus/ Mini Bus	93	87	5	7	1	1
4.	Express/ Medium Truck (6 wheeled truck)	160	168	4	5	-	1
5.	Heavy truck (10 wheeled truck and including trailer)	65	101	-	-	-	-
Total		1,369	1,066	41	73	12	24



Table 4-56 Traffic Count at 20.8.2023 form 7:00 am to 12:00 noon

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	295	329	16	11	5	3
2.	Passenger Car and Taxi	515	993	19	10	1	4
3.	Light Bus/ Mini Bus	45	102	4	2	-	1
4.	Express/ Medium Truck (6 wheeled truck)	86	164	6	2	2	3
5.	Heavy truck (10 wheeled truck and including trailer)	58	31	-	-	-	-
Total		999	1,619	45	25	8	11

Table 4-57 Traffic Count at 20.8.2023 form 1:00 pm to 6:00 pm

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	229	215	12	19	6	6
2.	Passenger Car and Taxi	976	659	4	6	1	2
3.	Light Bus/ Mini Bus	99	70	1	2	1	-
4.	Express/ Medium Truck (6 wheeled truck)	140	129	1	5	-	1
5.	Heavy truck (10 wheeled truck and including trailer)	34	36	-	-	1	-
Total		1,478	1,109	18	32	9	9



Table 4-58 Traffic Count at 21.8.2023 form 7:00 am to 12:00 noon

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	212	224	36	15	17	2
2.	Passenger Car and Taxi	370	651	46	19	7	7
3.	Light Bus/ Mini Bus	45	73	14	7	1	1
4.	Express/ Medium Truck (6 wheeled truck)	123	162	9	8	-	2
5.	Heavy truck (10 wheeled truck and including trailer)	48	55	-	-	7	4
Total		798	1,165	105	49	32	16

Table 4-59 Traffic Count at 21.8.2023 form 1:00 pm to 6:00 pm

No.	Types of Vehicles	YGN (In)	YGN (Out)	Factory (in) – From YGN	Factory (out) – to YGN	Factory (in) – From Other	Factory (out) – to Other
1.	Bicycle / Tricycle /Motorcycle	203	162	20	50	6	15
2.	Passenger Car and Taxi	659	539	17	32	4	9
3.	Light Bus/ Mini Bus	72	65	4	5	-	2
4.	Express/ Medium Truck (6 wheeled truck)	168	152	6	6	3	3
5.	Heavy truck (10 wheeled truck and including trailer)	82	108	-	2	-	1
Total		1,184	1,026	47	95	13	30





Figure 4.95 Recorded Photos at 19.8.2023



Figure 4.96 Recorded Photos at 20.8.2023



Figure 4.97 Recorded Photos at 218.2023



4.8.7 Conclusion

According to the above survey results, the traffic load of the No.3 Highway road is not significant different between the weekday and weekend. The traffic ratio of public and other use and factory use is 10:1. The No.3 Highway road is not traffic jam due to the factory operation activities.

4.9 Determining whether the defined AOI is sufficient

Conducting the comment of ECD as (A) of approving scoping report, that to reassess the AOI if it not be sufficient, and if it be, state in EIA with concrete causes and effects.

At the section 4.2 setting the study limits are defined as 1.5 km radius of core of project and Hlegu and Mingalardon Townships are also defined for some study area (e.g traffic, health etc.)

The study scope are as **Traffic, Air pollution, Noise Pollution, Vhbration, Biodiversity, Archaeology and Hertiage, Ground water and surface water, Hydrology, Socio-economic, and Health impact assessment.** For each scope, there **Area of Influence, Impacts, Finding, Mitigation Measure and Conclusion** are shown as following.



Determining whether the defined AOI is sufficient

Sr.No	Scope	Area of influence	Impact	Finding	Mitigation	Conclusion
1	Traffic	-Mingalardon and Hlegu Township -Factory yard	-Traffic Jam -Accident by vehicles (car, forklift etc)	-Traffic jam not significant different between the week day and weekend day -Traffic ratio of public usage and factory usage is (10:1) (CHAP. 4-8)	Traffic Management and Monitoring Plan (CHAP -6)	Sufficiency
2	Air Pollution	-Mingalardon and Hlegu Township -1.5km radius from core of project	-Health impact -Change the Biodiversity -Change the condition of culture and heritage	PM ₁₀ and PM _{2.5} were beyond standard during construction phase -All ambient air quality was in standard during operation phase -Boiler stack emission quality was in standard -Electric generator exhaust emission quality was in standard -workplace air quality in standard CHAP- 4-3-6	Air quality management and monitoring plan CHAP. 6	Sufficiency
3	Noise Pollution	-1.5km radius from core of project	-Health impact -Change the	-Ambient noise level in standard during operation phase	Noise level management and monitoring plan	Sufficiency



			Biodiversity -Change the condition of culture and heritage	-Ambient noise (Night time) Levels in village was beyond standard -work place noise level were beyond standard CHAP. 4-3-6	CHAP. 6	
	Vibration	-1.5km radius from core of project	-Health impact -Change the Biodiversity -Change the condition of culture and heritage	-Vibration levels (Amayawatty Monastery, Near wastewater area, Near security gate) were in standard (Ancient place) CHAP. 4-3-6	Vibration management and monitoring plan CHAP. 6	Sufficiency
4	Biodiversity	-1.5km radius from core of project	-Change the Ecosystem	-Project area is slightly significant. -Invasive species are dangerous for the natives. CHAP-4-4	Cooperated if there have a management plan to control remove the invasive species -Prevent pollution (Noise, Vibration, Air, Water) -Biodiversity management and monitoring plan	Sufficiency
5	Archaeology	-1.5km radius from core of project	Loss of culture and heritage	-Two religious places in Ta Kon Taing,	-If any cultural significance comes	Sufficiency



				<p>-Three in Nwel Khwe San Pya</p> <p>-Eight in Kon Ta La Baund</p> <p>CHAP-4-6</p>	<p>out, report to the heritage authority of Department of Archaeology and National Museum</p> <p>-Prevent pollution (Noise, Vibration, Air, Water)</p> <p>-Culture and heritage management and monitoring</p> <p>CHAP-6</p>	
6	Ground water and surface water	-1.5km radius from core of project	-Change the water environment	<p>-pH and Arsenic quality of tube well water were beyond standard 2018 (Construction phase)</p> <p>-all parameters of tube well water were in standard at 2023 (Operation phase)</p> <p>-Surface water of Balar creek showed some parameter were beyond the standard at 2018.</p> <p>-Surface water of Balar creek coliform was beyond the standard</p>	<p>-Underground water quality management and monitoring plan</p> <p>-Surface water quality management and monitoring plan</p> <p>CHAP . 6</p>	Sufficiency



				2023 CHAP 4-6		
7	Hydrology	-1.5km radius from core of project	-Deficiency of underground water -Change the quality of underground water	-Total abstractions is 12% -Underground water is sufficient for project and public CHAP – 4-3-1 to 4-3-5	-waste materials management and monitoring plan	Sufficiency
8	Socio-Economic	-1.5km radius from core of project	-Air pollution -Water pollution -Change of livelihoods	-Bad odor -Nutrient increasing in Barlar creek -Change of livelihoods	-Odor management and monitoring plan -Planting the native species as wind shield -Participant in removing of hyacinth -Assigning the villagers as employees if possible	Sufficiency
9	Health impact assessment	-1.5km radius from core of project Mingalardon and Hlegu Townships	-By air pollution -By water pollution -By noise and vibration -By occupational risk	-Not found the extraordinary events Chapter 4-7	-Ambient air quality management and monitoring plan -Boiler stack emission management and	Sufficiency



					monitoring plan -Electric generator emission management and monitoring -Noise level management and monitoring plan -Vibration management and monitoring plan -Surface water management and monitoring plan -Wastewater quality management and monitoring plan -Odor management and monitoring plan -Occupational health and safety management and monitoring plan -Informations from grievancy mechanisms	
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					-Traffic assessment study Chapter 6,8,4-8	
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5.0 KEY POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In this chapter, we

- Identify project activities that could beneficially or adversely impact the environment,
- Predict and assess the environmental impacts of such activities,
- Examine each environmental aspect-impact relationship in detail and identify its degree of significance,
- Identify possible mitigation measures for these project activities and select the most appropriate mitigation measure, based on the reduction in significance achieved and practicality in implementation.

5.1 Methodology and Approach

5.1.1 Methodology

Four main methods were used by the team conducting the exercise:

- Review of project documents and other relevant information:
- Site visits:

Two site visits were carried out to identify key environmental and social issues on-site.

- Specialized data collection

Socio-economic aspects: soliciting specific socio-economic views from the local authorities and affected communities regarding land use and tenure, population and settlement patterns at the project site, economic activities, legal issues, cultural aspects, existing infrastructure.

Physical geographical aspects: Landforms, climatic conditions etc.

Ecological aspects: the current status of flora and fauna of the area, and ecosystem interactions.

Water resources aspects: The water resources of the small creek in the project site with focus on water retention and intake.

- Public consultations: Initial consultations with district officials (Chief Administrative Officers, District Environmental Officers, District Engineers and Planners etc.), and local people were carried out to identify issues of concern among local people.

A full list of people consulted is included in Appendix (1) to this report. Based on these main methods, the significance of social and environmental impacts is assessed as compared to the baseLine situation in the proposed project area.

Second public meeting (1st public meeting after scoping report approved) was hold on 25th February 2023 and it is shown as Appendix (12).



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Third public meetintg (2nd public meeting after scoping report approved) was hold on 27th August 2023 and it is shown as Appendix (13).

5.1.2 Approach

Aspects and impacts associated with the construction and operation and deommissioning phases identified during the EIA procedure shall be extensively assessed. Comprehensive mitigation measures informed by the specialist reports as well as consultation with key stakeholders shall be in the report as well as in the Environmental Management Plan.

5.2 Brief Description of the Process

Emerald Brewery Myanmar Limited used rice and malt as main raw materials for manufacturing of beer. Beer is dilute solution of ethanol, obtaining its characteristic flavor from the use of hop and malt, which is the predominant source of fermentable carbohydrates and other yeast nutrients. Hops are the source of bitter components.

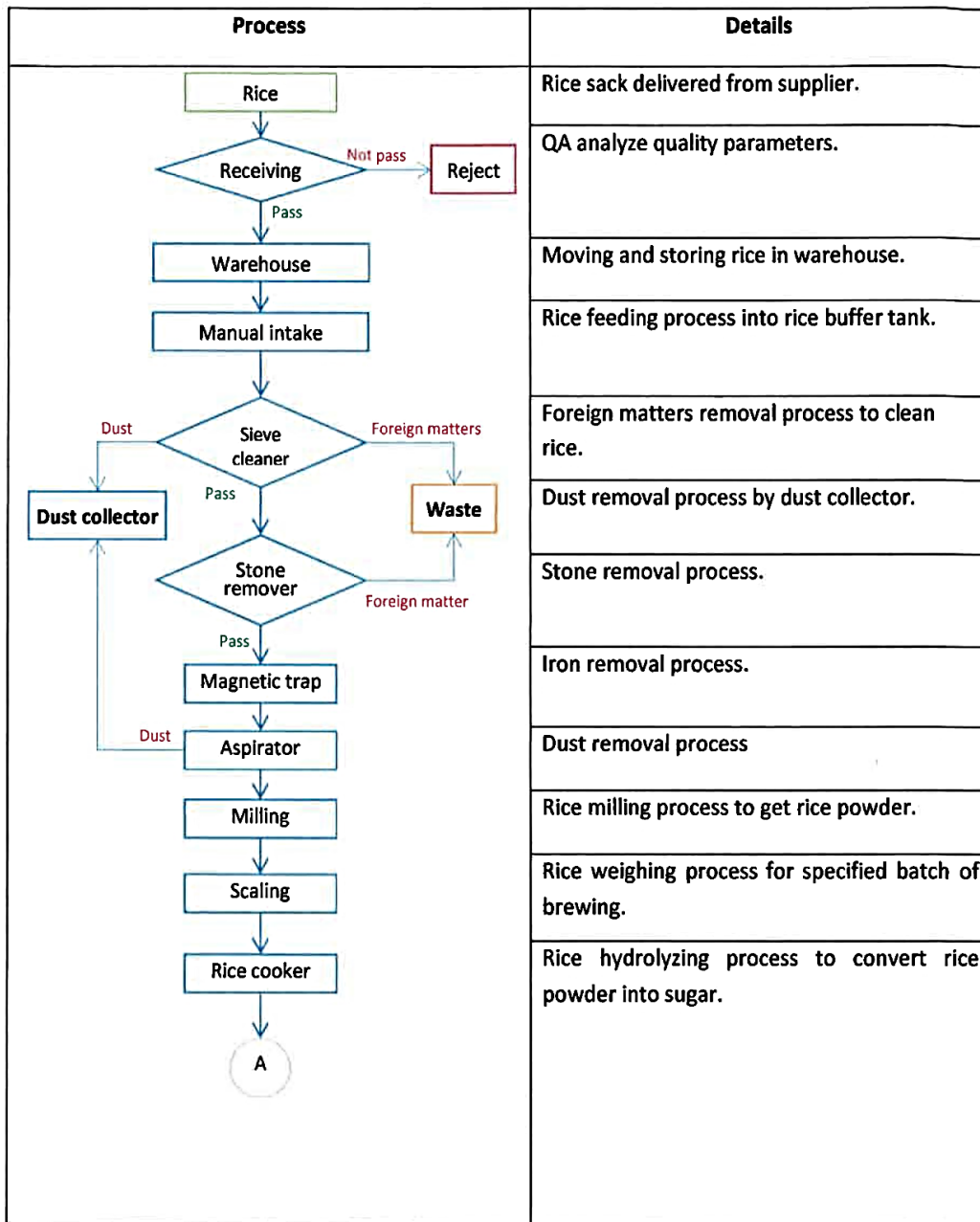
The important production stages within the brewery are mashing and fermentation. Mashing produces wort, an aqueous extract of malted barley. Wort is boiled with hop materials to get hopped wort. Yeast is added to the hopped wort and subsequently fermentation occurs. The yeast cells convert the fermentable sugars in the hopped wort predominantly into ethanol and carbon dioxide. After removal of the yeast, the product beer remains.















The uniqueness of a given beer is achieved by an appropriate degree of metabolism; it will contain a certain mixture of by-products, which contribute to its unique flavor and taste. It is also important to achieve the final product in a reasonable amount of time.

The flow diagram of beer production is already shown at section 3-17 and it be here.



Brewery processing flow chart



Process	Detail
	Malt delivered from supplier.
	QA analyze quality parameters.
	Malt delivery process from truck into buffer.
	Foreign matters removal process to clean malt.
	Stone removal process.
	Storing cleaned malt prior being used in the brew house.
	Iron removal process.
	Dust removal process.
	Malt milling process to convert malt grain into grist.
	Malt weighing process for specified batch of brewing.
	Malt hydrolyzing process to convert malt into sugar (During this process, the sugar from rice cooker is transferred into this Mash kettle)
	Separation process to collect wort then remove spent grain and others into spent grain bin (being sold as animal feed).
	Wort collection and preparation processes for next step.
	Wort boiling process with hop addition during the process.

Beer Fermentation and Packing Process

Process	Detail
	<p>Separation process to remove any precipitates or adulterants from wort.</p>
	<p>Cooling down process prior be transferred for further fermentation process.</p>
	<p>Yeast is added into the cold wort.</p>
	<p>Fermentation process to convert sugar into alcohol and carbon dioxide. During this process, temperature and pressure must be controlled.</p>
	<p>Yeast removal process from beer.</p>
	<p>Maturation process at low temperature to let yeast settling down to the bottom of treatment tank.</p>
	<p>Cooling down process to prepare the batch before filtration.</p>
	<p>Addition process of stabilizing agents.</p>
	<p>Filtration process for particle removal to clarify beer.</p>
	<p>Carbon dioxide adjusting process to appropriate carbon dioxide level.</p>
	<p>Storing bright beer prior be transferred to filling process.</p>
	<p>Filling process (bottle, can or keg containers) with pasteurization prior being packed in packaging and arranged on the pallet.</p>
	<p>Storing process of finished products in warehouse.</p>

Process flow for beer production

5.3 Description of Possible Environmental Impacts and Cumulative Impacts

Like many other types of developments, this development has not only direct but also indirect impacts on the environment. Thus, it is necessary to minimize the negative impacts

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

and enhance the positive impacts or in other word benefits. Direct environmental aspects associated with activities, products and services of the organization are listed in Table 5-1.

Table 5-1 Main Environmental Impacts in Process

Inputs	
Energy consumption	Energy for the operation of processing machinery (pumps, ventilation, mixers, compressors and coolineg units etc.) Fuel consumption for boiler, vehicles and machines.
Water consumption	Water use as one of the main ingredient for brewery Process-related water consumption (e.g. for washing the equipment, boiling, steaming, coolineg).
Use of chemicals	Use of -cleaning and disinfection agents, Enzymes and Other process related chemicals
Outputs	
Wastewater generation	Process used water, Water from cleaning operations Service water (coolineg water, boiler blow down, etc.). Sanitary water Domestic wastewater (from office and workers)
Solid waste generation	Non-hazardous waste from manufacturing and processing (organic residues, sludge from wastewater treatment process, wastes from packaging, etc.). Hazardous waste from the maintenance of equipment and machinery (packaging containing residues of / or contaminated by dangerous substances, absorbents, filter materials, oil filters, etc.).
Air emissions	Dust, Gaseous emission and VOCs, emissions from combustion (such as CO ₂ , NO _x and SO ₂). Odor losses during storage, fermentation, wastewater treatment plant's sludge and yeast sludge and VOCs.
Noise generation	Noise from the operation of plant, machinery and equipment.

5.3.1 Environmental Impact Assessment

Emerald Brewery Myanmar Limited is going to manufacturing and distribute beer as bottles, cans and keg. Environmental impacts are classified on construction, operation and decommissioning phases.

5.3.1.1 Environmental Impacts, and Sources during Construction Phase

Environmental impacts and main sources by Emerald Brewery Myanmar Limited for construction phase are summarized as following table.

Table 5-2 Environmental Impacts and Sources for Construction Phase

Impacts	Main Sources
Traffic	-Vehicles in and out for transportation of construction workers, supervisor, manager -Vehicles in and out for transportation of construction materials -Vehicles in and out for earth work -PiLineg machines -Vehicles in and out installation of equipment, machineries, piping,



	electrical, paint work, etc.,
Air	<ul style="list-style-type: none"> -Emission of PM, dusts from earth work such as excavation, digging foundations, digging and compacting of earth, digging fence holes, carrying cement, sand, concrete mixing -Emission of PM, dusts from erection, walling, roofing works. -Emission of smoke, gases and PM from machineries operation such as welding, wood cutting, planing, sandpaper work, steel cutting, diesel generator, vehicles, forklift, bulldozer etc. -Emission of PM from handling and provision of construction materials and loading, unloading, transportation within site -Nuisance smell from sewage discharge, temporary garbage area and toilets. -Gas emission from handling of fuel and hazardous chemicals, vehicular emission. -VOC emission from painting, plumbing work, installation of air conditions, cooling water system and ventilation dusts.
Noise and Vibration	<ul style="list-style-type: none"> -Piling, excavation, foundation, scaffolding, erection, roofing, concrete mixing, electrical, plumbing and air conditioners installation work. -Fencing work -Operation of vibration equipment such as cutter, wood planer, hacking tool, hammering tools, steel cutters, wood cutter, wood planer, crushing machines -Operation of vehicles and electric generator etc. -Loading, unloading, transportation of construction materials and machineries -Installation work of machineries, equipment, piping -Testing the machineries and equipment.
Biodiversity	<ul style="list-style-type: none"> -Emission gases, dusts destroy the ecosystem -Fauna species move to other due to noise and vibration -Wastewater destroys the ecosystem.
Archaeology and Heritage	<ul style="list-style-type: none"> -Emission gases, dust destroy the ancient monuments, antique objects. -Noise and vibration make short life of ancient monuments.
Ground and Surface Water	<ul style="list-style-type: none"> -Generation of muddy water and sediment from various earth work and foundation work. -Generation of muddy water from excessive usage of water during sprinkling process. -Spillage and leakage of paints and thinner. -Spillage and leakage of lubricant, oil, fuel, battery acid from maintenance of machineries, equipment, electric generator, vehicles. -Dripping of paint from oil painting process. -Emitted gases, dust are carried by rain water and diffuse to ground and into water. -Improper and direct discharge of general waste on the ground or in the drain. -Overflowing of sewage from temporary bio-septic tank. -Flushing the tanks, machineries and equipment on testing.
Wastewater and Solid	-Sewage from temporary bio-septic tank.



Wastes	<ul style="list-style-type: none"> -Flushing water from tanks, machineries equipment, boiler etc in testing. -Packing materials of machineries, equipment -Stock piLineg of waste on bare land -Packing materials for construction material (e.g cement bag, welding and packing) -Wood from form work -Constructing waste (used glove, sand paper, grinding disk, iron pieces, wood shavers, paper bags) -Food waste
Socio Economic – Social Health	<ul style="list-style-type: none"> -Risk of spreading contagious disease -Culture conflicts between migirant and local workers -Population and demographic change -Hand arm Vibrating Syndrome (a painful and debilitating decrease of the blood vessels, nerves, and joint cause by the prolong use of vibrating hand-held power tools. -Heat stress can be occurred from working lay hours under high temperature, direct sunlight and dehydration. -Difficulties of breathing can be caused from inhalation of excessive amount of dust, fume gas and PM. -Fire hazard -Electric shock -Accident risk -Skin burning from handling of chemicals (battery acid, diesel) -Injury (eye, hand, slipping, etc.)

5.3.1.2 Environmental Impacts and Sources during Operation Phase

Environmental impacts and main sources by **Emerald Brewery Myanmar Limited** for operation phases are summarizred as following table.

Table 5.3 Environmental Impacts and Sources for Operation Phases

Impacts	Main Sources
Traffic	<ul style="list-style-type: none"> -Vehicles in and out for transportation of raw materials, products, machinery spare parts, fuel, lubricant, workers etc. -Vehicles for visitors -Vehicles for inspection teams -Vehicles for business persons, media
Air	<ul style="list-style-type: none"> -Emitted dusts and PM from raw materials preparation (loading, unloading, transportation, cleaning, milling) -Emitted gases and PM from vehicles and electric generator -Emitted gases from boiler -Emitted gases and vapour from brewing house. (mashing, wort boiling, fermentation) -Leakage of transformer oil -Leakage of refrigerants from air condition, coolineg system CO₂ leakage from storage, cylinder during Filling in beer. -Caustic vapour from C.I.P. unit -Emitted gases from wastewater treatment plant
Noise and Vibration	<ul style="list-style-type: none"> -Noise and vibration by electric generator, vehicles



	<ul style="list-style-type: none"> -Running of machineries from malt cleaning, milling, mashing, wort boiling, and fermentation. -Running of machineries of CO₂ plant -Running of machineries of utilities section (water, electricity, steam) -Steam hammering during mashing, wort boiling. -Running of machineries of Bottling, keg and can plant. (bottle washer, Filling, capping, packaging, etc.,)
Biodiversity	<ul style="list-style-type: none"> -Emitted gas, dusts impact the ecosystem. -Fauna species move to other due to noise and vibration -Wastewater destroy ecosystem
Archaeology and Heritage	<ul style="list-style-type: none"> -Emission gases, dust impact the ancient monuments, antique objects. -Noise and vibration make short life of ancient monuments.
Ground and Surface Water	<ul style="list-style-type: none"> -Wastewater from personal cleaning washing and sanitary -Washed water form process -Boiler blow down -Spillage and leakage of fuel, lubricant, battery acid during maintenance -Wash water from bottle, keg washer -Leakage and spillage of C.I.P -Broken of beer bottle in process. -Waste water from treatment plant -Condensate water from CO₂ plant
Wastewater and Solid Wastes	<ul style="list-style-type: none"> -Spillage and leakage of lubricating oil, fuel, battery acid -Spillage and leakage of wort, hopped wort, beer, C.I.P liquid -Washed water from machineries, tanks and C.I.P -Boiler blowdown water -Packing materials for raw material (malt, rice bag, enzyme bucket, yeast pack, etc.,) -Spillage of spent grain -Spillage of yeast mud -Broken bottle -Damage can -Damage cap, label -Used cap, label from recycled bottle -Used stationary, debris from office work
Socio Economic – Social Health	<ul style="list-style-type: none"> -Risk of spreading contagious disease -Culture conflict between migrant and local workers -Population and demographic change -Heat stress can be occurred near boiler, mashing, wort boiling -CRYOGENIC stress (low temperature and high pressure) ammonia refrigeration plant and CO₂ plant -Ammonia toxic -Accident injury (falling, slip beer bottle bursting) -injury by broken bottle -eye injury by caustic solution in C.I.P -Fire Hazard -Electrical Shock -Accident risk



	-Skin burning from handling of chemicals (battery acid, caustic soda)
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5.3.1.3 Environmental Impacts and Sources during Decommissioning Phase

Environmental impacts and main sources by Emerald Brewery Myanmar Limited for decommissioning phases are summarized as following table.

Table 5-4 Environmental Impacts and Sources for Decommissioning Phases

Impacts	Main Sources
Traffic	-Vehicles in and out transportation of machineries, materials and worker for demolishing. -Vehicles in and out for carrying raw materials and products in left. -Vehicles in and out carrying the demolished debris
Air	-Emission of PM, dust from demolishing of building -Emission of PM, dust from cutting of tank by torch (especially – cutting Line on painted area) -Emission of dust from digging to remove foundation. -Emitted gases from vehicles, electric generators.
Noise and Vibration	-Hitting, hammering, hand held vibrating machine for demolishing of building, foundation. -Vehicles and electric generator -Loading, unloading for debris
Biodiversity	-Emission gases, dusts destroy the ecosystem -Fauna species move to other due to noise and vibration -Wastewater destroy the ecosystem.
Archaeology and Heritage	-Emission gases, dust destroy the ancient monuments, antique objects. -Noise and vibration make short life of ancient monuments.
Ground and Surface Water	-Spillage and leakage of lubricant oil, fuel, battery acid from demolishing machineries, vehicles and electric generator. -Washed water from tanks, machineries and equipment. -Wastewater left treatment plant liquid in septic tank. -Improper and direct discharge of general waste on the ground or in the drain.
Wastewater and Solid Waste	-Flushing washer from tank, machineries and equipment, boiler for transportation -Demolishing waste (used glove, grinding disk, concrete, piece of wood, iron, etc.,) -Leakage of oil, fuel, battery acid cooling water from vehicles and electric generator.

5.3.2 Environmental Impacts Significance

Methodology and approach for environmental impacts are already shown in Section 5-1 and significance of impacts will be carried. The significance of the impacts airse is rated by using **matrix** method as following formula:

$$\text{Significance} = (\text{Duration} + \text{Extent} + \text{Severity}) \times \text{Probability}$$



Significance of Impacts

Table 5.5 Significance Evaluation

Significance	Scores	Negative Impact
Negligible	10-30	Negligible does not require any additional mitigation or any specific management action as there is almost no impacts.
Minor	31-60	Minor may or may not require additional mitigation or management action as the activity has low impact with low significance.
Moderate	61-90	Moderate will require certain additional mitigation and management action as the activity could have impact with medium significance.
Major	91-120	Major shall require specific additional mitigation measures and management action as the activity could have impact with high significance.
Critical	121-150	Critical cannot be reduced by implementing mitigation measures and require alternative technology as the activity has very high significance impact.

Duration of Impacts

Duration classification describes the duration or period of time required until the environmental effect can no longer be measured or the valued ecosystem components return to their baseLine conditions.

Table 5-6 Duration Classification

Duration	Criteria	Score
Short Term	Impact will be occurred during short term activities or operation and disappear itself through natural process after the operation.	2
Medium Term	The impact will last for a period of time such as a season (3 months or up to 1 year or during construction period.)	3
Long Term	The impact will be occurred throughout the operational life of the project. But it can be alleviated by naturally or mitigation measures.	4
Permanent	This is non-reversible impact and cannot be rectified by natural process or human action.	5

Extent of Impacts

Extent describes the geographic area of environmental effects from the project.

Table 5-7 Extent Classification

Extent	Criteria	Score
Footprint or Local	Impact area is at footprint or local.	2
Project Site and Neighborhood	Impact area is within project site or up to 1 km radius.	3
Regional	Impact area exceeds 1 km and up to 100 km.	4
National	Impact area exceeds 100 km and extends to nation wise.	5



Severity Classification

Severity classification describes the magnitude of the impact that shows the extent of the damage. In other words, it is the amount of change of the measurable parameters relative to its baseLine conditions.

Table 5-8 Severity Classification

Intensity	Classification	Score
Very Low	Impact is unlikely to be noticed.	1
Low	Localized impact occurs but only on small patch of affected environment/ communities with negligible damage.	2
Medium	Impact is suffered only to the affected area/ communities and likely to extend to the whole project area.	3
High	Impact is suffered to the affected area/ communities and can go beyond project site.	4
Very High	Impact is suffered and affected to large environment or communities and extend to noational scale.	5

Probability Classification

Probability of the impacts describe the chances of the occurences of these impacts.

Table 5-9 Probability Classification

Probability	Classification	Score
Rare	Impact has never been occurred but it should not be taken into accounts as 0% probability.	2
Unlikely	Impact is unlikely to occur but may occur at sometimes during operation.	4
Likely	Impact is likely to occur at sometimes as there are some incidents experienced before in similar projects.	6
Very Likely	Impact is very likely to occur several times during operational phase in similar projects.	8
Certainly	Impact will occur anytime during operational phase. Incident has happened in similar projects.	10

5.3.2.1 Evaluation Impact Significance of Construction Phase Before Mitigation

Impact significance of construction phase before mitigation are summairzed as following.

Table 5-10 Impact Significance of Construction Phase before Mitigation

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	2	3	3	6	48	Minor
Air pollution	2	3	4	6	54	Minor
Noise	2	3	4	6	54	Minor
Biodiversity	2	3	3	6	48	Minor



Archaeology and Heritage	2	3	3	6	48	Minor
Ground water and surface water	2	3	3	6	48	Minor
Waste water and solid wastes	2	3	3	6	48	Minor
Socio economic	2	3	3	6	48	Minor

5.3.2.2 Evaluation Impact Significance of Operation Phase Before Mitigation

Impact significance of operation phase before mitigation are summarized as following.

Table 5-11 Impact Significance of Operation Phase before Mitigation

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	4	3	3	6	60	Minor
Air pollution	4	3	4	6	66	Moderate
Noise	4	3	3	6	60	Minor
Biodiversity	4	3	3	6	60	Minor
Archaeology and Heritage	4	3	2	4	36	Minor
Ground water and surface water	4	3	3	6	60	Minor
Waste water and solid wastes	4	3	3	6	60	Minor
Socio economic	4	3	3	6	60	Minor

5.3.2.3 Evaluation Impact Significance of Decommissioning Phase before Mitigation

Impact significance of decommissioning phase before mitigation are summarized as following.

Table 5-12 Impact Significance of Decommissioning Phase before Mitigation

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	2	3	3	6	48	Minor
Air pollution	2	3	4	6	54	Minor



Noise	2	3	4	6	54	Minor
Biodiversity	2	3	3	6	48	Minor
Archaeology and Heritage	2	3	3	6	48	Minor
Ground water and surface water	2	3	3	6	48	Minor
Waste water and solid wastes	2	3	3	6	48	Minor
Socio economic	2	3	3	6	48	Minor

5.3.3 Impacts and Mitigation Measure

Mitigation measures of environmental impacts due to Emerald Brewery Myanmar Limited project are summarised as following.

5.3.3.1 Impacts Mitigation Measures of Construction Phase

Impacts mitigation measures of construction phase are summarised as following table.

Table 5-13 Impacts Mitigation Measures of Construction Phase

Impacts	Mitigation Measures
Traffic	-Appropriate traffic warning signs should be ported for road were indicating a ' Construction Site Ahead ' -Flagman assigned for entry in and out about site. -Speed limit imposed at the project site. -Adequate parking area. -Construction vehicles avoid the traffic jam, if possible duty trained driver and helper
Air pollution	-SprinkLineg with water when earth work. -Cover the vehicles carrying construction materials, eg – cement, sand, gravel used good quality fuel for vehicles and electric generator. -Good manage the sanitary system. -Trained person are dutied.
Noise	-Sound proof machineries should be used. -Well maintenance for vehicles and electric generator -Systematic management for heavy duty machines. -Trained person should be dutied during testing.
Biodiversity	-Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration
Archaeology and Heritage	-Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration



Ground water and surface water	<ul style="list-style-type: none"> -Control waste disposal to soil and water. -Control spillage and leakage of oil, lubricant, fuel, battery acid -Control spillage fo painting materials -Less emitted vapour, dust. -Educating and punishment from under instruction.
Waste water and solid waste	<ul style="list-style-type: none"> -Educating and punishment for under instruction -Less water consumption during testing equipment, machineries -Good housekeeping about the packing materials of construction materials, debris, and food wastes.
Socio economic	<ul style="list-style-type: none"> -Under instruction by OHS -Under instruction by administration rules, disciplLines.

5.3.3.2 Impacts Mitigation Measures of Operation Phase

Impact mitigation measures of operation phase are summarizred as following table.

Table 5-14 Mitigation Measures of Operation Phase

Impact	Mitigation Measures
Traffic	<ul style="list-style-type: none"> -Flagman assigned for assisting in and out about factory. -Speed limit imposed in factory Adequate car parking. -Vehicles carrying raw material, products, employee avoid the traffic jan if possible.
Air	<ul style="list-style-type: none"> -Good quality fuel for vehicles and electric generator -Good quality fuel for boiler, correct fuel and air ratios for complete combustion -Check and maintenance transformer refrigeration unit, air conditioner -Control leakage of CO2 plant, CO2 Filling to beer. -Not high temperature when caustic soda dissolving for CIP. -Leakage control of waste water treatment plant.
Noise and vibration	<ul style="list-style-type: none"> -Sound proof machineries -Well maintenance for vehicles, electric generator and machineries -Slow and steady steaming mashing, hop boiling and steam hammering
Biodiversity	<ul style="list-style-type: none"> -Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration
Archaeology and Heritage	<ul style="list-style-type: none"> -Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration
Ground water and surface water	<ul style="list-style-type: none"> -Control waste disposal to soil and water use not more than required water amount for tank and machineries washing, boiler blowdown, personal consumption -Good house keeping for raw material packing materials
Waste water and solid waste	<ul style="list-style-type: none"> -Good house keeping for packing materials, debris -Trained person on duty educating and punishment.
Social economic	<ul style="list-style-type: none"> -Under instruction OHS -Under SOP



	-Under instruction by administration rule, discipLines.
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5.3.3.3 Impact Mitigation Measure of Decommissioning Phase

Impact mitigation measures of decommissioning phase are summarizred as following table.

Table 5-15 Mitigation Measures of Decommissioning Phase

Impacts	Mitigation Measures
Traffic	-Flagman assgined for entry in and out about site. -Speed limit imposed at the factory -Adequate parking area in factory (avoid park on public road) -Vehicles of factory avoid the traffic jam, if possible duty trained driver and helper take help of traffic policies if necessary.
Air pollution	-SprinkLineg with water when earth work. -Cover the vehicles carrying construction materials, eg – cement, sand, gravel used good quality fuel for vehicles and electric generator. -Good manage the sanitary system. -Trained person are dutied.
Noise	-Sound proof machineries should be used. -Well maintenance for vehicles and electric generator -Systematic management for heavy duty machines.
Biodiversity	-Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration
Archaeology and Heritage	-Emitted dust, PM are controlled by dust collection -Waste water should be controlled -Low noise and vibration
Ground water and surface water	-Control waste disposal to soil and water. -Control spillage and leakage of oil, lubricant, fuel, battery acid -Less emitted vapour, dust -Educating and purnishment for under instruction
Waste water and solid waste	-Educating and punishment for under instruction -Good housekeeping about demolished materials, debris, food waste
Socio economic	-Under instruction by OHS -Under instruction by administration rules, discipLines.

5.3.4 Evaluation Residual Impact Significances

After mitigation measure impact significances are reduced and residual significances are summarizred for each stage of production beer by Emerald Brewery Myanmar Company Limited.



5.3.4.1 Residual Impact Significances of Construction Phase

Residual impact significances of construction phase are summarized as following table.

Table 5-16 Residual Impact Significance of Construction Phase

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	2	3	2	4	28	Negligible
Air pollution	2	3	2	4	28	Negligible
Noise	2	3	2	4	28	Negligible
Biodiversity	2	3	2	4	28	Negligible
Archaeology and Heritage	2	3	2	4	28	Negligible
Ground water and surface water	2	3	3	4	32	Minor
Waste water and solid wastes	2	3	3	4	32	Minor
Socio economic	2	3	3	4	32	Minor

5.3.4.2 Residual Impact Significances of Operation Phase

Residual impact significances of operation phase are summarized as following table.

Table 5-17 Residual Impact Significance of Operation Phase

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	4	3	2	4	36	Minor
Air pollution	4	3	2	6	54	Minor
Noise	4	3	2	6	54	Minor
Biodiversity	4	3	2	4	36	Minor
Archaeology and Heritage	4	3	2	4	36	Minor
Ground water and surface water	4	3	2	4	36	Minor
Waste water and solid wastes	4	3	2	6	54	Minor



Socio economic	4	3	2	4	36	Minor
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5.3.4.3 Residual Impact Significances of Decommissioning Phase

Residual impact significances of decommissioning phase are summarized as following table.

Table 5-18 Residual Impact Significances of Decommissioning Phase

Impacts	Evaluation				Rating	
	Duration	Extent	Severity	Probability	Significance	
Traffic	2	3	2	4	28	Negligible
Air pollution	2	3	2	4	28	Negligible
Noise	2	3	2	4	28	Negligible
Biodiversity	2	3	2	4	28	Negligible
Archaeology and Heritage	2	3	2	4	28	Negligible
Ground water and surface water	2	3	2	4	28	Negligible
Waste water and solid wastes	2	3	2	4	28	Negligible
Socio economic	2	3	2	4	28	Negligible

5.3.5 Comparison tables of impact significance before and after mitigation

Comparison of impact significance before and after mitigation for the construction phase, operation phase and decommissioning phase are following.

5.3.5.1 Comparison table of impact significance before and after mitigation for the construction phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Minor	-20	
6.	Ground water and surface water	48	Minor	32	Minor	-16	
7.	Waste water and solid wastes	48	Minor	32	Minor	-16	
8.	Socio economic	48	Minor	32	Minor	-16	



5.3.5.2 Comparison table of impact significance before and after mitigation for the operation phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	60	Minor	36	Minor	-24	
2.	Air pollution	66	Minor	54	Minor	-12	
3.	Noise	60	Minor	54	Minor	-6	
4.	Biodiversity	60	Minor	36	Minor	-24	
5.	Archaeology and Heritage	36	Minor	36	Minor	-	
6.	Ground water and surface water	60	Minor	36	Minor	-24	
7.	Waste water and solid wastes	60	Minor	54	Minor	-6	
8.	Socio economic	60	Minor	36	Minor	-24	

5.3.5.3 Comparison table of impact significance before and after mitigation for the decommissioning phase

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Rank	Rating	Rank		
1.	Traffic	48	Minor	28	Negligible	-20	
2.	Air pollution	54	Minor	28	Negligible	-26	
3.	Noise	54	Minor	28	Negligible	-26	
4.	Biodiversity	48	Minor	28	Negligible	-20	
5.	Archaeology and Heritage	48	Minor	28	Negligible	-20	
6.	Ground water and surface water	48	Minor	28	Negligible	-20	
7.	Waste water and solid wastes	48	Minor	28	Negligible	-20	
8.	Socio economic	48	Minor	28	Negligible	-20	

5.4 Key Issues to be addressed in the EIA Phase and Mitigation Measures

The key issues as regard to the proposed development to be addressed in the Environmental Impact Assessment (EIA) phase are:

- Traffic Impacts
- Air Quality
- Noise Level
- Biodiversity Impacts
- Archaeology and Heritage
- Ground and Surface Water (Hydrology) Impacts
- Wastewater and Solid Waste Impacts



➤ Socio-economic Impacts

5.4.1 Traffic Impacts Mitigation Measure

In order to prevent from traffic congestion transportation frequency should be reduced as much as possible. It is quite certain that the presence of the proposed project will cause more congestion especially peak hour on the existing road traffic on No.3 main road, where entrance and exit gates will exist. Traffic Impacts Mitigation Measure need to provide-

- Appropriate traffic warning signs should be posted for road users indicating a “Construction Site Ahead”
- Flagman should be assigned for assisting “Entry” to the site and “Exit” from the project site
- Speed limit should be imposed at the project site
- Adequate parking facilities in its factory premises

During the demolishing phase, use of heavy vehicles in the vicinity of the project site would be more. This would cause inconvenience for the traffic and pedestrians. To minimize the inconvenience, proper measures such as road blocks could be used to re-route the traffic.

5.4.2 Air Pollution Mitigation Measure

Air pollution can be experienced from broken grain handling, cleaning, milling, slurry preparation, engine exhausts and dust particulates emitted from emptying grain bags, vehicles transporting and unloading raw materials, odor losses during storage, fermentation, wastewater treatment plant’s sludge and yeast sludge and VOCs. This may lead to moderate consequences. Anticipated odor generation sources are spent grain, fermentation unit, Diesel generators, septic tank, block drainages, yeast and wastewater treatment’s sludge. The project proponent needs to follow the mitigation measures to minimize the air pollution to the minimum.

- To reduce the air pollution, the factory manager makes ensure that the vehicles, generator, compressors are well maintained.
- To prevent dust emissions from vehicles, ensure that all vehicles entering or leaving the site and carrying load (vehicles that may generate dust) are covered during the time of loading and unloading.
- To avoid inhalation of dust and chemical odors, masks are provided to workers.
- The factory manager needs to check whether workers comply or not when working in dusty area.
- The boiler must maintain with the terms of monitoring facilities to respond quickly to any firing condition, which can lead to smoke emissions.
- Gaseous emission from fuel burning, which consists of common pollutants like SO₂, NO_x, and particulate matters, would be discharged into atmosphere through stacks of suitable height.



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- Development of green belt within the premises of the plant will help in attenuating the pollutants emitted by the plant.
- Ambient air quality and stack emission would be regularly monitored to ensure that ambient air quality standards and suggested limits on stack emission loads would be met honestly all the time.
- The working zone and surrounding areas shall be monitored.
- In order to ensure that the fugitive dust emissions due to transportation activity are low as possible, all the roads within the plant areas shall be asphalted.
- All the unpaved roads as well as paved roads shall be sprinkled with water.
- All the aspects of odor control will be adopted in designing phase
- To prevent odor problems, spent grain will be removed quickly to sell
- Fermentation unit make sure to cover not to cause odor problem
- Wastewater treatment' sludge and Yeast sludge can be used as manure in greenbelt or disposed systematically.

5.4.3 Noise Pollution Mitigation

Noise pollution may be caused from operation of steam injection, generators and boiler, operation machines, vehicles transporting and unloading raw materials. This may lead to moderate consequences. The company shall apply a strict policy within its all sections aims to minimize the noise pollution to the minimum by introducing the following measures:

- To reduce the noise pollution, trees can be grown to make buffer zone.
- Workers employing in noisy areas especially in boiler room should be worked on shifts.
- Unloading of raw materials and carrying finished products must be done with great care to reduce noise generation from these activities
- The factory manager must implement and follow regular maintenance plan for vehicles, machines and emergency generators.
- Make sure to use of Personal Protective Equipment (PPE) like ear plug, ear muffs in the noisy workplace which is exposed to high noise level.
- Regular monitoring of noise level should be carried out and corrective measures in concerned machinery should be adopted accordingly.
- Maintenance of machinery and vehicles will be done in a suitable manner to ensure best performance and less noise.
- Vehicles would not be allowed to queue outside the plant on the highway.
- Moreover, continuous exposure in noise generating units shall be avoided.

5.4.4 Biodiversity Impacts Mitigation Measure

The proposed Brewery Project is considered to affect directly or indirectly on both terrestrial and aquatic environments. These effects depend on wastewater management system and disposal of wastewater into the creek. Generally, the nature



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of the impacts by the Brewery will effect on flora and fauna especially in the aquatic environment.

This impact is serious by the improper disposal of wastewater which contains high level of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) as well as other organic and inorganic forms of waste materials. According to the data, there will be a direct impact on biological community especially to the existing aquatic organisms and vegetation. The extent of the impact on fauna and flora is investigated as only in the site specific and the duration of the impact is assumed as long term which all are depend on wastewater management. Mitigation measures should be carried out during construction and operational phases as below:

- Maintain the plants and vegetation which existing around the project area which can reduce the pollution in water and terrestrial environment in a natural way.
- Grow the native tree species and create a green belt around the project area to control the air pollutants and natural balance of the environment.
- Manage the disposal of wastewater from the industry into water, and follow the national emission guideLine. This is important measure to maintain the aquatic organism in the water including fish.
- Ensure to dispose wastewater into wastewater management plant systematically.

5.4.5 Archaeology and Heritage impacts and Mitigation Measure

Although the potential sites of cultural heritage around the project area are not including the list of national cultural heritage sites, they could be regionally important with their association of local religious practices and festivals. There are four villages of project and also monasteries and pagodas exist. Nearest point of pagoda from Kone Ta La Baund Village is located 0.29 km away from the project Baunday, the religious festivals or ceremonies will potentially be impacted if air and noise pollution generated from the operation stage of the project. And the waste discharged during the operation stage of project will challenge to the nearest religious complexes. Depending on the discharge of solid and liquid pollutants, the direct impact will happen on these places as pollution. Consequently, the degree of impact can potentially be high though the cultural heritage value may be low or minimum. Therefore, the project proponent must follow the guideLines and the mitigation measures.

5.4.6 Mitigation Measure for Ground and Surface Water (Hydrology) Impacts

5.4.6.1 Requirements Concerning Drainage and Runoff for Surface Water Quality

Drainage improvements for runoff from impervious surfaces are required to be engineered to minimize erosion through the used culvert inlets and outfalls.



Surface Water Impact Mitigation Plans

Desist from pouring cooking oil, fat or grease down the kitchen sink. Instead, keep a jar that collects all the fats, grease or oil then discard in solid waste. Desist from using the toilet as a bin during construction phases and decommissioning phase. Apply proper sewage treatment and management. Dispose trash properly. Avoid direct dumping into water systems. Insist on using environmentally safe products. Practice tree planting. The substances which contain scores of toxic materials and can destroy the quality of natural water systems need to dispose with affective methods.

A majority of storm water runoff generated by the project would be collected onsite. Storm water drainage system must be installed within the right of way of proposed roadways to convey storm water to detention basins throughout the property.

Storm water runoff from the site will be directed through grassed bios-wales/bio-filters to a detention/retention basin designed to retain runoff and percolate it back to groundwater. By doing so, the amount of runoff from the site will not exceed the rate or volume under existing conditions.

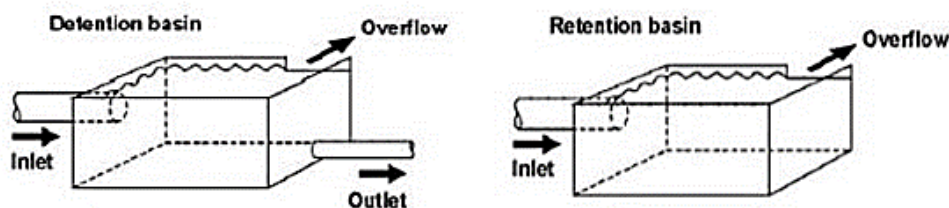


Figure 6-2 Sample Pictures of Detention/Retention Basin Design

5.4.6.2 Concerning Groundwater

Groundwater Impact Mitigation Plans

Avoid road construction across the flood plain in the direction perpendicular to flood flow. Provide adequate opening for flood flow. Reduce Chemical Use and make sure to dispose of them properly, don't dump them on the ground. Manage waste and properly dispose of potentially toxic substances like unused chemicals, pharmaceuticals, paint, motor oil, and other substances.

5.4.7 Wastewater and Solid Waste Impacts Mitigation Measure

In addition to the waste streams from drainage and wastewater discharge of the project, the following can cause the impacts local surface water (Barlar creek) in the vicinity of the project:

- Sewage effluent generated on site.
- Dirty storm water generation within the rainy season

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- Other waste generated on site which may include packaging waste, and used pieces etc.

5.4.7.1 Wastewater

Untreated wastewater discharges from the factory have the potential to cause significant environmental impacts. Water, the main raw material in a brewery, is increasingly in focus due to increasing wastewater discharge. Examples of reduction-of-water-usage measures include:

- Avoidance of Wastewater by Reduction of Water Usage
- RecycLineg of different rinsing waters (e.g. post - rinsing waters are used in intermediate rinsing).

The project proponent need to apply a strict policy within its all sections aims to minimize the wastewater to the minimum by introducing the following measures: To reduce the water consumption and ground water pollution, make sure,

- To dispose of sanitary wastewater discharge by contacting city development committee, regular pumping out must be done to protect septic tank from flooding.
- To prevent leakage of fuel and engine oils, regular inspection of vehicles and emergency generators must be done.
- To check and clean the drainage channels regularly and to send wastewater systematically to the treatment plant.
- Wastes from dining area must not be directly disposed into the drainage channels.
- Good habits like turned off water taps when not used must be done by all workers.
- To install flow meter at overhead tank to know both the quantity and quality details of water consumption.
- In order to reduce the water consumption by plant, it is recommended to carry out a water audit every year. The study shall focus on water consuming operations and measures to reduce water use.
- Water table levels shall be measured at the baseLine stations once every season.

5.4.7.2 Solid Waste Mitigation

These solid wastes will include waste papers, plastics and among others. Other solid waste likely to be generated empty containers. These are all potential pollutants and their collective or individual impacts are rated high. The project proponent needs to apply a strict policy within its all sections aims to minimize the solid wastes to the minimum by introducing the following measures:



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- The solid waste from the grain based operations generally comprises the fibers and proteins in the form of Wet Cake, ideally used as Cattle Feed.
- Yeast sludge will be sold to whom using them to make supplements/nutrients/feedstock aside from drying.
- Waste papers and boxes will be sold off to vendors/recyclers.
- Do not burn plastics or papers but instead avail for recyclers.
- Used oil from DG set need to be given to authorized recyclers or disposed with guideLines.
- Broken bottles shall be given to recyclers.
- Arranging awareness training programs for all personnel on how to handle solid wastes.

5.4.8 Socio-economic impacts and Mitigation Measures

The Overview considerations of Socio-economic impacts are:

- Potential impacts of the project
- The type of impact (positive, negative or neutral)

The following potential socio-economic impacts during construction phase, operation phase and decommissioning phase will be considered in the Impact Assessment Phase:

Table 5-19 Potential Socio-economic Impacts in Each Phase

Positive	Negative
Construction Phase	
<p><u>Employment</u> Temporary employment opportunities for local people during construction phase.</p> <p><u>Growth of Local Business and Enterprise</u> Benefit to local economy.</p> <p><u>Skill Development</u> Skills acquired during project construction including construction, woodwork, concrete work, steel/metal work and masonry.</p>	<p><u>Population Influx</u> Temporary pressure on accommodation, health care facilities and food could result in the influx of people to the area during the construction phase.</p> <p><u>Traffic</u> Traffic disruptions and congestion during construction period due to cargo transportation, occupying part of the road, making pedestrian.</p>
Operational Phase	
<p><u>Employment Opportunities</u> The proposed project will create long-term jobs during operation phase.</p> <p><u>Local Community Development Potential and Increased Living Standard</u> The project may provide opportunities for continued improvements in basic infrastructure and community development,</p>	<p><u>Traffic</u> Traffic congestion in village road will occur during the operation phase of the proposed project.</p> <p><u>Increase in Crime and Conflict with Local People</u> An inflow of migrant workers to proposed during operation phase will increase in social</p>



Positive	Negative
provision of health care services and education and in providing skill development. <i>Benefits to National Economy</i> Taxes local or national government will be great benefit to national economy.	pathologies and crime including drug and alcohol abuse, assault, theft and violence. <i>Increased in Road Accident</i> Road accidents will increase during operation phase due to the increased number of vehicles.
Decommissioning Phase	
-	<i>Loss of Jobs for Local People and Revenues for the Government</i> Potential negative impacts resulting in loss of jobs and indirect employment depending on the operation of proposed and of associated services as well as loss of revenues for the government.

Table 5-20 Positive and Negative Socio-Economic Impacts and Mitigation Measures in Each Phase

Impacts	Mitigation Measures
Construction Phase	
Employment Growth of Local Business and Enterprise Skill Development Population Influx Traffic	<ul style="list-style-type: none"> • Long term job opportunities should be created for local people especially local people in surrounding villages. • Support for skills development in the region. • Support and partner with local training providers to source traineeships and apprentices. • Skill Development Local construction sub-contractors should be chosen as first priority during tender process. • Growth of Local Business and Enterprise Establish a policy to collaborate local businesses and enterprises for procurement of goods and services in relation to construction activities to encourage local economy. • All of the impacts associated with population influx can be minimized by the use of local labor force. Own health care facilities and dormitory should be provided to additional workers during construction period. • Alternative ways for access roads should be considered for blocked roads during construction phase.



Impacts	Mitigation Measures
Construction Phase	
Operational Phase	
<p>Employment Opportunities</p> <p>Local Community Development Potential and Increased Living Standard</p> <p>Benefits to National Economy</p> <p>Traffic</p> <p>Increase in Crime and Conflict with Local People</p> <p>Increased in Road Accident</p>	<ul style="list-style-type: none"> • Local people who have potential for proposed works should be afforded training opportunities and apprenticeship in project operational activities to ensure to support local community in obtaining employment opportunities. • Adjusting allocation of CSR budget and giving priority for CSR activities relevant to community immediate needs each year after discussion with representatives from local authorities, CBOs, and NGOs. • Responsible taxes paying system to local or national government will be great benefit to national economy. • The developer also needs to continue to work with the local and regional police personnel and local administrative members in the resolution of potential increase in crime and violence. • Guests should be clearly identifiable and identification cards should be used in workers' check in and check out. • Proposed area should be fenced and access road should be controlled. • Never use village road as production road. • Upgrade village road as it is necessary to use it.

5.5 Cumulative Impacts

Potential cumulative impacts may result in both on- and off-site impacts. These include impacts such as:

- Increased loading of municipal services (sewage, potable water, storm-water, etc.); and
- Compromised road safety as a result of increased traffic.
- Increased storm-water in river systems.
- Potential change in surface and ground water source quality

Potential cumulative impacts will be evaluated during the assessment phase of the project, once the specialist studies are completed.

5.5.1 Assessment Methodology for cumulative impacts

The methodology for the identification and assessment of cumulative impacts has comprised the following steps:

(a) Project identification

Determine whether the other development projects in the surrounding of the proposed project site are in the planning system



(b) Impact and “interLinekages” assessment

Undertake a cumulative assessment that determines whether the combined impact of the Emerald Brewery and the other development projects will have a significant effect on residents.

(c) Unplanned but Predictable Activities

As part of the assessment, consideration has been given to “unplanned but predictable” activities anticipated as part of the Project that may occur later or at a different location.

5.5.5 Possible Cumulative Impacts

There is one brewery industry and no other industries exist within the 1.5 km radius scope of the project. Some of impacts on human and environment within the project area could be the results of cumulative impacts. The predicted possible cumulative impacts and their causes are shown in the following table.

Table 5-21 Possible Cumulative Impacts of the Proposed Project

Impacts	Causes/reasons
Water pollution in the vicinity	Small amount of households and water ponds exit beside the bank of creek. There will be sewage and domestic wastes disposal become cumulative impact in water quality. Water quality in villages can also be affected by these developments.
High water usage (impact on the ground water level)	If these developments will use same ground water source, this will cause cumulative impact on ground water usage. This additional groundwater abstraction will be in direct competition with the existing groundwater users.
Traffic and road accidents	The vehicles to the proposed project and the local transportation vehicles are using the same road (No.3 Main Road) and will cause cumulative impacts.
Pressure on public services	There will be cumulative impacts on the existing public health care services, security and housings due to the migrated workers for the proposed project.

6.0 Environmental Management Plan (EMP)

6.1 Objectives of Environmental Management Plan

Key objectives of the EMP are as follows:

- To ensure continuing compliance with legal Requirements and government policies;
- To provide the initial mechanism for ensuring measures identified in this study to mitigate potentially adverse impacts are implemented.;
- To provide framework for mitigation impacts during project execution;
- To provide assurance to regulation and stakeholder that their requirement with respect to health and safety environment;
- To undertake monitoring to demonstrate that prediction made within this EMP are valid , and
- To provide a framework for the compliance with auditing and inspection programs.

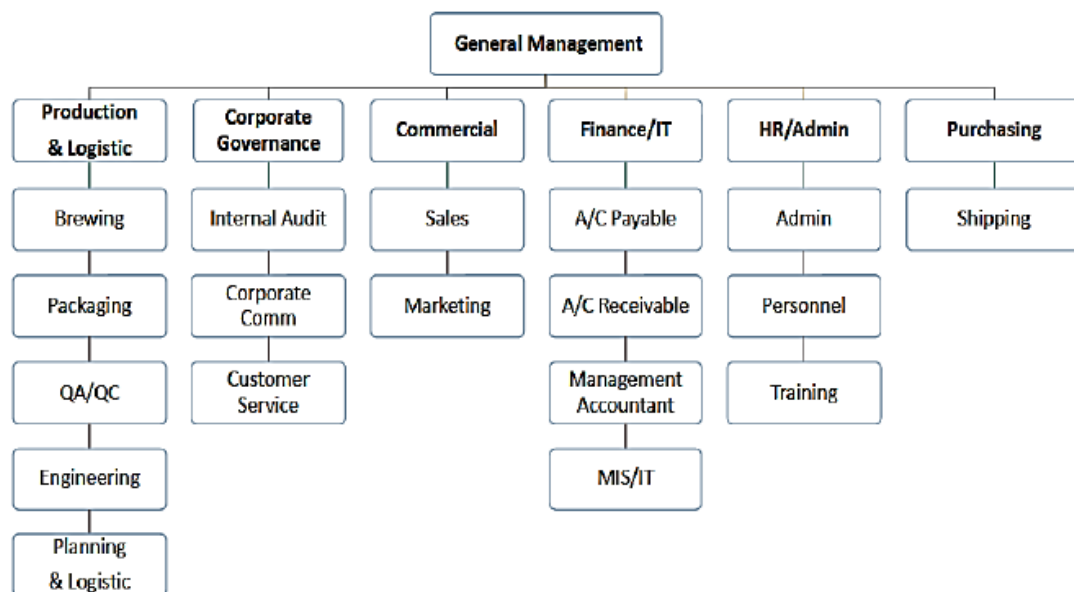
The environmental and social management plan is an important tool to ensure that the health, safety and security of people and communities within and vicinity of the project are protected.

An EMP; which is important in managing the impact of the proposed project, is constructed based on the findings of initial assessment. EMP is an integral part of the health, safety and environmental management system. This is also tool to ensure the impacts are properly managed.

6.2 The constitutional arrangement for EMP

The constitutional arrangement for EMP is set up based on the project organization type. The responsible person of the constitution will be the managing director. Under the managing director, section head of six project branches are included to take responsibility for EMP.

Organization Chart



6.3 Set up the organization of environmental and social management plan and monitoring Team

Emerald Brewery Myanmar Limited, board of director or managing director nominates the suitable person as leader of environmental and social management organization and set it up including representative person of various department as following:

- Representative person of production logistic
- Representative person of QA/QC
- Representative person of planning and logistic
- Representative person of engineering.
- Representative person of packaging'

Table 6-1 Environmental and Social Management Team

Sr.No	Name	Designation	Years in services	Qualification	Duty
1	SUPAPONG BUAMA	Technical Director	5	B.Sc (Food Technology)	Leader
2	SAUNG MOE AYE	Asst.Quality Manager	5	B.Sc (Industrial Chemistry)	Member -1
3	U THEIN HTEW	Asst.Brewing Manager	4	B.Sc (Industrial Chemistry)	Member -2
4	U WIN ZAW	Asst.Logistic & Warehousing Manager	5	B.E (Chemical)	Member -3
5	U ZAYA AUNG	Engineering Executive	4	B.TECH (Mechatronics)	Member -4
6	U KO KO	Engineering Executive	4	B.E (Mechatronics)	Member -5

Table 6-2 Environmental Monitoring Team

Sr.No	Name	Designation	Years in services	Qualification	Duty
1	U MYO MIN ZAW	Production Planning Executive	2	B.A (International Relation)	Leader
2	U AUNG CHAN THA	Technical Manager	5	B.E (Mechanical)	Member
3	U THAT LWIN OO	Asst.Packaging Executive	4	B.Sc (Chemistry)	Member
4	DAW KYI KYI SWE	Senior QA	4	B.Sc (Industrial)	Member



		Supervisor		Chemistry)	
5	U THEIN ZAW	Senior Engineering Executive	1	M.E (Mechatronics)	Member

6.3.1 Duties and Responsibilities

The following duties and responsibilities concern the member of organization.

Duties and responsibilities of leader

Duties and responsibilities of members

Duties and Responsibilities of Leader

- Studying the environmental, social management plan and perform the budget allotment by owner or factory manager for monitoring and mitigation measures subjected in environmental and social management plan.
- Preparing the monitoring and mitigation measures to respective department
- If environmental conservation department instructs to submit new revised EIA/EMP, connect the third party and make the revised report.
- Make the other members specified duties.
- Report the performance of organization to owner or factory manager
- Manage to document the monitoring report.

Duties and Responsibilities of Production Department Representative

- Make current impact mitigation
- Discuss and compromise with other members
- Report the performance to leader
- Check and prepare the perpetual events, e.g., leakage, spillage, fire-extinguisher, etc.

Duties and Responsibilities of Member 2

- Perform the ledger, entry, consume, and balance, e.g., waste material, reuse, recycle, reliable etc.
- Connecting the development committee for some waste not suitable by factory dispose, destroy
- If necessary manage and make dispLine.

Duties and Responsibilities of Member 3

- Arrange the smooth expenditure of members
- Budgetary control
- If necessary manage and make dispLine

Duties and Responsibilities of Member 4 & 5

- Studying the EIA/EMP report
- Monitoring point are to be noted.
- Help the monitoring person for food and accomidation



- Arrange to perform the sampling and analyzing of water, waste and soil
- Estimate the report to relevant department

6.4 Environmental Management Plan and Monitoring Plan

6.4.1 Ambient Air Quality Management Plan and Monitoring Plan

Objectives

- To protect the air environment from pollution.
- The measured ambient air quality should be in standard guideline of 1-1 of NEQ(E)G.

Legal Requirement

Ambient air quality standard guidelines are shown at 1-1 of NEQ(E)G as follow.

The ambient air quality on NEQ(E)G 1-1

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

Overview maps and site layout maps, images, aerial photos, satellite image

The air quality monitoring point is at latitude N 17°1' 7.61" and longitude E 96°9' 25.0" (front of administration office). The location as latitude and longitude are shown as following.





Figure 6-1 location of ambient air quality monitoring point

Implementation Schedule

Ambient air quality is monitored twice a year.

Management Action

Ambient air quality management plan is performed by following.

Ambient Air Quality Management Plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Emitted gases and odors of the vehicle's exhaust gases	<p>--Due to the transportation of raw materials, products, machineries, spare parts, employees air pollutants, such as CO₂, CO, SO₂ and carbon particles are emitted.</p> <p>-Thus, it is necessary management to reduce the vapor and gases emissions to the air.</p> <p>Car pool system – carpool with each other instead of running separately, reducing the usage of vehicles,</p> <p>Maintain the vehicles – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor oil, usually managing the engine power of the vehicles and the machinery good power condition.</p> <p>-To reduce SO_x emissions, use vehicles that are more efficient and less polluting and good quality fuels.</p> <p>-The emitted carbon dioxide gas and the water vapor can be reduced by planting trees inthe project backyard</p>
Emitted gases and odors of the electric generators' exhaust	<p>-The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon dioxide and sometimes carbonmonoxide when efficiency is low.</p> <p>-To be high efficiency of engine power and routine maintenance is carried</p>

	out.
Leakage of gases from transformers, refregenerator and air condition	-Check and repair by authorized person. -routine maintenance of refregenerator and air condition -installed safeguard
Ammonia refrigeration plant	-operator refrigeration unit by SOP. -conduct the ammonia refrigeration management plan
Fine dust, particulate matters from the loading,unloading handling and cleaning of rice and malt	-used good quality and fresh rice malt and handle with gently -prevent the emitted particulates by block the cover, joint, handhole of sieve, bucket elevator, magnetic sperator, etc.
Fine dust, particulate matters from milling of rice	-prevent the emitted particles by seaLineg, gasketing
vapour from mashing	-not open the manhole if not necessary -not over temperature
vapour from kettle	-not open the manhole if not necessary -not over temperature
vapour from CO₂ plant	-not oven exhausting when regeneration cycle of dryer and deodorizer -check and repair the solcnoid valees of drain separator
Vapour of caustic soda when dissolving	-take sufficient time to cooll the heat evolving when mixing with caustic soda and water in CIP.
Vapour from aerobic digestor	-not over blowing
Vapour from boiler when diesel fuel conbustion	-to ensure complete combustion (regulate the fuel air ratio)
Vapour from canteen	-good ventilation

Monitoring plan

Professional instrumentation and air quality monitoring expert person are hired by project and monitor ambient air quality twice a year at specified point.

Methodology

Ambient air quality is measured and results are compared with standard to assess the condition of pollution. The two consecutive results are compared to assess the pollution is better or worse.



Form of monitoring for ambient air quality

Form of ambient air quality monitoring is shown as follow and it includes parameters, measuring method, time schedule, monitoring place, frequency and recorded method and standard reference.



Form of Ambient Air Monitoring Plan

Emerald Brewery Myanmar Limited													
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget Allotment	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The particulate matters PM _{2.5} PM ₁₀	µg/m ³ µg/m ³	HAZ Scanner Model EPAS	October April	Fornt of administrative office N 17°1' 7.61", E 96°9' 25.01"	2000,000	Twice a year						10 – 1 year 25 – 24 hours 20 – 1 year 50 – 24 hours
2.	Sulfur Dioxide	µg/m ³											20 – 24 hours 500 – 10 minutes
3.	Nitrogen Oxide	µg/m ³											40 – 1 year 200 – 1 hour
4.	Ozone	µg/m ³											100 – 8 hours daily maximum

Estimated Budget and Responsible Team

Estimated budget amount for ambient air quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for ambient air quality monitoing

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Ambient air quality measuring 1000,000 x 2	2,000,000

Responsible team for monitoring the ambient air quality is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.1.A Workplace Air Quality Management Plan and Monitoring

Objective

To protect the employees by impact of workplace air quality.

To asses the pollution condition of workplace.

Legal Requirement

There are no direct guideLine and it is assumed that workplace air quality is influenced by emitted gases of combustion of boiler and electric generator and refer as NEQ(E)G 1-1.

Combustion technology	Particulate matter PM ₁₀	Sulfur dioxide	Nitrogen dioxide
Liquid	150 mg/Nm ³	2000 mg/Nm ³	460 mg/Nm ³

Overview maps, and site layout maps, images, aerial photos, satallite images

The workplace air quality monitoring point are at **Filling area (starting point), Filling area (end point), co2 plant area, brewing area (up) and brewing area (down), malt milling area (up), malt milling (down)** and the photo of point are shown as follws;

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



Figure 6-2 location of workplace air quality monitoring point

Implementation Schedule

Workplace air quality are monitored twice a year.

Management Action

Workplace air quality management plan is performed by following.

Workplace air quality management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Emitted gases from boiler	-used low sulphur fuel (diesel) -proper fuel oil and air ratio
Emitted gases electric generator	- used good quality fuel -match capacity of genetator and load.(not overload)
Leakage of gases from transformers oil vapour, refrigerant from air condition refrigerator	-Check and repair the transformer by aulthorized person -good maintenance and preventive precaution for refrigerator,air condition, water cooler
Leakage of co ₂ gas	-good ventalition and preventive, prevention of safety valve, solenoid valve, pipe Line etc.
Leakage of ammonia	-operate under SOP. -conduct the ammonia management plan

Monitoring Plan

Professional instrumentation and air quality monitoring expert person are hired by project and monitored workplace air quality twice a year at specified point.

Methodology

Workplace air quality are monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at the same point are compared to assess the pollution is better or worse.

Report form of monitoring for workplace air quality

Report form of workplace air quality monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Report Form of Workplace Air Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquul 500)	October April	- Filling area (starting point) -Filling area (end point)	4200,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98		- co ₂ plant area -brewing area								2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³			(up) - brewing area (down) - malt milling area (up) - malt milling (down)								460 mg/Nm ³



Estimated Budget and Responsible Team

Estimated budget amount for workplace air quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for workplace air quality monitoing

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	workplace air quality measuring 300,000 x7 x 2	4,200,000

Responsible team for monitoring and reporting the workplace air quality is shown at paragraph 6-3 and also duties are at 6-3-1.

6.4.1.B Boiler Stack Gas Quality Management Plan and Monitoring

Objective

To asses the boiler stack gas which influenced the workplace air quality.

If it is beyond the standard there makes to be better.

Legal Requirement

The boiler stack gas quality standard is NEQ(E)G 1-1 as follow.

Combustion technology	Particulate matter PM ₁₀	Sulfur dioxide	Nitrogen dioxide
Liquid	150 mg/Nm ³	2000 mg/Nm ³	460 mg/Nm ³

Overview maps, and site layout maps, images, aerial photos, satallite images

The boiler stack gas quality monitoring points are at N17°1' 45' and E 96°9' 17' the photo of points are shown as follows.





Figure 6-3 location of boiler stack gas quality monitoring point

Implementation Schedule

Boiler stack gas quality is monitored twice a year.

Management Action

Boiler stack gas quality management plan is performed by following.

Boiler stack gas quality management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Boiler stack gas	--used low sulphur diesel as fuel -adjust the fuel oil and air ratio -stack gas quality is monitored regularly

Monitoring Plan

Professional instrumentation and air quality monitoring expert person are hired by project and monitored boiler stack gas quality twice a year .

Methodology

Boiler stack gas quality are monitored and results are compared with standard to asses the condition of pollution. The two consecutive results are compared to asses the pollution is better or worse.

Report form of monitoring for boiler stack gas quality

Report form of boileer stack gas quality monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Boiler Stack Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G			
								Previous and Present Data Comparison Method								
								Previous Data		Present Data		More/ Less				
								Date	Value	Date	Value					
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroqul 500)	October April	- boiler stack	600,000	Twice a year						150 mg/Nm ³			
2.	Sulphur dioxide	mg/N m ³	Kane 98													2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³														460 mg/Nm ³



Estimated Budget and Responsible Team

Estimated budget amount boiler stack gas quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for boiler stack gas quality monitoing

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Boiler stack gas quality measuring 300,000 x 2 Twice a year x one point	600,000

Responsible team for monitoring and reporting the boiler stack gas quality is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.1.C Electric Generator Exhaust Gas Quality Management Plan and Monitoring

Objective

To assess the electric generator exhaust gas quality which influenced the workplace air quality.

If it is beyond the standard there makes to be better.

Legal Requirement

The electric generator exhaust gas quality standard is NEQ(E)G 1-1 as follow.

Combustion technology	Particulate matter PM ₁₀	Sulfur dioxide	Nitrogen dioxide
Liquid	150 mg/Nm ³	2000 mg/Nm ³	460 mg/Nm ³

Overview maps, and site layout maps, images, aerial photos, satallite images

Electric generator exhaust gas quality monitoring point is at N17° 1' 5.79" and E 96° 9' 18.61" the photo of points is shown as follows.





Figure 6-4 location of generator stack gas quality monitoring point

Implementation Schedule

Electric generator exhaust gas quality is monitored twice a year.

Management Action

Electric generator exhaust gas quality management plan is performed by following.

Electric generator exhaust gas quality management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Electric generator exhaust gas	--used low sulphur diesel oil or fuel -good maintenance of engine and regularly repair -not over load (match the load and generator capacity)

Monitoring Plan

Professional instrumentation and air quality monitoring expert person are hired by project and monitored electric generator exhaust gas quality twice a year .

Methodology

Electric generator exhaust gas quality is monitored and results are compared with standard to assess the condition of pollution. The two consecutive results are compared to assess the pollution is better or worse.

Report form of electric generator exhaust gas quality monitoring plan

Report form of electric generator exhaust gas quality monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Electric Generator Exhaust Gas Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	Particulate Matter, PM10	mg/N m ³	PM meter (Aeroquol 500)	October April	Electric generator exhaust pipe	600,000	Twice a year						150 mg/Nm ³
2.	Sulphur dioxide	mg/N m ³	Kane 98		N17°1' 5.79" E 96°9' 18.61"								2000 mg/Nm ³
3.	Nitrogen Oxide	mg/N m ³											460 mg/Nm ³



Estimated Budget and Responsible Team

Estimated budget amount for electric generator exhaust gas quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for electric generator exhaust gas quality monitoing

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Electric generator exhaust gas quality measuring 300,000 x 2 Twice a year x one point	600,000 MMK

Responsible team for monitoring and reporting the electric generator exhaust gas quality is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.2. Noise Level Management Plan and Monitoring Plan

6.4.2.A Noise Level at Baundaires

Objective

- To protect the environment from noise pollution
- The measured noise level should be in standard guideLine of 1-3 of NEQ(E)G

Legal Requirement

Standard guideLines of noise level are shown as 1-3 of NEQ(E)G and it is shown as following.

Noise Level

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



Overview maps, and site layout maps, images, aerial photos, satellite images

Location of Boundary Noise Measurement Point

Sr.No.	Decription	Coordinate Point
1	Near main entrance gate (P1)	N 17° 1' 11.90"E 96° 9' 25.16"
2	Near reception area (P2)	N 17° 1' 3.22" E 96° 9' 24.61"
3	Wastewater area (P3)	N 17° 1' 0.62'E 96° 9' 19.39"
4	In front of main office (P4)	N 17° 1' 3.34" E 96° 9' 17.32"
5	Treated wastewater pond (P5)	N 17° 1' 9.59" E 96° 9' 9.14"



Figure 6-5 The location of Boundary noise measurement point

Implementation Schedule

Noise level at specified points are measured twice year.

Management Plan

Noise level management plan is performed by following

Noise level management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Vehicles activity	-The noise can be decreased by repairing and checking the toughness of the vehicles, the power of the vehicles, the suspension of the car body, the exhaust pipe and silencers.
Machineries (brewhouse, fermentor, Bottling, can plant, keg plant, co2, boiler, generator, wastewater treatment plant)	-the alignment of the machines the toughness, reFilling the lubricants, normal tension of belt; tightening the foundation bolts nuts are checked and mended to reduce the impact by those action to the environment
Steam -	-introduce slowly steam to mash vesel
Provision of PPE and arrangement	-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.

Monitoring Plan

Noise level monitoring expert person are hired by project and monitored noise level at specified point twice a year .

Methodology

Noise level monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at same place are compared to assess the pollution is better or worse.

Report form of Baunday noise level monitoring plan

Report form of Baunday noise level monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Form of Noise Level Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	The Noise	dBA	Noise meter	October April	-Near main entrance gate - Near reception area - Wastewater area - In front of main office - Treated wastewater pond	1000000	Twice a year						70

*NEQ(E)G – National Environmental Quality (Emission) GuideLines



Estimated Budget and Responsible Team

Estimated budget amount for Boundary noise level monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for Boundary noise level monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Boundary noise level monitoring 100,000 x5 x 2 Twice a year x 5 point	1000,000 MMK

Responsible team for monitoring and reporting of Boundary noise level is shown at pharagraph 6-3 and also duties are at 6-3-1.



6.4.2.B Workplace Noise Level Management and Monitoring Plan

Objective

- To protect employee from noise pollution
- The measured noise level should be in standard guideLine of 1-3 of NEQ(E)G

Legal Requirement

Standard guideLines of noise level are shown as 1-3 of NEQ(E)G and it is shown as following.

Noise Level

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

Overview maps, and site layout maps, images, aerial photos, satellite images

The workplace noise level monitoring point are at **Filling area (starting point), Filling area (end point), co2 plant area, brewing area (up) and brewing area (down), malt milling area (up), malt milling (down)** and the photo of point are shown as follows;



Figure 6-6 location of workplace noise level monitoring point

Implementation Schedule

Workplace noise level at specified points are measured twice a year.

Management Plan

Noise level management plan is performed by following

Noise level management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Vehicles activity	-The noise can be decreased by repairing and checking the toughness of the vehicles, the power of the vehicles, the suspension of the car body, the exhaust pipe and silencers.
Machineries (brewhouse, fermentor, Bottling, can plant, keg plant, co2, boiler, generator, wastewater treatment plant)	-the alignment of the machines the toughness, reFilling the lubricants, normal tension of belt; tightening the foundation bolts nuts are checked and mended to reduce the impact by those action to the environment
Steam -	-introduce slowly steam to mash vessel
Provision of PPE and arrangement	-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.

Monitoring Plan

Noise level monitoring expert person are hired by project and monitored noise level at specified point twice a year .

Methodology

Noise level monitored and results are compared with standard to assess the condition of pollution. The two consecutive results at same place are compared to assess the pollution is better or worse.

Report form of workplace noise level monitoring plan

Report form of workplace noise level monitoring is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Workplace Noise Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	The Noise	dB(A)	Noise meter	October April	- Filling area (starting point) -Filling area (end point) - CO ₂ plant area -brewing area (up) - brewing area (down) - malt milling area (up) - malt milling (down)	1400,000	Twice a year						70



Estimated Budget and Responsible Team

Estimated budget amount for workplace noise level monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for workplace noise level monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Workplace noise level monitoring 100,000 x7 x 2 Twice a year x 7 point	1400,000 MMK

Responsible team for monitoring and reporting of workplace noise level is shown at paragraph 6-3 and also duties are at 6-3-1.

6.4.3 Vibration Management and Monitoring Plan

Objective

- To protect the evironment by impact of vibration
- If impact of vibration is significant, there be reducing of impact

Legal Requirement

Vibration standard guideLines is referdd as D 4150-3:1999 and it is shown as following.

Vibration Velocity

Line	Type of structure	Vibration peak particle velocity (mm/s)			
		Foundation frequency			Plane of floor of uppermost storey
		Less than 10 Hz	10 to 50 Hz	50 to 100° Hz	Frequency mixture
1	Building use for commrical purpose, industrial building and building of similar design	20	20 to 40	40 to 50	40
2	DwellLineg and building of similar design and/or use	5	5 to 15	15 to 20	15
3	Structure that, because of their sensitivity to vibration do not correspond to those listed in Lines 1 and 2 and are of great intrinsic value (e.g building that are under a preservation order	3	3 to 8	8 to 10	8

*for frequency above 100Hz, at least the value specified in this column shall be applied



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Overview maps, and site layout maps, images, aerial photos, satellite images

Vibration measuring points are at **near wastewater area, monastery (Amayawatty) and main entrance of gate** and the photo of point are shown as follows;



Figure 6-7 The location of vibration measuring point

Implementation Schedule

Vibration measurement are performed at specified points twice a year.

Management Plan

Vibration level management plan is performed by following

Vibration level management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Rotating components of machines	<ul style="list-style-type: none"> -adjust the unbalancing -adjust the misalignment -tightening the looseness Reduce the rubbing action
Foundation	<ul style="list-style-type: none"> -good foundation structure -tightening the foundation bolt nuts -isolating dumping or absorbing material -absorbing the vibration (Spring box or -) - measure the vibration level and repair if necessary

Implementation Schedule

Vibration measurement are performed at specified points twice a year.

Monitoring Plan

Vibration level monitoring expert person are hired by project and monitored at specified point twice a year .

Methodology

Vibration level are monitored and results are compared with standard to assess the impact of vibration. The two consecutive results at same point are compared to assess the better or worse.

Report form of vibration level monitoring plan

Report form of vibration level monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Report Form of Vibration Level Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Vibration	mm/sec	Vibration meter	October April	- near wastewater area - monastery (Amayawatty) - main entrance gate	1800,000	Twice a year						3mm/fec



Estimated Budget and Responsible Team

Estimated budget amount of vibration level monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for workplace noise level monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Vibration level monitoring 300,000 x3 x 2 Twice a year x 3 point	1800,000 MMK

Responsible team for monitoring and reporting of vibration level is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.4 Underground Water Quality Management and Monitoring Plan

Objective

- To protect the ground water quality to be used as drinking water

Legal Requirement

- Referring the
- the underground water Act, 21st – June 1930
 - The conservation of water resource and river law. The state peace and development council law No 8/2006 8-10-2006
 - Ministry of Health 2014, Drinking water standard.

Drinking water standard by ministry of health

SR.No	Parameter	Unit	Value	Remark
1	Turbidity	NTU	5	
2	Arsenic	mg/l	0.05	
3	Aluminum	mg/l	0.2	
4	Chloride	mg/l	250	
5	Copper	mg/l	2-0	
6	Cyanide	mg/l	0.07	
7	Managanese	mg/l	0.4	
8	pH	-	6.5~8.5	
9	Sulphate	mg/l	250	
10	Total AlkaLineity as CaCO ₃	-	-	



11	Total Dissolved Solid	mg/l	1000	
12	Total Hardness as CaCO ₃	mg/l	500	
13	Total Iron	mg/l	1	

Overview maps, and site layout maps, images, aerial photos, satellite images

Five underground water samples are collected and analyzed. The sampling points are shown as following.

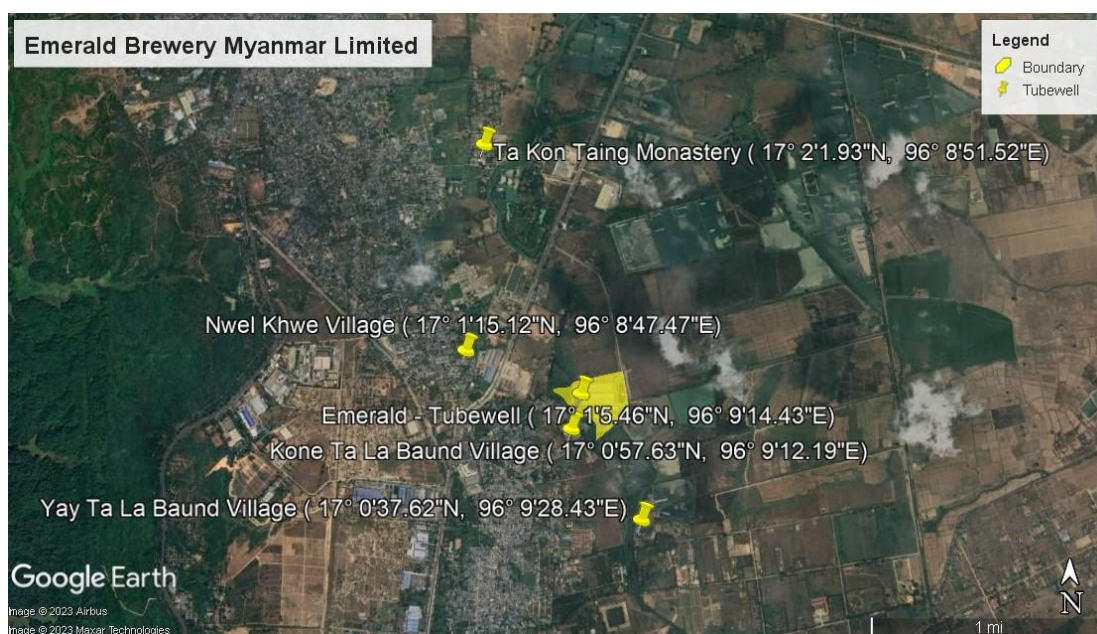


Figure 6-8 The location of underground water sampling points

Implementation Schedule

Underground water samples are collected at specified point and analyzed twice a year.

Management Plan

Underground water quality management plan is performed by following.

Underground water quality management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Spillage	-spillage of fuel, chemicals, lubricant oils, battery acid etc are prevented.
Disposal of waste	-properly disposed or disposed by authorized party for hazardous waste
Dumping the waste	-strictly prohibited
Septic tank	-to be enough naturally treated.

Wastewater	-wastewater quality is under standard
Checking	-underground water samples are regularly checked and repair if necessary.

Implementation Schedule

Quality of underground water sampled at specified point and analyzed at approved laboratory twice a year.

Monitoring Plan

Expert laboratory person are hired by project and analyzed twice a year .

Methodology

Underground water quality are compared with standard to assess the condition of pollution. The two consecutive results at same point are compared to assess the better or worse.

Report form of underground water quality monitoring plan

Report form of underground water quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Aluminum	mg/L	Spectrophotometer	October	- Kone Ta La	3000,000	Twice a					0.02	
	Arsenic	mg/L	APHA-AWWA-WPCF	September	Baund		year					10	
	Chloride	mg/L	APHA-AWWA-WPCF		- Yay Ta La							250	
	Copper	mg/L	Spectrophotometer		Baund							2	
	Cyanide	mg/L	Spectrophotometer		-Ta Kon Taing							0.07	
	Manganese	mg/L	Spectrophotometer		- Nwel Khwe							0.4	
	pH	-	pH meter		-Emerald Beer							6~9	
	Sulfate	mg/L	APHA-AWWA-WPCF									250	
	Total Alkalinity as CaCO ₃	mg/L	APHA-AWWA-WPCF									-	
	Total Dissolved Solids	mg/L	APHA-AWWA-WPCF									600	
	Total Hardness as CaCO ₃	mg/L	APHA-AWWA-WPCF									500	
	Total Iron	mg/L	APHA-AWWA-WPCF									0.3	
	Turbidity	NTU	Trubidity mter									5	



Estimated Budget and Responsible Team

Estimated budget amount of underground water quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for underground water quality monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Underground water quality monitoring 300,000 x5 x 2 Twice a year x 5 point	3000,000 MMK

Responsible team for monitoring and reporting of undreground water quality monitoring is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.5 Surface Water Quality Management and Monitoring Plan

Objective

- To protect the surface water quality.
- To facilitate the livelihood of the surround people along side the surface water.

Legal Requirement

- Referring the
- The consecuative of water resources
 - The state peace and development council law No 8/2006 8-10-2006
 - The effluent level of breweries and distilleries

Effluent Level of Breweries and Distilleries

Parameter	Unit	GuideLine Value
5-day Biochemical oxygen demand	mg/l	50
Active ingredients / Antibiotics	To be determined on a case specific basis	
Chemical oxygen demand	mg/l	250
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Temperature increase	°C	<3 ^b



Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

Overview maps, and site layout maps, images, aerial photos, satellite images

The four surface water samples are collected and analyzed. The sampling points are shown as following.

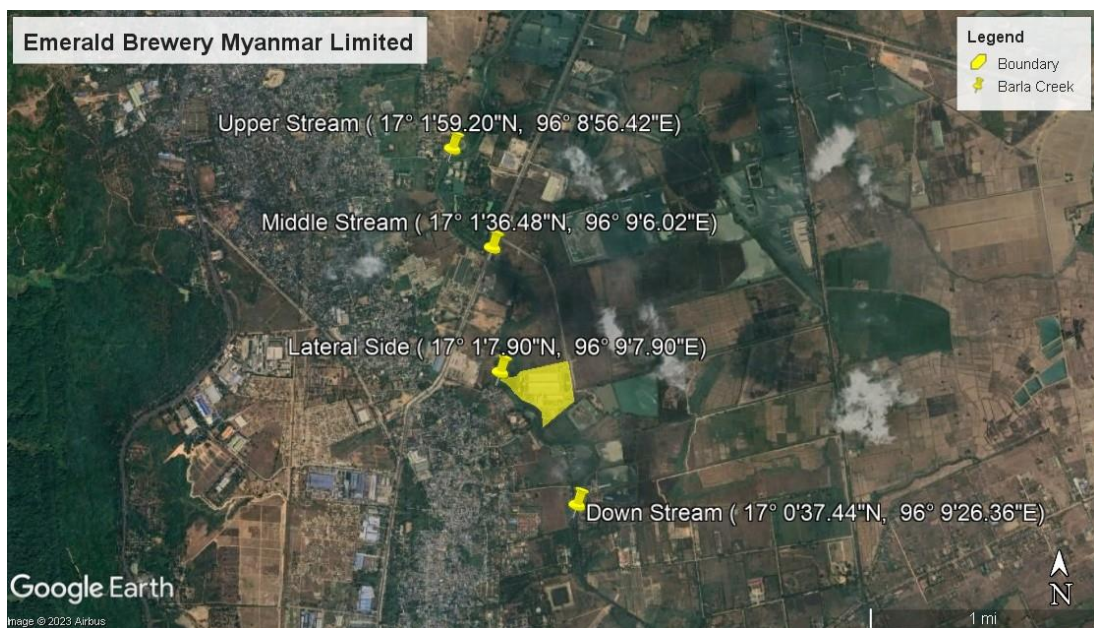


Figure 6-9 The location of Surface water sampling points

Implementation Schedule

Surface water samples are collected at specified point and analyzed twice a year.

Management Plan

Surface water (Barlar Creek) quality management plan is performed as following and there were responsible for the all person stay along side the Barlar creek.

Management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Agricultural activity	-over sediments, nutrients pesticides are prohibited
Farming activity	-wastewater from farming are prohibited or in standard
Sanitary water	-domestic sannitray waste are prohibit
wastewater	-all wastewaters are in standard guideLine.
Wastewater treat	-wastewaters quality is under standard
Blocking the flow	-free flowing
Wastewater treatment	-wastewater are treated and under standard.
Solid wastes	-prohibit the disposal of solid waste
Action	-regularly sampLineg and checking the quality of surface water

Implementation Schedule

Surface water are sampled at spcified point and analyzed at approved laboratory twice a year.

Monitoring Plan

Expert laboratory person are hired by project and analyzed twice a year .

Methodology

Surface water quality is compared with standard to assess the impact of pollution. The two consecutive results at same point are compared to assess the better or worse.

Report form of surface water quality monitoring plan

Report form of surface water quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper stream -Middle Stream - Down Stream -Lateral Side	Twice a year	2400,000						50
2	Active ingredients/ Antibiotics		Spectrophotometer					-					
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF					250					
4	Oil and grease	mg/l	APHA-AWWA-WPCF					10					
5	pH	-	pH meter					6-9					
6	Temperature increase	°C	Thermometer					<3					
7	Total Coliform bacteria	100ml	Plate count					400					
8	Total phosphorus	mg/l	Spectrophotometer					5					
9	Total suspended solids	mg/l	APHA-AWWA-WPCF					50					
10	Total nitrogen	mg/l	APHA-AWWA-WPCF					10					

Estimated Budget and Responsible Team

Estimated budget amount of surface water quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for surface water quality monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Surface water quality monitoring 300,000 x4 x 2 Twice a year x 4 point	2400,000 MMK

Responsible team for monitoring and reporting of surface water quality monitoring is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.6 Wastewater Quality Management and Monitoring Plan

Objective

- To protect the water environment from pollution
- The wastewater quality measured should be in standard guideLine of 2-3-1-8 NEQ(E)G (Effluent level of Breweries and Distilleries)

Legal Requirement

Referring the effluent level of Breweriew and Distilleries NEQ(E)G 2-3-1-8

Effluent Level of Breweries and Distilleries

Parameter	Unit	GuideLine Value
5-day Biochemical oxygen demand	mg/l	50
Active ingredients / Antibiotics	To be determined on a case specific basis	
Chemical oxygen demand	mg/l	250
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Temperature increase	°C	<3 ^b
Total coliform bacteria	100 ml	400



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

Overview maps, and site layout maps, images, aerial photos, satellite images

Three wastewater samples as wastewater treatment plant inlet, wastewater treatment outlet and treated final discharge wastewater are collected and coordinate point map is as follow.



Figure 6-10 The location of wastewater sampling points

Implementation Schedule

Wastewater samples are collected at specified point and analyzed once per month.

Management Plan

Wastewater quality management plan is performed as following.

Management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
Wastewater from employee's daily usage	-flush water toilets is decomposed naturally in the septic tank -clean out by YCDC when full

	-educating and uniting the employee to reduce the over usage of water
Spill and leakage of transformer oil, lubricant oil, fuel, battery acid	-check and repair the spill and leakage -wipe and cleaning material are disposal by guideLine of YCDC -old materials are collected, store and sold out and disposed under guideLine of YCDC
Washed water of tanks, machineries	-send to wastewater treatment plant
Boiler blowdown water	-disposed the sufficient amount not more or less
Washed water of bottle, can, keg plant	-use the necessary amount and not more or less
CIP. wastewater	-send to wastewater treatment plant
Wastewater from wastewater treatment plant	Wastewater from whole factory are treated with physical, Chemical, aerobic and anaerobic dygestion . -parformance by SOP and quality of outlet of the treatment plant should be in standard guideLine of NEQ(E)G 2-3-1-8

Monitoring Plan

Laboratory expert person are hired by project and wastewater are sampled and analyzde once per month.

Methodology

Wastewater quality are compared with standard to assess the condition of pollution. The two consecutive results at same point are compared to assess the better or worse.

Report form of wastewater quality monitoring plan

Report form of wastewater quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Wastewater Quality Monitoring Plan

Sr. No	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G			
								Previous and Present Data Comparison Method								
								Previous Data		Present Data		More/ Less				
								Date	Value	Date	Value					
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	January	- wastewater treatment plant inlet - wastewater treatment outlet - treated final discharge wastewater	Every month	10800,000						50			
2	Active ingredients/ Antibiotics		Spectrophotometer	February												-
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF	March												250
4	Oil and grease	mg/l	APHA-AWWA-WPCF	April												10
5	pH	-	pH meter	May												6-9
6	Temperature increase	°C	Thermometer	June												<3
7	Total Coliform bacteria	100ml	Plate count	July												400
8	Total phosphorus	mg/l	Spectrophotometer	August												5
9	Total suspended solids	mg/l	APHA-AWWA-WPCF	September												50
10	Total nitrogen	mg/l	APHA-AWWA-WPCF	October												10

Estimated Budget and Responsible Team

Estimated budget amount of wastewater quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for wastewater quality monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Wastewater quality monitoring 300,000 x3 x 12 3 point and every month	10800,000 MMK

Responsible team for monitoring and reporting of wastewater quality monitoring is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.7 Soil Quality Management and Monitoring Plan

Objective

- To protect the soil environment from pollution

Legal Requirement

Although the are standard guideLine for soil, they are for the polluted one and one of there is stated at section 2-5-5.a-6 of this report. The soil of the proposed plant is rural area and therefore request to allow that the analyzed parameter of soil of current are as balseLine and furthur data should be compared such as pollution is better or worse.

Overview maps, and site layout maps, images, aerial photos, satallite images

Soil was sampld at the factory premise of the project at N17° 1'1.87", E 96° 9'19.10" shown as follow.





Figure 6-11 The location of soil sampling point

Implementation Schedule

Soil sample is collected at specified point and analyzed twice a year.

Management Plan

Soil quality management plan is performed as following.

Management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
General solid wastes as worn out paper stationaires (old used, ruined) waste of personal wastes of employee	-kept in dustbin with cover and disposed by YCDC guidelines.
Packing materials of raw materials (plastic bag of malt, rice, plastic bucket of enzyme acid, etc.)	-collect and reuse at some place, sell and dispose by YCDC guidelines
Damage materials in process (broken bottle, cap, can, label, cardboard box, etc.	-collect and reuse at some place, sell and dispose by YCDC guidelines
Spent grain	-collect and sell for cattle food.
Expired materials resin, activated carbon, dessicant	- collect and reuse at some place, sell and dispose by YCDC guidelines
Sludge from wastewater	-collect and use as natural fertilizer



Monitoring Plan

Laboratory expert person are hired by project and soil sample is collected and analyzde twice a year.

Methodology

The anlyzed data of two cosecutives soil samples compared to assess pollution is better or worse.

Report form of soil quality monitoring plan

Report form of soil quality monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G	
								Previous and Present Data Comparison Method						
								Previous Data		Present Data		More / Less		
								Date	Value	Date	Value			
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000							
၂။	Arsenic	mg/kg												
၃။	Chloride	mg/kg												
၄။	Copper	mg/kg												
၅။	Cyanide	mg/kg												
၆။	Extractable Acidity	cmol/kg												
၇။	Manganese	mg/kg												
၈။	P-AlkaLineity	mmol/l.extract												
၉။	Total AlkaLineity	mmol/l.extract												
၁၀။	pH	-												
၁၁။	Total Iron	mg/kg												

Estimated Budget and Responsible Team

Estimated budget amount of soil quality monitoring is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for wastewater quality monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Soil quality monitoring 300,000 x2 1 point and twice a year	600,000 MMK

Responsible team for monitoring and reporting of soil quality monitoring is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.8 Odor Management and Monitoring Plan

Objective

- To protect the environment from off-odor

Legal Requirement

Standard guideLine of odor is stated at 1-4 of NEQ(E)G. It states 'Projects should control odors to ensure that odors that are offensise or unacceptable to neighbour do not occur. Generally, odor levels should not exceed five to ten adorant units at the edge of populated areas in the vicinity of a project.

Overview maps, and site layout maps, images, aerial photos, satallite images

To asses the odor, five place of Baunday odor measurement point are **near main entrance gate , near reception, wastewater area, in front of main office and treated wastewater pond.** The location map is follow.





Figure 6-12 The location of odor measurement points

Implementation Schedule

The odor levels are measured at the specified place twice a year.

Management Plan

Odor level management plan is performed as following.

Odor level management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Emitted gases and odors of the vehicle's exhaust gases	<p>--Due to the transportation of raw materials, products, machineries, spare parts, employees air pollutants, such as CO₂, CO, SO₂ and carbon particles are emitted.</p> <p>-Thus, it is necessary management to reduce the vapor and gases emissions to the air.</p> <p>Car pool system – carpool with each other instead of running separately, reducing the usage of vehicles,</p> <p>Maintain the vehicles – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor oil, usually managing the engine power of the vehicles and the machinery good power condition.</p> <p>-To reduce SO_x emissions, use vehicles that are more efficient and less polluting and good quality fuels.</p> <p>-The emitted carbon dioxide gas and the water vapor can be reduced by planting trees inthe project backyard</p>
Emitted gases and	-The generators are used for emergency back-up when power fails.

odors of the electric generators' exhaust	Generator exhaust contains high levels of carbon dioxide and sometimes carbonmonoxide when efficiency is low. -To be high efficiency of engine power and routine maintenance is carried out.
Leakage of gases from transformers, refregenerator and air condition Ammonia refrigeration plant	-Check and repair by authorized person. -routine maintinance of refregenerator and air condition -installed safeguard -operator refrigeration unit by SOP. -conduct the ammonia refrigeration management plan
Fine dust, particulate matters from the loading,unloading handling and cleaning of rice and malt	-used good quality and fresh rice malt and handle with gently -prevent the emitted particulates by block the cover, joint, handhole of sieve, bucket elevator, magnetic sperator, etc.
Fine dust, particulate matters from milling of rice	-prevent the emitted particles by seaLineg, gasketing
vapour from mashing	-not open the manhole if not necessary -not over temperature
vapour from kettle	-not open the manhole if not necessary -not over temperature
vapour from co2 plant	-not oven exhausting when regeneration cycle of dryer and deodorizer -check and repair the solcnoid valeses of drain separator
Vapour of caustic soda when dissolving	-take sufficient time to cooll the heat evolving when mixing with caustic soda and water in CIP.
Vapour from aerobic digestor	-not over blowing
Vapour from boiler when diesel fuel conbustion	-to ensure complete combustion (regulate the fuel air ratio)
Vapour from canteen	-good ventilation

Monitoring Plan

Odor measured expert person are hired by project and monitor at specified place twice a year.

Methodology

Odor measured results are compared with standard to assess the condition of pollution. The two consecutive results of the same place are compared to assess the pollution is better or worse.



Report form of odor monitoring plan

Report form of odor monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.



Report Form of odor Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Odor	5~10	Odor meter	April October	- near main entrance gate - near reception -wastewater area, -in front of main office - treated wastewater pond.	600,000	Twice a year						5~10

Estimated Budget and Responsible Team

Estimated budget amount of odor level monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for wastewater quality monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Odor monitoring plan 300,000 x2 1 point and twice a year	600,000 MMK

Responsible team for monitoring and reporting of odor quality monitoring is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.9 Traffic Management and Monitoring Plan

Objective

- To protect the employees and environment from rsisk of traffic issues.

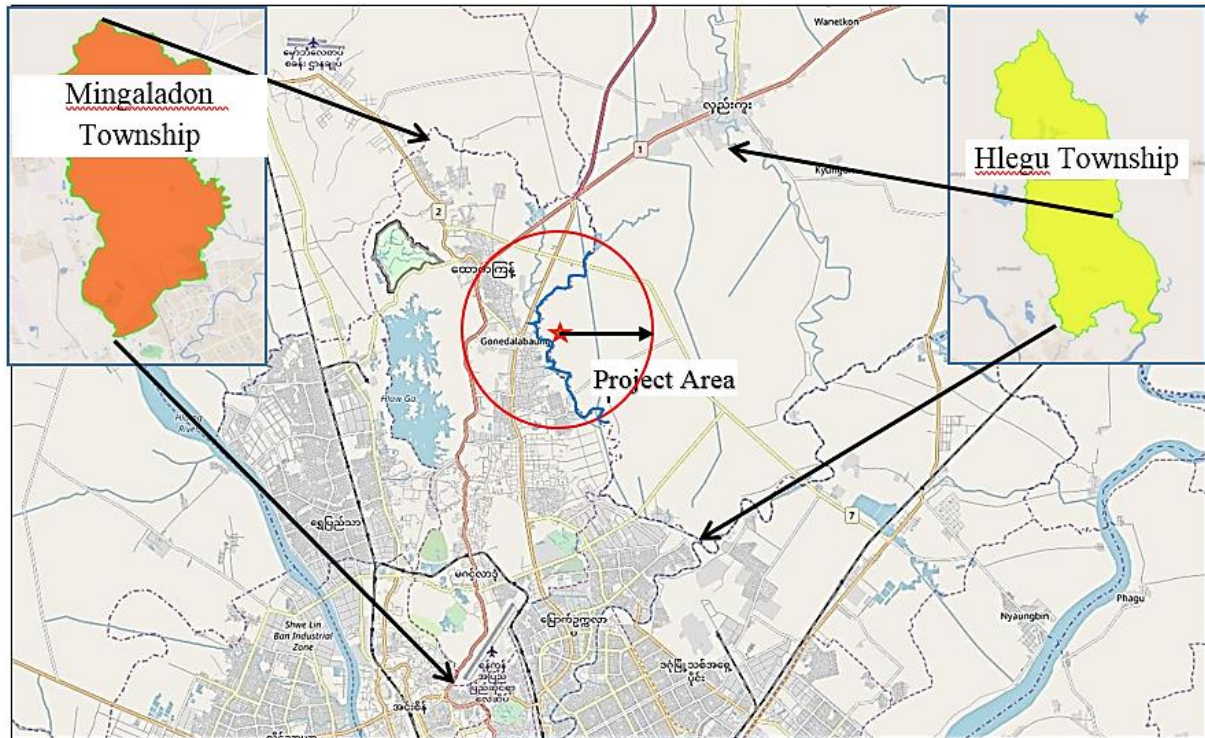
Legal Requirement

Referring the law , the motor vechicel law, 2015 and the motor vehicle rules, 1989.

Overview maps, and site layout maps, images, aerial photos, satallite images

Risk of the traffic issues may occur at premis of factory, Helgu and Mingalardone township and are shown as follows,





Map of project premises, Helgu and Mingalardon township

Implementation Schedule

The accident and injury records of employee and person of environment are documented by monthly.

Management Plan

Traffic magement plan is performed as following.

Traffic management plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Loading unloading of raw materials and product	-duties the skilled and cautious person
Fallen from vehicle	-duties the skilled and cautious person -good maintenance vehicles -skilled drivers are assigned
Accident by vehicles	-duties the skilled and cautious person -good maintenance vehicles -skilled drivers are assigned
Transprotation of raw material and production	-duties the skilled and cautious person -good maintenance vehicles -skilled drivers are assigned

Vehicles use in long distance	<ul style="list-style-type: none">-good maintenance vehicles-skilled, cautious and law abiding driver are assigned-apply the appropriate route-avoid traffic jam-teaching, instruction the laws, rules and regulations about traffic on properly-applying reward and punishment system
-------------------------------	---

Monitoring Plan

Accident and injury records of traffic affairs are documented by office work skilled person on monthly.

Methodology

The two consecutive accident and injury records are compared in frequency and severity to assess the risk of traffic is better or worse.

Report form of traffic monitoring plan

Report form of traffic monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method, standard reference.

Report Form of Traffic Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Accident and injury record	frequency and severity	Documentation of record	The whole month	- administration office	600,000	Every month						

Estimated Budget and Responsible Team

Estimated budget amount for traffic monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for traffic monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Traffic monitoring plan 500,000 x12	600,000 MMK

Responsible team for monitoring and reporting of traffic monitoring is shown at paragraph 6-3 and also duties are at 6-3-1.

6.4.10 Biodiversity Management and Monitoring Plan

Objective

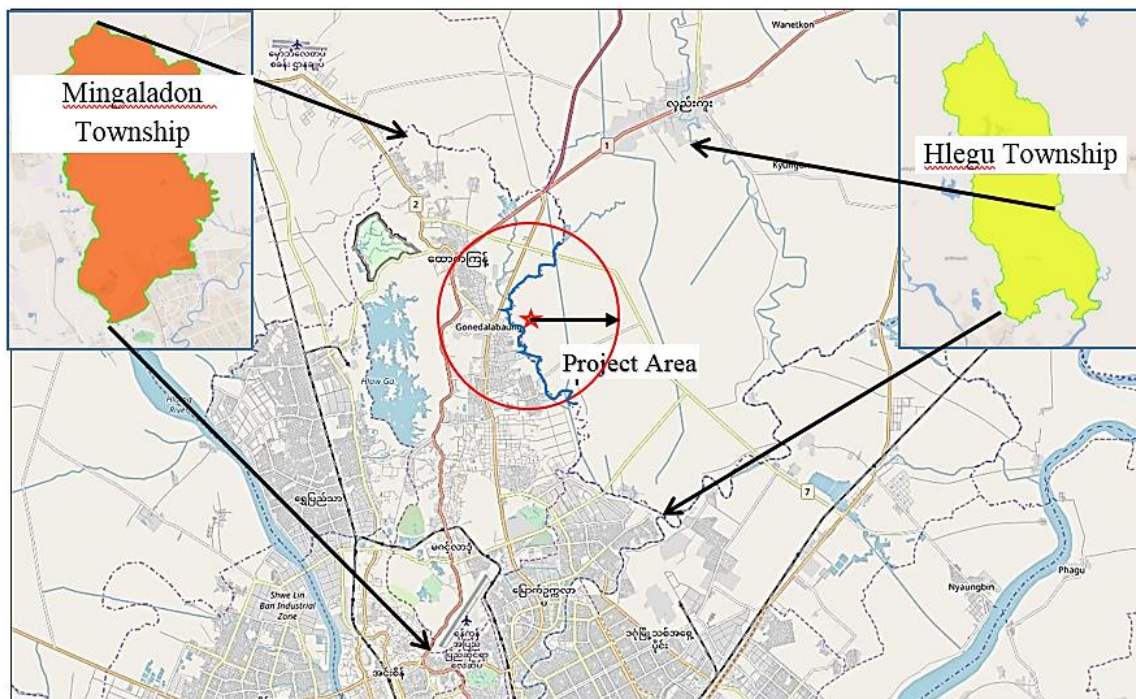
- To protect the local species by invasion of alein species

Legal Requirement

Referring the law ,’The Conversation of Biodiversity and Protected Area Law, The Pyidaungsu Hlutaw Law No. 12/2018).

Overview maps, and site layout maps, images, aerial photos, satallite images

There may be invaded on Hlegu and Mingalardon Township by alein species and these two township are protected and they are shown as following.



Map of Helgu and Mingalardon township

Implementation Schedule

Collection the situation invasive of alien species and inform to the relevant department to protect the local species.

Management Plan

Invasive species management plan is as follow.

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Acacia auriculiformis	Plant species; inform the authorized departemnt
Leucaena leucocephala	Plant species; inform the authorized departemnt
Prosopis juliflora	Plant species; inform the authorized departemnt
Chromolaena adorata	Plant species; inform the authorized departemnt
Hyptis suaveolens	Plant species; inform the authorized departemnt
Lantana camara	Plant species; inform the authorized departemnt
Echinochloa crus-galli	Plant species; inform the authorized departemnt
Imperata cylindrica	Plant species; inform the authorized departemnt
Pennisetum spp	Plant species; inform the authorized departemnt
Mikania micrantha	Plant species; inform the authorized departemnt
Mimosa diplotricha	Plant species; inform the authorized departemnt
Eichhornia crassipes	Plant species; inform the authorized departemnt
Achatina fulica	Animal species; inform the authorized departemnt
Pomacea canaliculata	Animal species; inform the authorized departemnt
Clarias fuscus	Animal species; inform the authorized departemnt
Cyprinus carpio	Animal species; inform the authorized departemnt
Ctenopharyngodon idella	Animal species; inform the authorized departemnt
Oreochromis spp	Animal species; inform the authorized departemnt
Teredo spp	Animal species; inform the authorized departemnt

Monitoring Plan

Document the records about invasive alien species by monthly. Administration work skilled person is assigned to document the records and is honorable reward 50000 per month.



Methodology

The two consecutive documents are compared in frequency and severity to assess the invasion of alien species is better or worse.



Report Form of Invasion of Alein Species

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Invasion of alein species	frequency and severity	Document the record	every month	Hlegu and Mingalardon	600,000	The whole mont						



Estimated Budget and Responsible Team

Estimated budget amount for invasion alein species monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for invasion alein species monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Documentation of record for invasion alein species 500,000 x12	600,000 MMK

Responsible team for monitoring and reporting the invasion of alein species is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.11 Culture and Heritage Management and Monitoring Plan

Objective

- To protect the culture and heritage as antique objects; an ancient monument and cultural heritage region of union of myanmar.

Legal Requirement

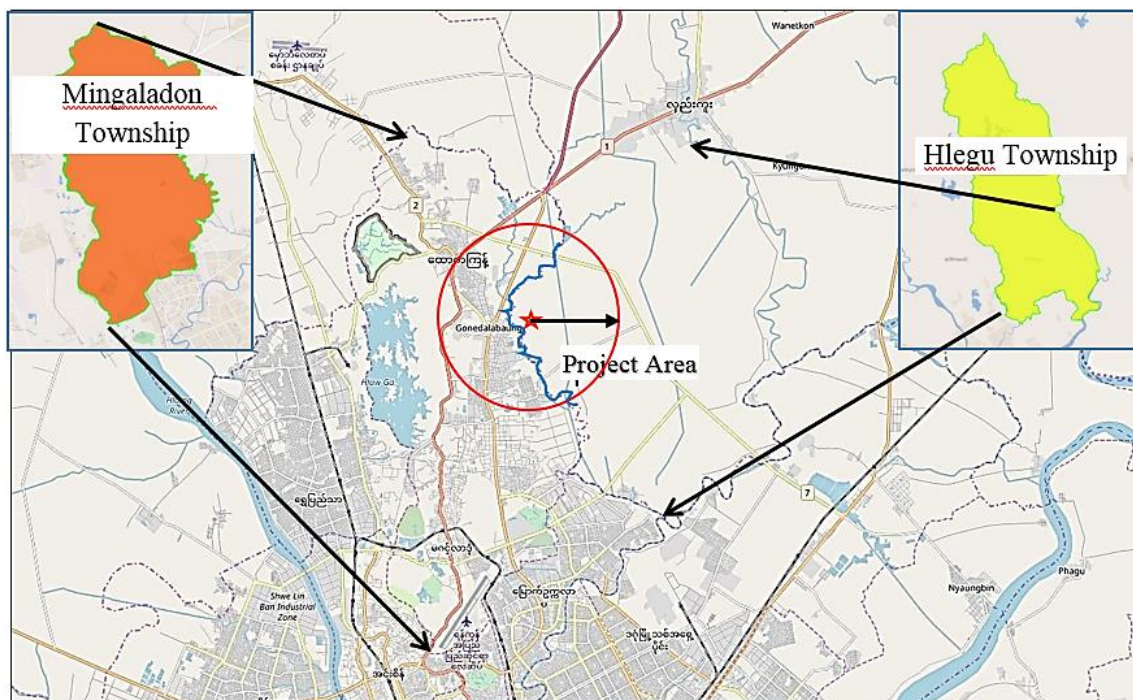
Referring the laws

- Protection and Presevation of Antique Objects Law, 2015
- The Protection and Presevation of Ancient Monument Law, 2015
- The Protection and Presevation of Cultural Heritage Regions Law, 1998

Overview maps, and site layout maps, images, aerial photos, satallite images

Protected area are noted the townships as Hlegu and Mingalardon. The map of two townships and proposed project is shown as follow.





Map of Helgu and Mingalardon township

Implementation Schedule

The activities of protection of cultural and heritage of union of myanmar are carried out as following.

- Collecting the information about the antique object; ancient monument and cultural heritage region from factory employees and public.
- Reporting the above informations to the relevant authorized department.

Management Plan

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Employees and public	-Insite the person of Archaeologist and National Museum Department and make the teaching, education and knowledge shairng with the factory employees, public at convenient time. -Requesting the employees and public that inform the facts about antique object, ancient monuments and cultural heritage region -If the information get from employeess and public are evident, report to the authorized deapartment.

Report Form of Cultural and Heritage Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Information about antique object, ancient monument, cultural heritage	frequency and evicence	Collecting the information	The whole month	Hlegu and Mingalardon	100,000	monthly						



Estimated Budget and Responsible Team

Estimated budget amount for cultural and heritage monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget for cultural and heritage monitoing plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Monitoring of cultural heritage 100,000 x expenditure for teaching, education and knowledge shairng	100,000 MMK

Responsible team for monitoring and reporting for cultural and heritage monitoring plan is shown at pharagraph 6-3 and also duties are at 6-3-1.

6.4.12 Waste Materials Management and Monitoring Plan

Objective

To protect the surface water, ground water and soil environment from pollution due to waste materials such as liquid, and soild waste.

Legal Requirement

To protect the surface water and ground water, the guideLine for effluent level, stated at NEQ(E)G 2-3-1-8 Breweries and Distilleries and for surface water and 2014 Ministry of Health Drinking water standard for ground water. For the soil environment, the soil analyzed results are compared each other.

Breweries and Distilleries

Parameter	Unit	GuideLine Value
5-day Biochemical oxygen demand	mg/l	50
Active ingredients / Antibiotics	To be determined on a case specific basis	
Chemical oxygen demand	mg/l	250
Oil and grease	mg/l	10
pH	S.U. ^a	6-9
Temperature increase	°C	<3 ^b



Total coliform bacteria	100 ml	400
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50

Drinkint Water Quality Standards 2014, Ministry of Health

SR.No	Parameter	Unit	Value	Remark
1	Turbidity	NTU	5	
2	Arsenic	mg/l	0.05	
3	Aluminum	mg/l	0.2	
4	Chloride	mg/l	250	
5	Copper	mg/l	2-0	
6	Cyanide	mg/l	0.07	
7	Managanese	mg/l	0.4	
8	pH	-	6.5~8.5	
9	Sulphate	mg/l	250	
10	Total AlkaLineity as CaCO ₃	-	-	
11	Total Dissolved Solid	mg/l	1000	
12	Total Hardness as CaCO ₃	mg/l	500	
13	Total Iron	mg/l	1	

Overview maps, and site layout maps, images, aerial photos, satallite images

Surface water, ground water and soil quality measuring points are shown as following.



Surface water monitoring point



Ground water monitoring point



Soil quality monitoring point

Implementation Schedule

Surface water, ground water and soil samples are collected at specified place and analyzed by professional expert laboratory person hired by project

Management Plan

Management plan for surface water, ground water and soil quality are as following.

Management plan for surface water, ground water and soil quality

Emerald Brewery Myanmar Limited	
Sources	Management Plan
Wastewater from the employees daily usage	<ul style="list-style-type: none"> -naturally decomposed in the septic tank -educating and unitting the employees the reduce the over usages of water -clean by YCDC when septic tank are full.
Spillage, leakage of fransformer oil, fuel, lubricant oil, and battery acid	<ul style="list-style-type: none"> -assigned the experience and skilledd person when reFilling, renewing, transportation -check and repair immediately when leak and spillage. -wiping out materials are disposed by guideLine of YCDC
Washed water of tanks, machine and CIP system	<ul style="list-style-type: none"> -send to waste water treatment plant and treat to be guideLine values.
Beer waste as bottle, demage can from apstuerizer	<ul style="list-style-type: none"> -send to waste water treatment plant and treat to be guideLine values.

Boiler blowdown water	-blowdown the necessary and sufficient amount not more or less
Regeneration and washed water from water treatment plant	Control the discharge waste as necessary and sufficient amount.
Sludge from wastewater	-collect and used as natural fertilizer
Wastewater from wastewater treatment plant	Final discharge wastewater should be under NEQ(E)G 2-3-1-8
Used lubricant oil, battery acid fuel waste	-collect and reuse at other place, sold out and disposed by guideLines of YCDC
Packing material for raw material (rice,malt,enzyme, caustic, acid etc)	-collect and reuse at other place, sold out and disposed by guideLines of YCDC
Damage in procss (broken bottle, cap, label, can etc)	-collect and reuse at other place, sold out and disposed by guideLines of YCDC
Solid and liquid waste from canteen	-disposed by guideLine of YCDC

Monitoring Plan

Surface water, ground water and soil sampLineg and analyzing by laboratory person twice a year.

Methodology

Surface water analyzed data are compared with standard to assess the pollution condition. Two consecutive are compared to assess the pollution of surface water is better of worse.

Ground water analyzing are compared with standard to assess the pollution and two consecutive results are compared to assess pollution is better or worse.

Two consecutive soil analyzing data are compared to assess the pollution is better or worse.



Report Form of Surface Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Measurement Methods	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G			
								Previous and Present Data Comparison Method								
								Previous Data		Present Data		More/ Less				
								Date	Value	Date	Value					
1	5-day Biochemical oxygen demand	mg/l	Spectrophotometer	April September	- Upper stream - Middle Stream - Down Stream - Lateral Side	Twice a year	2400,000						50			
2	Active ingredients/ Antibiotics		Spectrophotometer													-
3	Chemical Oxygen Demand	mg/l	APHA-AWWA-WPCF													250
4	Oil and grease	mg/l	APHA-AWWA-WPCF													10
5	pH	-	pH meter													6-9
6	Temperature increase	°C	Thermometer													<3
7	Total Coliform bacteria	100ml	Plate count													400
8	Total phosphorus	mg/l	Spectrophotometer													5
9	Total suspended solids	mg/l	APHA-AWWA-WPCF													50
10	Total nitrogen	mg/l	APHA-AWWA-WPCF													10

Report Form of Underground Water Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Estimated budget	Frequency	Recorded Method					Ministry of health
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
	Aluminum	mg/L	Spectrophotometer	October	- Kone Ta La	3000,000	Twice a					0.02	
	Arsenic	mg/L	APHA-AWWA-WPCF	September	Baund		year					10	
	Chloride	mg/L	APHA-AWWA-WPCF		- Yay Ta La							250	
	Copper	mg/L	Spectrophotometer		Baund							2	
	Cyanide	mg/L	Spectrophotometer		-Ta Kon Taing							0.07	
	Manganese	mg/L	Spectrophotometer		- Nwel Khwe							0.4	
	pH	-	pH meter		-Emerald Beer							6~9	
	Sulfate	mg/L	APHA-AWWA-WPCF									250	
	Total Alkalinity as CaCO ₃	mg/L	APHA-AWWA-WPCF									-	
	Total Dissolved Solids	mg/L	APHA-AWWA-WPCF									600	
	Total Hardness as CaCO ₃	mg/L	APHA-AWWA-WPCF									500	
	Total Iron	mg/L	APHA-AWWA-WPCF									0.3	
	Turbidity	NTU	Trubidity mter									5	



Report Form of Soil Quality Monitoring Plan

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More / Less	
								Date	Value	Date	Value		
၁။	Aluminum	mg/kg	Procedures for Soil Analysis, 6 th Edition, ISRIC, FAO of the United Nations	April October	- factory permis	Twice a year	600,000						
၂။	Arsenic	mg/kg											
၃။	Chloride	mg/kg											
၄။	Copper	mg/kg											
၅။	Cyanide	mg/kg											
၆။	Extractable Acidity	cmol/kg											
၇။	Manganese	mg/kg											
၈။	P-AlkaLineity	mmol/l.extract											
၉။	Total AlkaLineity	mmol/l.extract											
၁၀။	pH	-											
၁၁။	Total Iron	mg/kg											

Estimated budget for surface water quality monitoring plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Surface water quality monitoring 300,000 x4 x 2 Twice a year x 4 point	2400,000 MMK

Estimated budget for underground water quality monitoring plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Underground water quality monitoring 300,000 x5 x 2 Twice a year x 5 point	3000,000 MMK

Estimated budget for wastewater quality monitoring plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Soil quality monitoring 300,000 x2 1 point and twice a year	600,000 MMK

Responsible Team

Responsible team for surface water, ground water, soil quality monitoring plan is shown at paragraph 6-3 and also duties are at 6-3-1.



6.4.13 Occupational Health and Safety Management and Monitoring Plan

Objective

To protect the employees of the proposed project from health problems and set up the safe works.

Legal Requirement

There are no direct measurements and it is assessed by indirect measurement such as

- sick leave
- accident and injury record
- average number of working hours for employee
- occupational illness
- days of absence caused by occupational illness, and
- complaints and grievance information

Overview maps, and site layout maps, images, aerial photos, satellite images

To assess the occupational health and safety, the skilled administration work person is assigned the duties, to document the records such as sick leaves, accident and injury record, average number of working hour for employees; occupational illness; days of absence caused by occupational illness and complaints and grievance information. Therefore administration office is noted as main place of occupational health and safety affairs and it was shown as following.



Administration office location point

Implementation Schedule

Facts about occupational health and safety are documented by monthly.

Management Plan

Management plan for occupational health and safety is as follow.

Emerald Brewery Myanmar Limited	
Sources	Management Plan in Brief
<p>Dust and particles (Explosion, nuisance, eye irritation, respiratory infection probably suffer cancer)</p> <p>Emitted vapour</p>	<ul style="list-style-type: none"> -powerful engine for vehicles and generators -good maintenance -use good quality fuel -good ventilation -fumes emission control when caustic soda dissolving for CIP -good quality and malt (less dust) -control dust fine particles emission when rice milling, loading unloading of rice and malt. -good ventilation CO₂ plant -prevent the ammonia leakage in refrigeration
Accident and injury	<ul style="list-style-type: none"> -fallen from vehicles when loading unloading the raw materials, products and spare part machineris etc (assigning the skilled and cautious person)
Accideent by vehicles	<ul style="list-style-type: none"> -assigning the skilled and cautious employees -good mainteance the vehicles -assigning the skilled and cautious drivers and helpers
Moving parts of machineris wraping the hair, clothes	<ul style="list-style-type: none"> -assigning the cautious employees -cover the moving parts
Noise (Nuisance and audio disturbance)	<ul style="list-style-type: none"> -maintenance the engine exhaust system -lubricating -aligning the machines, belt, etc. -avoid to work with the leisure time -not assign the persson at the high noise level for long term -arrange the PPE
Odor (nuisance the respiration tract)	<ul style="list-style-type: none"> -powerful engine -good quality fuel -fuel and air in right ratio for boiler -control the leakage of CO₂ plant -control the leakage of ammonia



Industrial hazard	
Boiler explosive	-assigned the certified boiler operator
Electric shock	-conducting the boiler law, rules and regulation
Heat burn	-use good quality electrical hand tools
Steam burn	-insulating the hot metal part (e.g valve and joint pipe Line)
Cold burn	- insulated the cold surface (e.g co2, ammonia pipe Lines)
Chemical hazard	-assigned the skilled and cautious person to handle the hazardous chemical -explain the MSDS of hazardous chemical and conducting the safety procedure
Broken bottle	-good quality bottle -wearing the PPE (e.g goggles,leather,gloves,apron,safety boots)
Keg explosion	-pressure test and not over pressure -update the management plan of hazardous chemical (ammonia)
Ammonia poisoning	-conduct the management plan of hazardous chemical (ammonia)
Fire hazard	-manage the leak and spill of fuel -not be conditions that fine particle oxygen (air) and spark (hot surface)

Monitoring Plan

Assess the document about the occupational health and safety affairs as frequency and severity.

Methodology

Assess the monthly occupational health and safety affair as frequency and severity and conclude better or worse.

Report form of occupational health and safety

Report form of occupational monitoring plan is shown as follows and it includes parameter, measuring method, time schedule, monitoring place, frequency recorded method.



Report form of occupational health and safety

Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Estimated budget	Recorded Method					The Standards and Reference *NEQ(E)G
								Previous and Present Data Comparison Method					
								Previous Data		Present Data		More/ Less	
								Date	Value	Date	Value		
1.	-sick leaves -average number of working hours for employee -occupational illness -days of absence caused by occupational illness -complaints and grievance information	No. No. No. No. No.	Data collection and comparison	every month	leave, record section of Administrative Department	every month	600,000						



Estimated Budget and Responsible Team

Estimated budget amount of odor level monitoring plan is as follow and if it not be sufficient, extra allotment is planned.

Estimated budget of occupational health and safety monitoring plan

Sr.No.	Purposes	Estimated Expenditure (MMK)
1	Occupational health and safety monitoring plan 50,000 x12	600,000 MMK

Responsible team for occupational health and safety is shown at pharagraph 6-3 and also duties are at 6-3-1.



7.0 RISK ASSESSMENT

Broadly speaking, a **risk assessment** is the combination effort of:

- (a) Identifying and analyzing potential (future) events that may negatively impact individuals, assets, and/or the environment and
- (b) Making judgments on the tolerability of the risk on the basis of a risk analysis while considering influencing factors.

Risk Assessment is mentioned as two categories:

7.1 Natural Disaster, assessment including climate change

7.2 Risk assessment by beer manufacturing plant

7.1 Natural Disaster, Assessment Including Climate Change

Myanmar faces a number of natural disaster, including earthquake, (ground movement, Tsunami), flood, (Unspecified, flash flood, riverine flood), landslide storm (tropical cyclone), wildfire (forest fire).

Natural disasters in Myanmar from 1900 to 2014 are summarized as follow:

Table 7.1 Summarized Table of Natural Disasters in Myanmar from 1900 to 2014

		No.of Events	Killed	Total Affected	Damage (000 US\$)
Earthquake	Ground movement	7	663	22923	4770
	Tsunami	1	71	15700	500000
Flood	Unspecified	7	161	386988	55115
	Flash flood	3	263	85734	1700
	Riverine flood	13	134	2188690	79840
Landslide	Landslide	4	125	146367	-
Storm	Tropical cyclone	17	90827	3935844	4079388
Wildfire	Forest fire	2	8	78588	11000

Source: "EM-DAT: The OFDA/CRED International Disaster Database, www.em-dat.net – Universite Cathalique de Louvain – Brussels – Belgium"

It is estimated that the around 870,000 people in Myanmar live in areas that are exposed to cyclone, and a similar proportion are vulnerable to earthquakes, with two fault Lines running through the country across some densely populated areas. Furthermore 440,000 people are vulnerable to flooding and 390,000 are exposed to drought. These risks are being further accelerated due to processes attributed to climate change and vairability. According to meteorological and hydrological data and concerning changes in pattern in recent years, such as the shortening and identification of monsoons; and increase in sea surface temperature and an overall



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increase in heat and drought indices; increase in clear sky days; increase in risk of flooding; increase in intensity of cyclone/strong winds/strong waves, sea level rise are noted.

7.2 Risk Assessment for Beer Manufacturing Plant

The mitigation measures to reduce the impacts on the environment are described in **Chapter-5** (key potential environment impact and mitigation measure). The risk assessment by the impact (emissions) of the production, distribution of products is discussed in this section. Therefore, the source of impact, risk assessment, the impacted areas, the impacted amount and duration and the mitigation measures for the impacts are described as the following titles:

7.2.1 The Sources Of The Impacts; Risk Assessment; The Impacted Areas; The Impacted Amount And Duration And The Mitigation Measures For The Impacts By The Production And Distribution Of Product

By the production and distribution of product of this factory; the impacts to the air, water, the soil, impacts by the noise and the odor are described as follow:

- The impacts to the air
- The impacts to the water
- The impacts to the soil
- The impacts of the noise
- The impacts of the odor

The Impacts to the Air

Emerald Brewery Myanmar Limited	
The impacts	Spreading the dust and the particles; the emission of the combusted gases and the leakage of gases; and the emission of bad smells
Risk Assessment	Explosion may undergo when dust, air and spark were together in right composition. Nuisance, eye irritation, respiratory infection, probability suffer cancer. Refrigerant (HFC) is ozone destroyer. CO,CO ₂ , ammonia are poisonous materials. CO ₂ , bio gas are global warming
The sources of the impacts	The emitted particulate matters and the gases from the generator exhaust pipes and the cars for transporting the raw material, the finished products, the machines, the employees' ferry The leakage of the gases (transformer oil vapour;



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	<p>refrigerants air condition, water cooler; refrigerator; ammonia; CO₂; biogas; alcohol vapour; vapours from mashing; wort boiling).</p> <p>The emitted dust and the particles from the loading, unloading, transporting of rice and malt.</p> <p>The generating the sulfur dioxide from using the bad quality of diesel using in boiler and electric generator.</p> <p>The emitted dust and fine particles from rice, malt cleaning.</p> <p>The emitted dust and fine particles from rice, milling.</p> <p>Emitted vapour from mashing, wort boiling</p> <p>Emitted vapour from aerobic digester</p> <p>Combusted gases from boiler</p> <p>Emitted gases from CO₂ dryer and deodorizer</p> <p>Gases from drain separator (CO₂ plant)</p> <p>Emitted vapour from caustic dissolving</p> <p>Vapour from canteen</p>
<p>The impacted areas</p>	<p>The peoples along through transportation route of materials, the finished goods and the machines</p> <p>The employees within the factory yard</p> <p>Public nearby factory</p>
<p>The impacted amount and duration</p>	<p>The impacted amount is low to the peoples and the impacted duration is short.</p> <p>For the employees, the impacted amount is medium and the impacted duration is longer.</p>
<p>The mitigation measures</p>	<p>Full engine power (good maintenance, good quality fuel, check and repair)</p> <p>Match generator capacity and load</p> <p>Car pool system</p> <p>Check and repair the transformer by authorized person</p> <p>Check and repair refrigerator, air condition, water cool</p> <p>Operate ammonia refrigeration unit under SOP.</p> <p>Conduct the management plan for ammonia</p> <p>Use good quality of rice and malt</p> <p>Block the emitted dust and particles from cleaning, weighing, milling the raw materials</p> <p>Not open the manhole, handhole if unnecessary</p> <p>Not over heat in mash tank, kettle</p> <p>Not over aeration at aerobic digester</p> <p>Right fuel oil and air ratio</p> <p>Right the timing sequence of CO₂ dryer and deodorizer</p> <p>Right the timing of drain separator</p>



	Control the heat evolving when caustic dissolving Good ventilation at canteen
--	--

The Impacts to the Water

Emerald Brewery Myanmar Limited	
The impacts	Change the ecosystem of water environments
Risk Assessment	Change the quality of surface water and ground water Oily layer prevents the light and air to under water king doms. Battery acid make, pH changes of surrounding water, corrosion and irritation to metal,skin Wastewater with high BOD,COD,changes the ecosystem of water environment
The sources of the impacts	The wastewater from the unsystematic disposal of the employees The accidental spills from reFilling the lubricants, the transformer oils, and the battery acids The washed waters of the machines, tanks, (mash tanks, wort kettle, fermentor, rack tank, pipe Line etc.) The washed water from bottle,kegs Beer waste from process (bottle broken, can damage, pasterizer, Filling, capping) Waste from CIP unit Treated wastewater from wastewater treatment plant Washed water from CO ₂ plant, condensate water Back washed water from water treatment Reject water from R.O unit Salt solution from water treatment Wastewater from canteen Boiler blowdown water
The impacted areas	Treated water stored pond Treated wastewater discharge place (Balar Creek)
The impacted amount and duration	The impacted amount to the factory's environment is medium and impacted duration is medium. The impacted amount to the employees is medium and the impacted duration is medium.
The mitigation measures for the impacts	Be systematic; following the instructions and discipLines; checking accurately; educating if do not follow; taking the actions; systematically keeping and



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	<p>sellineg; disposing in the specific areas of YCDC Assigning the skilled and cautious person for Filling, renewing the fuel, battery acid, lubricating oil Use washed water in necessary amount not more or less Use good quality bottles Check and repair the machines to less damage of bottle, cap. Wastes from CIP unit are sent to wastewater treatment plant Treated wastewater should be under NEQ(E)G guideLine Boiler blowdown water should be necessary amount not less or more</p>
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The Impacts to the Soil

Emerald Brewery Myanmar Limited	
The impacts	Changes the composition of surface water, ground water and soil quality
Risk Assessment	Changes the composition of environment
The sources of the impacts	<p>The solid wastes from daily used materials of the employees The damaged and used materials from office works, manufacturing process (broken bottle, cap, label,) Packing materials of raw materials (bag of rice, malt, plastic bucket of enzyme, acid,) Solid particles from rice, malt Spent grain Solid wastes from canteen</p>
The impacted areas	The peoples near the disposing place of the solid wastes and the factory's environment and the employees
The impacted amount and duration	The impacted amount is low and the impacted duration is short.
The mitigation measures for the impacts	<p>Educating to do systematically; checking; and taking actions Systematically keeping and selling; disposing in the specific areas of YCDC</p>



The Impacts of the Noise

Emerald Brewery Myanmar Limited	
The impacts	Disturbing the pleasure of sound conditions. Causing the hearing losses
Risk Assessment	Nuisance and audio Disturbance
The sources of the impacts	The noise and the vibration from driving the cars to transport the raw, products, the machines, and the employees and the generators Running of machineries (conveyor,milling machines, separator, boiler,compressor,pumps,agitator,filler, capper,labeller) Running of co2 plant Running of wastewater treatment plnt Running of boiler
The impacted areas	The peoples along through transportation route of raws, the finished goods and the machines The employees within the factory yard and near the factory's environment
The impacted amount and duration	The impacted amount to the people is low and the impacted duration is short. The impacted amount to the employees within the factory yard is medium and the impacted duration is long. The impacted amount to the public near the factory is low and the impacted duration is long.
The mitigation measures for the impacts	Maintenance the exhaust system of the cars and the generators; maintenance of the machines; being good the reFilling the lubricants and mending in-time; avoiding to work with the leisure time of the employees; giving the personal protective equipment for the employees; and no longer the duty time in the noisy place for the employee

The Impacts of the Odor

Emerald Brewery Myanmar Limited	
The impacts	Disturbing the pleasure of sensory conditions Nuisance the respiration tract (nose, throat, larynx, Trachea, bronchi and lungs) and gastrointestinal tract (mouth to anus)
Risk assessment	Nuisance and bad sensory
The sources of the impacts	The odors of the emitted gases from the exhaust pipes of the cars and the generators The emitted caustic odors from dissolving the caustic soda with water (CIP system) The odors form the boiler stack The odors from the canteen Odors from mashing, wort boiling Odor form ammonia if leakage
The impacted areas	The peoples along through the cars route The employees within the factory yard
The impacted amount and duration	The impacted amount to the people is low and the impacted duration is short. The impacted amount to the employees is medium and the impacted duration is long.
The mitigation measures for the impacts	Being ensure the engine power full; using the good quality of fuels; reFilling in-time the lubricants; keeping the heat generated rate from dissolving the caustic soda being the right ratio of the air and the fuel Not over temperature of mashing and wort boiling Not open the manhole, hanhole if nunecessary

7.3 Natural Hazards and Industrial Hazards
Natural Hazards

There are six natural hazard groups and 21 natural hazards defined at 2014 and they are summarizred as follow.

Summarizred Table of Natural Hazards

Hazard Group	Hazard	Code
Geophysical	Earthquake	EQ
	Tsunami	TS



	Volcanic eruption	VO
	Landslide	LA
	Snow avalanch	AV
Hydrological	Flood	FL
	Drought	DR
Shallow earth process	Regional Subsidence	RS
	Ground Collapse	GC
	Soil (local) subside	SS
	Ground Heave	GH
Atmospheric	Storm	ST
	Tornado	TO
	Hailstorm	HA
	Snowstorm	SN
	Lightning	LN
	Extreme Temperature (Heat)	ET(H)
	Extreme Temperature (Cold)	ET(C)
Biophysical	Wildfires	WF
Space/celertial	Geomagnetic storms	GS
	Impact events	IM

Among the 21 natural hazards, the most probable events on Emerald Brewery Myanmar Limited, are chosen as **earthquake, flood, storm and lightning.**

Assessment on Risk of Earthquake

Emerald Brewery Myanmar Limited	
Objectives	-to protect and manage the loss of lives and property and recover to the original states in short time.
Sources of hazards	-causes by fallLineg objects and colapsed structures -electrical shock -steam leakage from damage pipe Lines,joints and accessaires -steam burning -boiler explosion -catching fire (fuel as wooden crate,cardboard boxes ,diesel -secondary hazards as Tsunami, landslide, ground heave, soil subsidence. -colapsing beer fermentor



	<ul style="list-style-type: none"> -leakage of CO₂ from storage ,pipe Lines, -leakage of ammonia from compressor, pipe Line, cylinder -blown out from high pressure (CO₂ cylinder, storage tank) (ammonia tank, cyLineder)
Mitigation/Enhancement Measures	<ul style="list-style-type: none"> -checking the structure of building by code of construction and repair if necessary -plan the emergency plan for earthquake -perform the earthquake drill (isolation of electricity, releasing the steam if possible) -train the person how to get safe during earthquake phenomenon -medical care after earthquake -plan the budget allotment -prepare the plan the secondary hazards as Tsunami, Landslide, Ground heave, Soil subsidence, Ground collapse, riot, etc. -transportation of injured person to hospital, clinic, etc.

Assessment on Risk of Flood

Emerald Brewery Myanmar Limited	
Objectives	-to protect and manage the loss of lives and property and recover to the original states in short time.
Sources of hazards	<ul style="list-style-type: none"> -electrical shock -machines are flooded and corrosion can take place; lose of wire insulation properties -contaminations of water supply system -irritation of chemical (caustic soda, fuller earth, calcium chloride, zince sulphate, calcium sulphate) if not remove in time. -flooding wastewater pond -water borne diseases can explode -flooding the septic tanks -secondary hazard, erosion, landslide
Mitigation/Enhancement Measures	<ul style="list-style-type: none"> -listening the information of meteriological news and necessary preparation in advance (rise of sea level, rainfall data, stream flow data, Dam data) -removing the raw materials to secure place -factory is shutdown if necessary -plan the emergency plan for flooding -medical care during flooding -plan the budget allotment



Assessment on Risk of Storm

Emerald Brewery Myanmar Limited	
Objectives	-to protect and manage the loss of lives and property and recover to the original states in short time.
Sources of hazards	-injuries by broken window glass, objects carried by storm, flying objects -electrical shock by broken cables -secondary hazards as flooding, flash flooding landslide, erosion, sedimentation, heavy rain, lightning -contamination of water supply -flooding wastewater pond -flooding of septic tanks
Mitigation/Enhancement Measures	-listening information of meteorological news and necessary preparation in advance [windspeed, high rain, direction, arrival time rank of severity (orange, yellow, red, etc.)] -factory is shutdown if necessary -check and repair by structure code of overhead water tank racks, chimney and high building) -store some waters (drinking other purposes), foods, medicine -plan the emergency plan for storm -medical care during storm, first aid -plan the budget allotment -transportation of injured person to hospital, clinic, etc. -take notice the poisonous creatures -emergency light if necessary

Assessment on Risk of Lightning

Emerald Brewery Myanmar Limited	
Objectives	-to protect and manage the loss of lives and property and recover to the original states in short time.
Sources of hazards	-explosions of transformer by lightning -boiler explosion by lightning -catch fire in boiler room by lightning on diesel -catch fire at wire cable due to high voltage when lightning strikes



Mitigation/Enhancement Measures	-lightning arrestor is installed at transformer high building under expression of Electrical Inspection Department -regular inspection of earthing tests by Electrical Inspection Department -Conducting the instructions of Electrical Inspection Department
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7.4 Evaluation of Risk Assessment for Natural Hazard

There is Risk Matrix Calculation for hazard and it is shown at **Appendix (11)** and its equation is as follow.

$$\text{Risk assessment} = \text{Probability} \times \text{Severity}$$

7.4.1 Calculation of risk assessment for earthquake

Calculation of risk assessment for earthquake before

$$\begin{aligned} \text{Mitigation/Enhancement Measurement} &= \text{Probability} \times \text{Severity} \\ &= \text{Remote (2)} \times \text{Critical (3)} \\ &= 6 < \text{Medium} \end{aligned}$$

Calculation of risk assessment for earthquake after

$$\begin{aligned} \text{Mitigation/Enhancement Measurement} &= \text{Probability} \times \text{Severity} \\ &= \text{Remote (2)} \times \text{Negligible (1)} \\ &= 2 < \text{Low} \end{aligned}$$

7.4.2 Calculation of risk assessment for flood

Calculation of risk assessment for flood before

$$\begin{aligned} \text{Mitigation/Enhancement Measurement} &= \text{Probability} \times \text{Severity} \\ &= \text{Remote (2)} \times \text{Critical (3)} \\ &= 6 < \text{Medium} \end{aligned}$$

Calculation of risk assessment for flood after

$$\begin{aligned} \text{Mitigation/Enhancement Measurement} &= \text{Probability} \times \text{Severity} \\ &= \text{Remote (2)} \times \text{Negligible (1)} \end{aligned}$$



= 2 < Low

7.4.3 Calculation of risk assessment for storm

Calculation of risk assessment for storm before

Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Marginal (2)

= 4 < Medium

Calculation of risk assessment for storm after

Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Negligible (1)

= 2 < Low

7.4.4 Calculation of risk assessment for lightning

Calculation of risk assessment for lightning before

Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Marginal (2)

= 4 < Medium

Calculation of risk assessment for lightning after

Mitigation/Enhancement Measurement = Probability x Severity

= Impossible (1) x Marginal (2)

= 2 < Low

Table 7-2 Comparison of Risk Assessments of Natural Hazards (Earthquake, Flood, Storm and Lightning) before and after Mitigation/Enhancement Mitigation

SR. NO.	Natural Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	



1.	Earthquake	6	Medium	2	Low	-4
2.	Flood	6	Medium	2	Low	-4
3.	Storm	4	Medium	2	Low	-2
4.	Lightning	4	Medium	2	Low	-2

Industrial Hazards

There are general hazards in industries as follows.

1. Fire Hazards

Sources of fire hazards

- hot surfaces
- combustible and flammable liquids
- heat utilization equipment (over heating)
- chemical process equipments
- lightning
- gas cylinders
- ovens and furnaces
- reactor
- welding and cutting
- spark from material to metal contact
- carelessness

2. Mechanical Hazards

Occur due to

- large number of equipments
- crowded work place conditions
- frequent interaction between workers and equipment
- insecurely fixed machines
- worn and teared parts
- failure of SOP
- dangerous parts
- negligence
- improper maintenance of equipment

3. Electrical Hazards

The most frequent causes of electrical injury/death are

- contact with power Lines
- path to ground missing on discontinuous
- equipment not used in manner prescribed
- improper use of extension and flexible cords
- electric shocks and burns due to poor induction

facilities

- wiring faults and improperly wired equipments
- sparking at loose connection

4. Chemical Hazards



- toxic
- corrosive
- irritation
- carcinogenic
- flammable
- mutagenic

5. Pharmaceutical Hazards

- dust and noise exposure
- exposable to UV radiation
- repetitive motion in disorder

6. Dust Explosion

Among the above six groups industrial hazards, **fire hazards**, **mechanical hazard**, and **chemical hazard** and are chosen for hazard assessment.

Assessment of Fire Hazards

Emerald Brewery Myanmar Limited	
Objectives	-to protect the loss of lives and property from fire hazards
Sources of hazards	-catch fire, contacting the dust particles (rice,malt) with spark (hot surface) in the present of air -catch fire by contacting the leaked, spilled diesel with hot surface, naked flame and spark -catch fire by overheat of motors from conveyor, vibrating screen, pump agitator, etc. -boiler back fire -boiler explosion -catch fire by electrical shock of electric applicances which forget to turn off by users (phone charger, hot plate, fan, etc.) -catch fire by electrical shock when the capacity of wires, switches, breaker, transformer are not match the loads; -catch fire by electrical shock from solar pannel -catch fire by heat releasing from empty plastic bags (rice,malt), cardboard boxes when some moisture dumping action -catch fire by contacting of incompatible materials in store
Mitigation/Enhancement Measures	-using good quality rice and malt -prevent sparks, naked flame hot surface in the dusty place -check and repair the leakage, spill of diesel (CCTV istallation) -not store for long time the empty plastic bags, cardboard box, -check and repair the wires, switches, contactors, breaker capacity and



	<p>load</p> <ul style="list-style-type: none"> -assign the skilled, certified boiler operator -conduct the boiler's rules, regulations and instructions -educating the employees and punishment -use in other place or sold out -following the MSDS of chemicals
--	---

Assessment of Mechanical Hazards

Emerald Brewery Myanmar Limited	
Objectives	- to protect the injuries and lives of human
Sources of hazards	<ul style="list-style-type: none"> - fall from vehicles when raw materials, finished products loading unloading - collision by vehicles - fallen when floor is slip - fine particles enter the eye, ear, nose - rotating, moving parts can catch loose clothing, hands or hair potentially causing serious injuries (eg. conveyor, bucket elevator, vibrating screen, milling machine, etc.) - steam burning by hot pipe Lines, steam - released high pressure fluid [(R.0 system) co2 plant, ammonia plant, CIP unit] - cold burn (co₂ , ammonia) - fallen from high place to ground floor - deterioration muscular skeletal system (low back pain, carrying the bags of rice, malt,beer packings etc.) - injuries by broken bottles -bursting of co₂ cylinder, ammonia cylinder
Mitigation/Enhancement Measures	<ul style="list-style-type: none"> - assign the experienced and cautious person for loading, unloading of raw materials and finished products -assign the skilled and cautious driver, helpers -good maintenance for vehicles -make the floor unslip - wearing face shield, mask, ear plug, goggles -assign the experienced and cautious person for working at near by machine -cover the rotating parts by guard -assign the skilled person for working with steam, high pressure system



	<ul style="list-style-type: none"> -check and repair the joints, valves, safety valve etc. at high pressure system -proper cold insulation and hot insulation -wearing the safety belt over 3feet height -right and proper posture when handling the heavy objects. (beer packings bag of malt, rice etc.) -using good quality bottles -weairng PPE when working with bottles -regular pressure testing, the cylinder -follow the SOP for handling the cylinder
--	---

Assessment of Chemical Hazards

Emerald Brewery Myanmar Limited	
Objectives	- to protect the injuries and lives of human
Sources of hazards	<ul style="list-style-type: none"> - transportation of diesel, gasoline, caustic soda, acid enzymes, etc - Filling the diesel and gasoline to the motor vehicle and generator - carrying the caustic soda ,acid from store to work place - unpacking the caustic soda bag, opening the acid bucket, enzyme bucket - dissolving caustic soda in CIP unit - purchasing, transpotation, handling the ammonia cylinder -operation of ammoia refrigeration plant -operation of liquid, co2 production
Mitigation/Enhancement Measures	<ul style="list-style-type: none"> - follow the chemicals management plan -studying and following the MSDS -dissolving caustic soda with water in slowly -following the hazard chemicals management plan -follow by SOP

7.5 Evaluation of Risk Assessment Industrial Hazards

Calculation of risk assessment for Fire Hazards

Calculation of assessment of Fire Hazards

Before Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Marginal (2)



= 4 < low

Calculation of assessment of Fire Hazards

After Mitigation/Enhancement Measurement = Probability x Severity

= Impossible(1) x Negligible (1)

= 1 < Low

Calculation of risk assessment for Mechanical Hazards

Calculation of assessment of Mechanical Hazards

Before Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Marginal (2)

= 4 < low

Calculation of assessment of Mechanical Hazards

After Mitigation/Enhancement Measurement = Probability x Severity

= Impossible(1) x Negligible (1)

= 1 < Low

Calculation of risk assessment for Chemical Hazards

Calculation of assessment of Chemical Hazards

Before Mitigation/Enhancement Measurement = Probability x Severity

= Remote (2) x Marginal (2)

= 4 < low

Calculation of assessment of Chemical Hazards

After Mitigation/Enhancement Measurement = Probability x Severity

= Impossible(1) x Negligible (1)

= 1 < Low



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Table 7-3 Comparison of Risk Assessments on Industrial Hazards (Fire, Mechanical, and Chemical) before and after Mitigation/Enhancement Mitigation

SR. NO.	Industrial Hazards	Risk Assessment Before MEM		Risk Assessment After MEM		More or Less
		Rating	Level	Rating	Level	
1.	Fire Hazards	4	Low	1	Low	-3
2.	Mechanical Hazards	4	Low	1	Low	-3
3.	Chemical Hazards	4	Low	1	Low	-3



8.0 Public Consultation and Development Program

There are three public consultation meetings as

- 1st public meeting during the preparation of scoping report (held at 23-12-2018)
- 2nd public meeting (held at 25-2-2023)
- 3rd public meeting (held at 27-8-2023)

8.1 Public Consultation

8.1.1 First Public Consultation Meeting

First public consultation meeting was meeting for scoping report and it was held at 23-12-2018. There were about 370 people from local authorities, communities, NGO and INGO, and those who were directly or indirectly affected by the proposed project were also attended in this meeting. The details facts about 1st public meeting was shown at **Appendix (1)**.

8.1.2 Second Public Consultation Meeting (held at 25-2-2023)

Second public meeting was held at 25-2-2023 and there were about 71 people from various parties such as G.M.E.S local resident of Ta Kon Taing, Ye Ta La Baund, Kon Ta La Baund, Ywar Thit, staff of Government Department, interested person of NGO and charitable organization.

There fifteen suggestions are received and they are shown at **Appendix (12)** and also attendant list, photos of meeting and meeting minutes.

The main suggestions are

- To minimize the bad odor
- To get more job opportunities
- To conduct the points that described in EIA.

The responsible person promise to do the above suggestion as he can,

8.1.3 Third Public Consultation Meeting

Third public meeting was held at 27-8-2023 and there were about 70 person representatives as GMES, local resident, department, organization.

There eleven discussion and suggestion were accepted and, they are shown at **Appendix (13)** and also attendant list, photos of meeting and meeting minutes.



8.2 CSR Development Program

8.2.1 Employee's Social Welfare Plan

The project proponent has employee's welfare plan and submitted to Myanmar Investment Commission. The following facilities and services are the usual company practices and based on the labor law of the country. The project proponent has a welfare plan for employees are as follows;

(a). Staff Transportation

This factory arranges the transportation for all employees.

(b). Accommodation

The project proponent arranges dormitory with full facilities for foreign technicians at project site.

(c). Other Benefits

Uniform

All employees are supplied with four uniforms and personal protective equipment such as mask, gloves (rubber, cotton), safety boots and hats.



Figure 8-1 Providing Uniform and Personal Protective Equipment



Figure 8-2 Locker for Employees, Canteen and Toilets

Health Care

The company provides medical check-ups (free of charge) for all employees, if any emergency cases arise due to work-related activities. In addition, purified water are provided for staff drinking water. Appropriate sanitation facilities are installed and regular disinfection work carried out. The project proponent provides the following health programs.

- a) Medicine and first aid kits are available at the factory to address emergency cases.
- b) The factory has first aid kits and a resting room for staff who feel sick.
- c) Those who are sick will be sent to social welfare hospital for care.
- d) The project proponent trains employees on basic health care every three months. It aims to teach staff how to provide first aids for injured person during emergency cases.
- e) The project proponent supply medicine and/or provide for the cost of medicine longtime employees as required.

Social Security Fund

All employees are given an additional 3% of their salary contributed by the company toward health care, social security and injury fund. In addition, workers are provided visits by a qualified doctor paid for by the company every 6 months. Other leave (sick leave, annual leave etc.) will be drawn up.

8.2.2 Public Development and Donation

- Public Development
 - Bridege for Ta Kon Taing Village
 - Crossroad to bridge
 - Health clinic for Nwel Khwe Village
 - Job opportunities



Figure 8-3 Bridge for Ta Kon Taing Village



Figure 8-4 Crossroad to bridge

နွယ်ခွေးကျေးရွာ၌ ကျန်းမာရေးဆေးပေးခန်းဆောက်လုပ်လွှဲဒါန်းခြင်း



Figure 8-5 Health Clinic for Nwel Khwe Village

အလုပ်အကိုင်အခွင့်အလမ်းများ

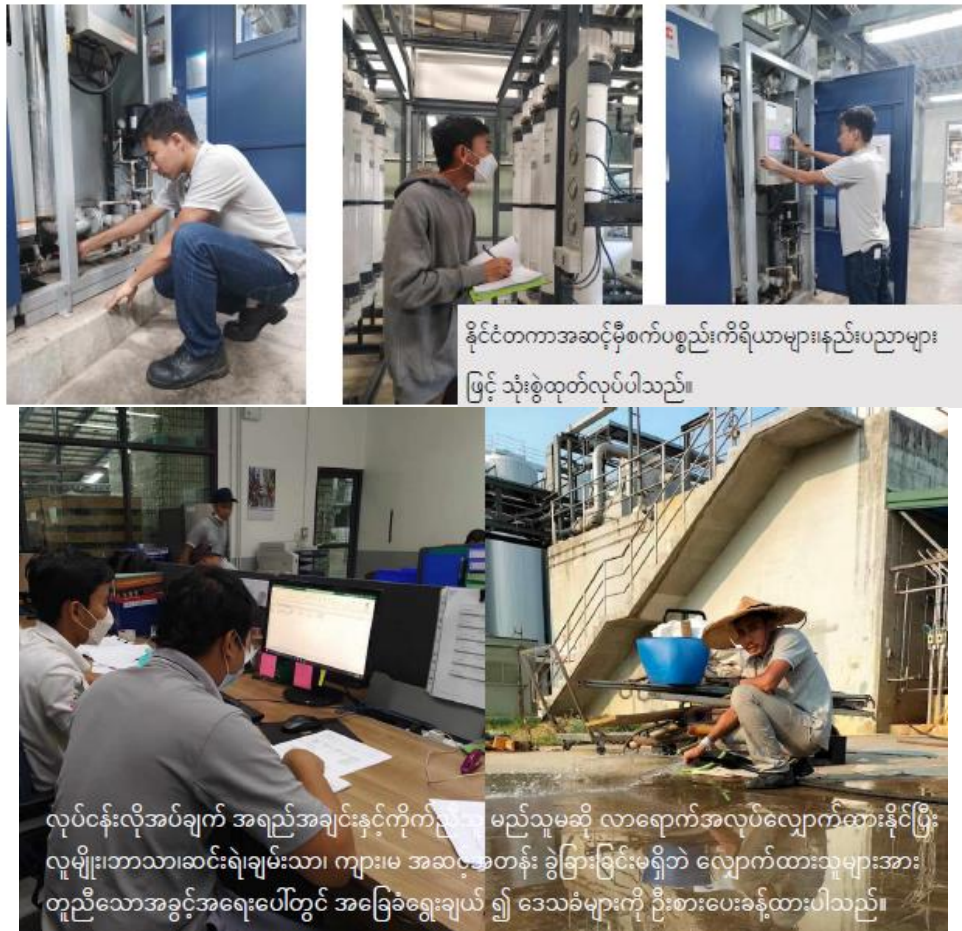


Figure 8-6 Job Opportunities

- **Social and Religious Donation**
 - 5kW solar electric system for Amarawatty Monastery
 - Donation to victim by MOCHA STORM



Figure 8-7 5 kW solar electric system for Amawatty Monastery



Figure 8-8 Donation to victim by MOCH STORM

- **Collaboration with Government Department**

- Field inspection by Myanmar Investment Commission, Ministry of Natural Resource and Environmental Conservation, Ministry of Health.
- Field Inspection by Myanmar Fire Services Department, Yangon Division
- Field Inspection by Drug (center)
- Inspection upon utilization of diesel by sub-committee of supervisor of Petroleum and Petroleum Product.
- Field Inspection by General Administrative Department (District)
- Field Inspection by Development Committee (Hlegu Township)



Figure 8-9 Field inspection by Myanmar Investment Commission, Ministry of Natural Resource and Environmental Conservation, Ministry of Health.



Figure 8-10 Field Inspection by Myanmar Fire Services Department, Yangon Division



Figure 8-11 Field Inspection by Drug (center)



တိုင်းဒေသကြီးရေနံနှင့်ရေနံထွက်ပစ္စည်းဆိုင်ရာလုပ်ငန်းများ
ထိန်းသိမ်းကြီးကြပ်ရေးဆပ်ကော်မတီမှ
ဒီဇယ်အသုံးပြုမှုစစ်ဆေးခြင်း

Figure 8-12 Inspection upon utilization of diesel by sub-committee of supervisor of Petroleum and Petroleum Product.



Figure 8-13 Field Inspection by General Administration Department (District)



Figure 8-14 Field Inspection by Development Committee (Hlegu Township)

8.2.3 Plan for CSR and Budget Allotment

At **Emerald Brewery Myanmar Limited**, estimated budget for Corporate Social Responsibility is planned as 2.0% of annual net profit and plan for development program as section 8-2-1 **Employee's Social Welfare Plan** and section 8-2-2 **Public Development and Donation**.

If there were not sufficient as 2% of annual net profit, it will plan for extra budget.

8.3 Grievance Redress Mechanism (GRM)

A grievance redress mechanism (GRM) must be made available to parties who have grievances or are not satisfied with any part of the development of proposed project and compensation process.

8.3.1 Purposes of GRM

The purposes of a well-established and well-functioning GRM are following;

- To ensure that grievances, complaints and concerns are addressed and resolved in a fair, transparent and easily accessible manner in order to achieve the goals of restoring positive relationships with affected persons/households and communities.
- To be responsive to the needs of beneficiaries and to address and resolve their grievances;
- To serve as a conduit for soliciting inquiries, inviting suggestions, and increasing community participation;
- To collect information that can be used to improve operational performance;
- To promote transparency and accountability
- To deter fraud and corruption and mitigate project risks
- To facilitate timely feedback from local communities in order to support the project's commitment to continuous improvement.

8.3.2 Basic Elements of GRM Design

It is based on an integrated approach guided by five principles and five process steps, with adequate resources assigned to them. These basic elements are relevant for all project sizes and industries.

However, the processes behind them are context-specific, and the form of the grievance mechanism should be adapted to the needs of both the project and relevant stakeholders.

8.3.3 Principles of GRM

1. Proportionality: Scaled to risk and adverse impact on affected communities
2. Cultural Appropriateness: Designed considering culturally appropriate ways of handling community concerns
3. Accessibility: Clear and understandable mechanism that is accessible to all segments of the affected communities at no cost
4. Transparency and Accountability: To all stakeholders
5. Appropriate Protection: A mechanism that prevents retribution and does not impede access to other remedies

Table 8-1 Process Steps

Steps	Description
Step 1: Publicize the Mechanism	Publicizing Grievance Redress Mechanism Manual: GRM manual should be publicize and make sure the availability of manual to all stakeholders.
Step 2: Receive and Register	Receiving and Keeping Track of the Grievances: Once stakeholders are aware of the mechanism and access it to raise grievances, there is need of processing the grievances. Processing includes: 1) collecting grievances; 2) recording grievances as they come in; 3) registering them in a central place; and 4) tracking them throughout the processing cycle to reflect their status and importance
Step 3: Review and investigate	Reviewing and Investigating Grievances: All grievances will need to undergo some degree of review and investigation, depending on the type of grievance and clarity of circumstances
Step 4: Develop Resolution options, Respond to the Grievances	Developing Resolution Options and Preparing a Response: Once the grievance is well understood, resolution options can be developed taking into consideration Stakeholders preferences, project policy, past experience, current issues, and potential outcomes
Step 5: Monitor and Evaluate	Monitoring, Reporting and Evaluating a Grievance Mechanism: Monitoring and reporting can be tools for measuring the effectiveness of the grievance mechanism and the efficient use of resources, and for determining broad trends and recurring problems



	so they can be resolved proactively before they become points of contention. Monitoring and reporting also create a base level of information that can be used to report back to communities.
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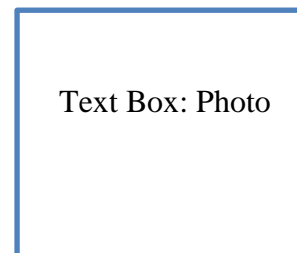
8.3.4 Grievance Handling Form

At Emerald Brewery Myanmar Limited, there Grievance Handling Form is shown and it consists description of complainant and official worker for registration, comments.

The forms are shown as English and Myanmar languages.

OFFICIAL GRIEVANCE HANDLING FORM

Serial Number.....



DETAILS OF THE PROJECT AFFECTED PERSON

Name:

Gender: Female Male

Contact Number:

Occupation:

Marital Status: Married...

Single...

Divorced...

Widow(er)...

Separated...

Name of Spouse:Contact Number:

Next of Kin:Contact Number:

Address:

.....

GRIEVANCE DESCRIPTION

Signature of Complainant.....

Date:



FOR OFFICIAL USE ONLY

Reg. Number:
Date Opened:
Name of the Recorder:
Contact Number
Location.....

Comments from Grievance Handling Committee

Resolved.....
Referred.....
Closed....
Reasons for Referral:.....

.....
.....

Name & Signature of Officer
Date:

To be filled by Project Affected Person:

Unsatisfactorily handled....
Satisfactorily Handled....

The information filled above is true and correct to the best of my knowledge.

Signature of Complainant:
Date:

Comments from Grievance Handling Committee

Resolved:
Referred:
Closed.....

Signature of GHC Official
Name:
Date:



မကျေနပ်ချက်နှင့်လိုလားချက်တင်ပြသည့်ပုံစံ

အမှတ်စဉ်.....



စီမံကိန်းသက်ဆိုင်သူ ပုဂ္ဂိုလ်အချက်အလက်များ

အမည် :

ကျား / မ မ/ကျား

ဆက်သွယ်ရန်ဖုံးနံပါတ် :

ရာထူး :

အိမ်ထောင်ရေးအခြေအနေ :

လက်ထပ်

ကွာရှင်း

မုဆိုးဖို/မုဆိုးမ

အိမ်ထောင်ကွဲ

ဇနီး/ခင်ပွန်း :ဆက်သွယ်ရန်ဖုံး:

အနီးစပ်ဆုံးဆွေမျိုး : ဆက်သွယ်ရန်ဖုံး:

နေရပ်လိပ်စာ :

.....

မကျေနပ်ချက်နှင့်လိုလားမှုဖော်ပြချက်

.....

.....

မကျေနပ်သူ၏လက်မှတ်.....

ရက်စွဲ:



ရုံးမှဖြည့်ရန်

မှတ်ပုံတင်သည့်နံပါတ် :

ဖိုင်ဖွင့်သည့်ရက်စွဲ :

မှတ်တမ်းတင်သူ :

ဆက်သွယ်ရန်ဖုံး :

တည်နေရာ :

မကျေနပ်ချက်နှင့်လိုလားချက်များကိုင်တွယ်ဖြေရှင်းသည့်အဖွဲ့၏ သဘောထား

ဖြေရှင်းပြီး :

လွှဲပြောင်းပေးခြင်း :

ဖိုင်ပိတ်ပြီး :

လွှဲပြောင်းပေးရခြင်း၏အကြောင်းအရင်း :

အရာရှိအမည်နှင့်လက်မှတ် :

ရက်စွဲ :

စီမံကိန်းသက်ဆိုင်သူဖြည့်စွက်ရန် :

ကျေနပ်စွာလက်ခံရရှိပါသည် :

မကျေနပ်မှုဖြင့်လက်ခံရရှိပါသည် :

အထက်ဖော်ပြချက်များသည် ကျွန်ုပ်၏ အကောင်းဆုံးအတွေ့အကြုံ ဗဟုသုတအရမှန်ကန်ပါသည်။

မကျေနပ်ချက်နှင့်လိုလားသူ၏လက်မှတ် :

ရက်စွဲ :

မကျေနပ်ချက်နှင့်လိုလားချက်များဖြေရှင်းသည့်အဖွဲ့၏ သဘောထားအမြင်

ဖြေရှင်းပြီး :

လွှဲပြောင်းပြီး :

ဖိုင်ပိတ်ပြီး :

မကျေနပ်ချက်နှင့်လိုလားချက်များဖြေရှင်းသည့်အဖွဲ့၏လက်မှတ် :

အမည် :

ရက်စွဲ :



8.3.5 Set up the Grievance Handling Committee

Emerald Brewery Myanmar Ltd forms the grievance handling committee as following.

Table 8-1 Grievance Handling Committee

Grievance Redress Mechanism (GRM) team					
No.	Name	Designation	Years in Service	Qualification	Duty
1	Koh Tai Hong	Managing Director	5	B.Com (Honours Business Administration)	Patron
2	May Khin Zaw	Human Capital Director	5	B.A (Economics)	Leader
3	War War Lwin	Finance Manger	5	B.Act (Accounting), MBA	Member
5	Thinzar Soe	Logistics & Warehousing Manager	4	B.A (Business Management)	Member
4	Zar Ni Tun	Adminstrative Executive	4	B.A (Business Management)	Member

8.3.6 Collection, Solving and Replying the Complaints and Grievances

The collections of complaints and grievances upon the production and distribution of proposed project are performed as following.

- Hanging the suggestion box on the gate of project
- Distribution the phone numbers of complaints and grievance team leader, members at the gate
- Distribution the phone numbers of complaints and grievances team leader and members to the government administrative department of wards, villages and township.
- The team of complaints and grievances administration will discuss upon complaints and desires and solve or submit to higher level if they cannot solve.

8.3.7 Estimated Time Duration to solving the Complaints and Grievances

Estimated time for solving the complaints and grievances upon proposed factory, will be following depending on the conditions

Estimated Time Duration to Solve the Complaints and Grievances

Sr.No.	Time Duration	Remark
1	one week	If factory manager can solve
2	two to four weeks	If company owner can solve
3	more than four weeks	If to get the helps of court, advocate and professional of laws

9.0 Conclusion

Emerald Brewery Myanmar Limited established the beer production and distribution plant at field number 498 of Yay Ta La Baund Village by the permit number 071|2018 dated 27-3-2018 of Myanmar Investment Commission. There was a contract between Green Myanmar Environmental Services Company Limited and Emerald Brewery Myanmar Limited to prepare the Environmental Impact Assessment report for latter and starting to get permission, land leasing, soil test, land preparation since 2017. Green Myanmar Environmental Services Company Limited prepared the scoping reports that of initial stage of Environmental Impact Assessment report and there were three scoping reports from 2019 to 2021 and approved letter form ECD at November 2022 to carry on the EIA. At the project site installation of machineries and running for test run were performed and commercial run at September 2019.

One of the scoping areas as **Traffic**, from the data of Traffic Assessment showed that **‘the number of vehicles entering and exiting the project site was only one-tenth of the number travelling on the main road.’** Another scoping area as **Hydrology**, and from the assessment it, there were notices, **the amount of water at aquifer is sufficient for project site and environment and keep the wastewater quality in standards.** From the assessment **Biodiversity**, there were noticeable that **the dangerous of invasive species upon local species were at Barlar creek before the project construction phase and participation with the public when removing the Hyacinth, and emitted gases, wastes, noise and vibration of the project must be controlled not to impact upon flora and fauna species.** From the assessment of **Cultural Heritage**, there are thirteen edifices and **emitted gases, wastes, noise and vibration of the project must be keep in standards not to impact upon religious edifices.** From the **Health** assessment, there were normal and emissions from factory site should be in standards. From the **Socio-economic** assessment the three main desires of public are bad odor, nutrient increasing in Barlar creek and changing of livelihood condition. It should be minimized by planting the native species at the bank of creek, participating with public when removing the hyacinth and assigning the villagers as employees if possible.

There are monitorings and analyzings **the ambient air, workplace air, ambient noise levels, workplace noise levels, boiler stack emission, generator exhaust emission, surface waters ground waters, vibrations and wastewaters** and all measured parameters except PM₁₀ and PM_{2.5} of ambient air pH value and **arsenic content in tube well water during the construction phase** and workplace noise level during operation phase, are in standards of NEQ(E)G and drinking water standards of Ministry of Health. Although workplace noise levels are beyond the NEQ(E)G standards, they are in Occupational Health and Safety eight working hours standard. [i.e NEQ(E)G is 70 dBA and OHS 8 working hours is 90 dBA]. These facts show that biodiversity, cultural heritage, hydrology, health and socio-economic are minimum significant under adverse impacts. By controlling the existing conditions with environmental management plan, this proposed project be increasing the positive impacts and minimizing the negative impacts.



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Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

APPENDICES

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



Photos of recording the attendance



Photos of public meetint (discussion & attending)

DISCUSSIONS FROM PUBLIC CONSULTATION MEETING (ENGLISH AND MYANMAR LANGUAGE)

No.	Speaker	Subjects
1	U Aung Chan Tha (Senior Project Manager from Emerald Brewery Myanmar Limited)	The introduction of the company's information (background information, purpose, processes, products and impacts) Call for participation in the discussion
2	U Kyaw Soe Win (Managing Director from Green Myanmar Environmental Services Co., Ltd.)	Introduce about the purpose of the meeting, the involved parties, the step by step processes of the projects and procedures of impact assessment The possibilities of the increasing opportunities for job due to the industry
3	Dr. Kyaw Zay Moe (Biodiversity Specialist)	Explain about the processes and procedures of biodiversity assessment The impacts on the biodiversity due to the project
4	Dr. Saw Tun Lin (Culture and Heritage Assessment Specialist)	Explain about the processes and procedures of culture and heritage assessment near the project The impacts on the culture and heritage concerned with the project
5	Dr. Kyaw Swar Tint (Socio-economic Specialist)	Explain about the processes and findings of the social survey near the project site; and the needs and concerns of the local people on the project
6	U Thein Tan (Parliament Representative of Hlegu Township)	The impacts occurred in the past due to the similar projects The suggestions for the project for mitigation of impacts
7	U Sai Soe Thant (Hydrological Specialist)	The detail explanation of the applied water in the project Explain about the treatment system and mitigation measures of the released waste water and impacts



စဉ်	တင်ပြဆွေးနွေးသူ	အဓိကဆွေးနွေးချက်များ
	ဦးအောင်ချမ်းသာ (Senior Project Manager from Emerald Brewery Myanmar Limited)	- ကုမ္ပဏီ နှင့် ပတ်သတ်သည့် အကြောင်းအရာများ (စီမံကိန်း အကြောင်းအရာများ၊ လုပ်ငန်းစဉ်များ၊ ထုတ်ကုန်များ အပါအဝင်) နှင့် သက်ရောက်မှုများကို ဦးစွာပြောကြား ပြီး ဆွေးနွေးလိုသူများအားဖိတ်ခေါ်ပါသည်။
၁။	ဦးကျော်စိုးဝင်း (စီမံလမ်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှု ကုမ္ပဏီ မှ မန်နေဂျင်းဒါရိုက်တာ)	- ဤပွဲသည်နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းပုံစံဖြစ်၍ပတ်ဝန်းကျင်ထိခိုက်မှုကိုလေ့လာစမ်းစစ်ခြင်းများပြုလုပ်ခဲ့ကြောင်း၊ - ပထမအဖွဲ့အစည်း၊ ဒုတိယအဖွဲ့အစည်းနှင့်တတိယအဖွဲ့အစည်းအကြောင်းများရှင်းလင်းခြင်း၊ စီမံကိန်းနှင့် ပတ်သတ်၍အဆင့်လိုက်လုပ်ဆောင်ရမည့်လုပ်ငန်းများ အကြောင်းရှင်းပြခြင်း၊ နိုင်ငံတော်မှ နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုကုမ္ပဏီများအကြောင်းရှင်းပြခြင်းနှင့် စက်ရုံတည်ဆောက်လည်ပတ်ခြင်းများ ရှင်းလင်းပြောကြားသွားပါသည်။
၂။	ဒေါက်တာကျော်ဇင်မိုး (ဇီဝမျိုးစုံမျိုးကွဲများ အကြောင်းအရာများ)	- အပင်နှင့်ဇီဝမျိုးစုံမျိုးကွဲများ အကြောင်းအားရှင်းလင်းတင်ပြခြင်း၊ နိုင်ငံတော်မှသတ်မှတ်ထားသော ဇီဝမျိုးကွဲစီမံကိန်း ပတ်ဝန်းကျင်တွင် ရှိမရှိ အစီရင်ခံစာတွင် ရေးဆွဲတင်ပြခြင်း၊ ဘားလားချောင်းအတွင်းရှိရေနေမျိုးစိတ်များ၊ အပင်များ၊ ငါးမျိုးစိတ်များအားတွေ့ရှိခဲ့ကြောင်း၊ - စီမံကိန်းနှင့်ပတ်သတ်၍ဇီဝမျိုးစိတ်များအပေါ် ထိခိုက်မှုနှင့်အပင်မျိုးစိတ်များအပေါ် အနည်းငယ်သာ ထိခိုက်မှုရှိကြောင်းနှင့် ၎င်းမှာစက်ရုံ တည်ဆောက်ခြင်းကြောင့် မြေနေရာများရှင်းလင်းခြင်းကြောင့် ဖြစ်သည်ဟုပြောကြားသွားပါသည်။
၃။	ဒေါက်တာစောထွန်းလင်း (ယဉ်ကျေးမှုအမွေအနှစ်များဆိုင်ရာအကြောင်း အရာများ)	- စီမံကိန်းနှင့်ပတ်သတ်၍ရှေးဟောင်းယဉ်ကျေးမှုများမည်မျှထိခိုက်သွားနိုင်သည်ကိုဆန်းစစ်လေ့လာ ထားကြောင်းနှင့်ယဉ်ကျေးမှုဆိုင်ရာ ထိန်းသိမ်းစောင့်ရှောက်ခြင်းဥပဒေစည်းမျဉ်းများရှင်းလင်းပြော ကြားသွားခြင်း - စီမံကိန်းဒေသအတွင်းတိုက်ရိုက်ထိခိုက်မှုမရှိသော်လည်း၊ သွယ်ဝိုက်၍ထိခိုက်နိုင်ခြင်းဖြစ်ပြီးလမ်းဖောက်ခြင်းကြောင့်စက်ကိရိယာများအသုံးပြုမှုကြောင့်မြေတုန်ခါမှုဖြစ်စေပြီး ဘုရားအုတ်များ ပြိုကျခြင်းနှင့်ယဉ်ကျေးမှုသဘာဝများ ထိခိုက်ခြင်း၊ စီမံကိန်းကြောင့် အမှိုက်ထွက်ရှိခြင်းများဖြစ်နိုင်ကြောင်း၊ - ထို့ကြောင့်ထိခိုက်မှုသက်သာစေရန်အတွက် ဒေသခံလူထုများနှင့်စက်ရုံ တာဝန်ရှိသူများ ညှိနှိုင်းဆွေးနွေးတိုင်ပင်ရန် လိုအပ်ပါကြောင်း ပြောကြား ခဲ့ပါသည်။

စဉ်	တင်ပြဆွေးနွေးသူ	အဓိကဆွေးနွေးချက်များ
၄။	ဒေါက်တာကျော်စွာတင့် (လူမှုဆန်းစစ်ခြင်းပညာရှင်)	- လူနေရပ်ကွက်များအား ကွင်းဆင်းဆောင်ရွက်ခဲ့ခြင်းများအားရှင်းလင်းပြောကြားပြီး ကွင်းဆင်းခဲ့သောနေရာများမှဒေသခံလူထု၏စိုးရိမ်မှုများလိုလားချက်များအားဆွေးနွေး ပြောကြားခဲ့ပါသည်။
၅။	ဦးသိန်းတန် (လည်းကူးမြို့နယ်၊ပြည်သူ့လွှတ်တော်)	<ul style="list-style-type: none"> - စီမံကိန်းမှပညာရှင်များ၏ဆွေးနွေးချက်များ အရမသိသေးတဲ့အကြောင်းအရာအများကြီး သိရှိရခြင်း၊ဘီယာဆိုသည်မှာရေကိုအဓိကထားပြီးထုတ်လုပ်သောပစ္စည်းဖြစ်ကြောင်းနှင့် ယခင်ကအရက်ချက်စက်ရုံတည်ဆောက်ခြင်းကြောင့်ငမိုးရိပ်ချောင်းအတွင်းရေအရင်းအမြစ် ပျက်စီးခြင်း၊စက်ရုံပတ်ဝန်းကျင်တွင်နေရာညပါ အနံ့ဆိုးများထွက်ရှိခြင်း၊ ပတ်ဝန်းကျင်ရှိ သက်ရှိသတ္တဝါများ သေကြေပျက်စီး ခြင်းများ ဖြစ်ပေါ်ခဲ့ပါသည်။ - ထို့ကြောင့်ယခုအရက်စက်ရုံတည်ဆောက်ရာတွင်ယခင်တစ်ခါကဖြစ်ပေါ်ခဲ့သည့် ဆိုးကျိုးများအား ပြန်လည်ပြုပြင်ပေးပါက ပတ်ဝန်းကျင်ကိုထိခိုက်မှုမရှိဘဲ ရွာသူရွာသားများအတွက် အလုပ်အကိုင် အခွင့်အလမ်းများပေါ်ပေါက်လာပြီး စဉ်ဆက်မပြတ်ဖွံ့ဖြိုးတိုးတက်မှုကိုလျှောက်လှမ်းနိုင်မည်။ - စွန့်ပစ်ရေကိုလည်းစနစ်တကျစွန့်ပစ်စေလိုကြောင်း၊ဘားလားချောင်းရေစီးရေလာကောင်းမွန်အောင် ဆောင်ရွက်ပေးစေလိုကြောင်းဆွေးနွေးပြောကြားခြင်း။
၆။	ဦးဆန်းစိုးသန်း (ရေအသုံးချမှုဆန်းစစ်ခြင်းပညာရှင်)	<ul style="list-style-type: none"> - စီမံကိန်းတွင်အသုံးပြုသောရေနှင့်ပတ်သတ်၍အသေးစိတ် ရှင်းလင်းတင်ပြခဲ့ပါသည်။ - စီမံကိန်းအတွင်းတွင်ရေသန့်စင်မှုကိုပုံစံ နှစ်မျိုးဖြင့်လုပ်ဆောင်ကြောင်း၊ ၎င်းတို့မှာ စီမံကိန်းအတွင်း အသုံးပြုနေသော ရေအားသန့်စင်ခြင်းနှင့်စီမံကိန်းမှ စွန့်ထုတ်သော ရေဆိုးအားသန့်စင်ခြင်း၊ - မင်္ဂလာဒုံဘက်ခြမ်းတွင်မိုးရွာပါက စီမံကိန်းဧရိယာအတွင်းတွင် ရေတက်လာနိုင်ကြောင်း၊ စီမံကိန်း ဧရိယာအတွင်းတွင်ဘားလားချောင်း သည်အကြီးဆုံးဖြစ်ကြောင်း၊ - စီမံကိန်းပြုလုပ်ရာတွင် ရေအသုံးချမှု၊ ရေဆိုးထွက်ရှိမှု အနည်းဆုံးဖြစ်အောင် ဆောင်ရွက်သွားမည် ဖြစ်ကြောင်းဆွေးနွေးခြင်း။

PARTICIPANTS' SUGGESTIONS AND PROJECT PROPONENTS' EXPLANATIONS(ENGLISH AND MYANMAR LANGUAGE)

No.	Participants /Suggestions	Project Proponents /Explanations
1	<p>U Onn Myint (Head of Kong Ta La Baung village) suggested that-</p> <p>-Kone Ta La Baund Village's water resource quality is really good. After construction of tiger beer factory, water flow into Barlar Creek contains chemicals that can damage to aquatic. Therefore, the wastewater must dispose with better disposal system. For village developments, he wants to ask the project to provide the employments and firefighting cars to village.</p>	<p>The project proponent explained that-</p> <p>They will inform and discuss with company responsible people</p> <p>They will use 2 percent of net profit from the company for Corporate social responsibility plan</p>
2	<p>U Maung Maung (aka) U Mya Thaung</p> <p>(From Kone Ta La Baund Village) discussed that -</p> <p>Waste water must be treated before disposal.</p> <p>Ask to provide the local's education, health and transportation</p>	<p>The project proponent explained that-</p> <p>They will inform and discuss with company responsible people.</p>
3	<p>U Ti Myint (From Ta Kon Taing village) discusses that</p> <p>-to make sure local people can get only positive benefits and not suffer from negative impacts from the project.</p>	<p>The project proponent explained that-</p> <p>To give the employments for local people is their first objective.</p> <p>For Ta Kon Taing villagers, they will also provide the employments too.</p>



စဉ်	ဆွေးနွေးသူ/အဓိကဆွေးနွေးချက်	ပြန်လည်ဖြေကြားသူ/ဖြေကြားချက်
၁။	<p>ဦးအုန်းမြင့် (ကုန်းတလဘောင်ကျေးရွာ၏အုပ်ချုပ်ရေးမှူး)</p> <ul style="list-style-type: none"> - ယခင်ကကုန်းတလဘောင်ကျေးရွာသည်ရေအရင်းအမြစ်အလွန်ကောင်းကြောင်း၊ tiger ဘီယာစက်ရုံဆောက်လုပ်ပြီးချိန်တွင်ဘားလားချောင်းအတွင်းသို့ ဝင်ရောက်လာသည့်ရေများသည် ရေနေသတ္တဝါများ သေစေနိုင်သည့် ဓာတုပစ္စည်းများပါဝင်နေကြောင်း၊ - ထို့ကြောင့် စွန့်ပစ်ရေကိုပိုမိုကောင်းမွန်သော နည်းစနစ်များဖြင့်စွန့်ပစ်စေလိုကြောင်း - ဤစီမံကိန်းမှ ကျေးရွာဖွံ့ဖြိုးရေးအတွက် အလုပ်အကိုင်များ ထောက်ပံ့စေလိုကြောင်းနှင့်ကျေးရွာအတွင်းမီးသတ်ကားများ ထောက်ပံ့ပေးစေလိုကြောင်း ဆွေး နွေးထားပါသည်။ 	<p>စီမံကိန်းတာဝန်ခံ</p> <ul style="list-style-type: none"> - ကုမ္ပဏီ၏သက်ဆိုင်ရာသူများအားတင်ပြဆွေးနွေးသွားမည်ဖြစ် ကြောင်း၊ - ကုမ္ပဏီမှရရှိသော အကျိုးအမြတ်၏ ၂%ကို ကျေးရွာ၏ လူမှုဖွံ့ဖြိုးရေးအတွက် အသုံးပြု မည် ဖြစ်ကြောင်းဖြေကြားသွားပါ သည်။
၂။	<p>ဦးမောင်မောင် (ခေါ်) ဦးမြသောင်း (ကုန်းတလဘောင်ကျေးရွာမှရပ်မိရပ်ဖ)</p> <ul style="list-style-type: none"> - ရေဆိုးများအားသန့်စင်၍စွန့်ထုတ်ပေးစေလို ကြောင်း - ဒေသအတွင်းရှိပညာရေး၊ကျန်းမာရေးနှင့်လမ်းပန်းဆက်သွယ်ရေးအား ကူညီပေးစေလိုကြောင်းဆွေး နွေး ထားပါသည်။ 	<p>စီမံကိန်းတာဝန်ခံ</p> <ul style="list-style-type: none"> - အထက်ပါအကြောင်းအရာများကို ကုမ္ပဏီ၏ သက်ဆိုင်ရာ တာဝန်ရှိသူများထံတင်ပြသွား ပါမည်။
၃။	<p>ဦးတည်မြင့် (တံခွန်တိုင်ကျေးရွာမှရပ်မိရပ်ဖ)</p> <ul style="list-style-type: none"> - စီမံကိန်းကြောင်းဒေသခံပြည်သူများမှာဆိုးကျိုးများကိုသာခံစားရပြီး ကောင်းကျိုးများအား မခံစားရ ကြောင်းဆွေးနွေးတင်ပြထားပါသည်။ 	<p>စီမံကိန်းတာဝန်ခံ</p> <ul style="list-style-type: none"> - ဒေသခံများကိုအလုပ်အကိုင်ဖန်တီးခြင်းသည်ဤစီမံကိန်း၏ပထမရည်ရွယ်ချက်ဖြစ် ကြောင်း - တံခွန်တိုင်ကျေးရွာသူရွာသားများကိုလည်း အလုပ်အကိုင်ခွဲဝေပေးမည်ဖြစ်ကြောင်း ဆွေးနွေးထားပါသည်။

**FACTS IN BRIEF ABOUT POWER POINTS SUBMITTED BY G.M.E.S
AT PUBLIC MEETING**

**အများပြည်သူတို့အား စီမံကိန်းအကြောင်းအရာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်နိုင်မှုတို့အား
ရှင်းလင်းဆွေးနွေးတင်ပြသည့် အကြောင်းအရာများ**

- (၁) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၏ ရည်ရွယ်ချက်။
- (၂) နိုင်ငံတော်မှထုတ်ပြန်ထားသော ဥပဒေ၊ နည်းဥပဒေများ။
- (၃) တတိယအဖွဲ့အစည်းအကြောင်း။
- (၄) စီမံကိန်းအကြောင်းအရာနှင့် ကုန်ထုတ်လုပ်မှုနည်းစဉ်။
- (၅) ကုန်ထုတ်လုပ်မှုနည်းစဉ်ကြောင့် ပတ်ဝန်းကျင်ကို ထိခိုက်နိုင်သည့်အချက်များ။
- (၆) ပတ်ဝန်းကျင်ထိခိုက်စေနိုင်သည့် အချက်များကို လျော့နည်းပပျောက်စေရေး နည်းလမ်းများ။
- (၇) ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်တွင် ဒေသခံများပါဝင်နိုင်ကြောင်း။
- (၈) စီမံကိန်းလုပ်ငန်းကို စောင့်ကြည့်ရန် စောင့်ကြည့်အဖွဲ့နှင့် အဖွဲ့၏ တာဝန်များအကြောင်း။
- (၉) လူမှုတာဝန်သိအစီအစဉ် (Corporate Social Responsible) လုပ်ဆောင်ပြီး ဒေသခံ ရပ်မိရပ်ဖများမှ ထိန်းကျောင်းပေးရန်။
- (၁၀) စီမံကိန်းနှင့် စပ်လျဉ်း၍ သုံးသပ်ချက်နှင့် အကြံပြုချက်။



တံခွန်တိုင်ကျေးရွာမှ ဆွေးနွေးပွဲအတွင်းဘက်ရောက်သူစာရင်းများ

Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့် သက်တမ်းအတွင်း အကျိုးစီးပွားအတွက် လူထုအမြင်စုံမေးမြန်းစဉ် ဘက်ရောက်သူစာရင်းများ

၁၅.၆.၂၀၂၂.၂၀၁၀

စဉ်	အမည်	အလုပ်အကိုင်အမျိုးအစား	ဆက်သွယ်ရန်ဖုန်းနံပါတ်	လက်မှတ်
၂၆၀	ဦးစိုးဝင်း	အိမ်ထောင်ရေး	-	၂
၂၇၀	ဒေါ်ခင်မာမာ	- / -	-	၁၁၃
၂၈၀	ဒေါ်မာမာ	- / -	-	၂၆၆
၂၉၀	မောင်မောင်	- / -	၀၇. ၄၃၂၇၅၄၆၀	၃
၃၀၀	မောင်မောင်	- / -	-	၁၀၆
၃၁၀	မောင်မောင်	- / -	၀၇. ၄၀၁၀၃၂၅၅၅	၆၀၃
၃၂၀	မောင်မောင်	- / -	၀၇. ၃၀၃၈၂၇၄၆၈	၈၄
၃၃၀	မောင်မောင်	- / -	-	၆၃၀၆
၃၄၀	မောင်မောင်	- / -	-	၈၅၅
၃၅၀	မောင်မောင်	- / -	၀၇. ၇၆၀၅၆၅၁၀၃	၆၅၅

Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့် သက်တမ်းအတွင်း အကျိုးစီးပွားအတွက် လူထုအမြင်စုံမေးမြန်းစဉ် ဘက်ရောက်သူစာရင်းများ

၁၅.၆.၂၀၂၂.၂၀၁၀

စဉ်	အမည်	အလုပ်အကိုင်အမျိုးအစား	ဆက်သွယ်ရန်ဖုန်းနံပါတ်	လက်မှတ်
၃၆၀	မောင်မောင်	အိမ်ထောင်ရေး	-	၆၅၆
၃၇၀	မောင်မောင်	-	-	၃၆
၃၈၀	မောင်မောင်	အိမ်ထောင်ရေး	-	၃၆၀၃
၃၉၀	မောင်မောင်	အိမ်ထောင်ရေး	၀၇. ၇၆၇၇၀၇၀၇	၆၅၆
၄၀၀	မောင်မောင်	-	၀၇. ၇၆၆၆၆၆၆၆	၁၀၆
၄၁၀	မောင်မောင်	အိမ်ထောင်ရေး	၀၇. ၇၆၆၆၆၆၆၆	၈၅၆

Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့် သက်တမ်းအတွင်း အကျိုးစီးပွားအတွက် လူထုအမြင်စုံမေးမြန်းစဉ် ဘက်ရောက်သူစာရင်းများ

၁၅.၆.၂၀၂၂.၂၀၁၀

စဉ်	အမည်	အလုပ်အကိုင်အမျိုးအစား	ဆက်သွယ်ရန်ဖုန်းနံပါတ်	လက်မှတ်
၃၆၀	မောင်မောင်	အိမ်ထောင်ရေး	-	၆၅
၃၇၀	မောင်မောင်	-	၀၇. ၃၂၅၅၅၅၅၅	၆၅၀၆

Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့် သက်တမ်းအတွင်း အကျိုးစီးပွားအတွက် လူထုအမြင်စုံမေးမြန်းစဉ် ဘက်ရောက်သူစာရင်းများ

၁၅.၆.၂၀၂၂.၂၀၁၀

စဉ်	အမည်	အလုပ်အကိုင်အမျိုးအစား	ဆက်သွယ်ရန်ဖုန်းနံပါတ်	လက်မှတ်
၃၈၀	မောင်မောင်	အိမ်ထောင်ရေး / အလုပ်အကိုင်	၀၇. -	၆၅
၃၉၀	မောင်မောင်	- / -	-	၆၅
၄၀၀	မောင်မောင်	- / အလုပ်အကိုင်	၀၇. ၇၆၆၆၆၆	၆၅၅
၄၁၀	မောင်မောင်	- / အလုပ်အကိုင်	၀၇. ၇၆၆၆၆၆၆၆	၆၅၅
၄၂၀	မောင်မောင်	အိမ်ထောင်ရေး	-	၆၅၅
၄၃၀	မောင်မောင်	အိမ်ထောင်ရေး	၀၇. ၇၆၆၆၆၆၆၆	၆၅၅
၄၄၀	မောင်မောင်	- / အလုပ်အကိုင်	၀၇. ၇၆၆၆၆၆၆၆	၆၅၅
၄၅၀	မောင်မောင်	- / -	-	၆၅၅
၄၆၀	မောင်မောင်	-	၀၇. -	၆၅



ဌာနဆိုင်ရာမှ ဆွေးနွေးပွဲအတွင်းတက်ရောက်လာသူစာရင်းများ

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 ၀၅.၂၀၂၂.၂၀၀

စဉ်	အမည်	အလုပ်အကိုင်အရာအမျိုးအမည်	ဆက်သွယ်ရေးဖုန်းနံပါတ်	လက်မှတ်
၁	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၁၄၂၀၀၂၀/၀၉၉၅၀၀၂၅၅	
၂	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၃	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၄	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၅	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၆	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၇	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၈	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၉	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၀	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	

Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့်သက်တမ်းအတွင်း ဖြစ်နိုင်ပါသည့် အခြေအနေအထားများကို အခြေခံ၍ အောက်ဖော်ပြပါအတိုင်း ဖော်ပြထားပါသည်။
 ၀၅.၂၀၂၂.၂၀၀

စဉ်	အမည်	အလုပ်အကိုင်အရာအမျိုးအမည်	ဆက်သွယ်ရေးဖုန်းနံပါတ်	လက်မှတ်
၁၁	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၂	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၃	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၄	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၅	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၆	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	





Emerald Brewery Myanmar Limited မျှော်လင့်တော့မည့်သက်တမ်းအတွင်း ဖြစ်နိုင်ပါသည့် အခြေအနေအထားများကို အခြေခံ၍ အောက်ဖော်ပြပါအတိုင်း ဖော်ပြထားပါသည်။
 ၀၅.၂၀၂၂.၂၀၀

စဉ်	အမည်	အလုပ်အကိုင်အရာအမျိုးအမည်	ဆက်သွယ်ရေးဖုန်းနံပါတ်	လက်မှတ်
၁၇	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၈	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၁၉	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	

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 ၀၅.၂၀၂၂.၂၀၀

စဉ်	အမည်	အလုပ်အကိုင်အရာအမျိုးအမည်	ဆက်သွယ်ရေးဖုန်းနံပါတ်	လက်မှတ်
၁	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၂	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၃	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	
၄	ဒေါ်အေးအေး	ဒေါ်အေးအေး	၀၅၅၅၀၀၀၀၀၀၀၀	

နယ်မြေစံပြုကျေးရွာမှ ဆွေးနွေးပွဲအတွင်းတက်ရောက်သူစာရင်းများ

ဦးစိုးဦး	ဒဂုံမြို့နယ်	၀၉-၇၇၁၃၇၁၁၂၀	
ဦးမြင့်စိန်	.	၀၉-၈၈၃၃၇၈၈၇၂၃	
ဦးခင်ဦး	.	၀၉-၂၅၀၅၂၂၂၆၆	
ဦးဝင်းဝင်း	ဒဂုံမြို့နယ်	၀၉-၃၄၀၁၀၇၁၇၁	



COMMENTS AND SUGGESTION FROM PUBLIC CONSULTATION MEETING

တွေ့ဆုံပွဲအတွင်းတက်ရောက်လာသူများမှတစ်ဆင့်ရွေးချယ်မှုများနှင့်သက်ဆိုင်သူများမှပြန်လည်ဖြေကြားချက်များ		
စဉ်	အကြံပြုချက်	အကြံပြု ဆွေးနွေးသူ
၁။	<p style="text-align: right;">နေ့စွဲ - ၂၀၂၁.၂၀.၁၀</p> <p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်၍အကြံပြုချက်များကိုရင်းနှီးမြှုပ်နှံလမ်းညွှန်ရေးသားတင်ပြပေးပါရန် နှင့် လူကြီးပင်းတို့၏ အကြံပြုချက်များအားထိခိုက်မှုလျော့နည်းစေရန်အတွက်လုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p style="text-align: center;">အကြံပြုချက်များ</p> <p>၁။ ဤဇာယာကို ဖြိုငှက်စား နေရာအတွက် အသုံးပြုရန် အတည်ပြုပေးရန်။ ၂။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၃။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၄။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၅။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၆။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၇။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၈။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၉။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၁၀။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။</p>	<p style="text-align: center;">(လက်မှတ်)</p> <p style="text-align: center;">အမည်- ဦးဒေါက်ကော်ဝင်း</p> <p style="text-align: center;">အလုပ်အကိုင် - ၇၇/၅၆</p> <p style="text-align: center;">ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၇-၇၅၄၁၈၇၅၆၅</p>
၂။	<p style="text-align: center;">ယင်းပုံစံဖြင့် အသုံးပြုရန်</p> <p>အကြံပြုချက်များ</p> <p>၁။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၂။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၃။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၄။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၅။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၆။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၇။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၈။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၉။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၁၀။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။</p>	<p style="text-align: center;">(လက်မှတ်)</p> <p style="text-align: center;">အမည် - ဦးစိုးစိုးစိုး</p> <p style="text-align: center;">အလုပ်အကိုင် - အကြီးအမှူး</p> <p style="text-align: center;">ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၉၇၆၇၂၄၆၇၂၅</p>
၃။	<p style="text-align: right;">နေ့စွဲ - ၂၀၂၁.၂၀.၁၀</p> <p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်၍အကြံပြုချက်များကိုရင်းနှီးမြှုပ်နှံလမ်းညွှန်ရေးသားတင်ပြပေးပါရန် နှင့် လူကြီးပင်းတို့၏ အကြံပြုချက်များအားထိခိုက်မှုလျော့နည်းစေရန်အတွက်လုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p style="text-align: center;">အကြံပြုချက်များ</p> <p>၁။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၂။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၃။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၄။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၅။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၆။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၇။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၈။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၉။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။ ၁၀။ ဤဇာယာကို အသုံးပြုရန် အတည်ပြုပေးရန်။</p>	<p style="text-align: center;">(လက်မှတ်)</p> <p style="text-align: center;">အမည် - ဦးစိုးစိုးစိုး</p> <p style="text-align: center;">အလုပ်အကိုင် - ဦးစိုး</p> <p style="text-align: center;">ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၉၇၆၇၂၄၆၇၂၅</p>

<p>၁၀။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအကြံပြုချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားတင်ပြပေးပါရန် နှင့် လူကြီးပင်းတို့၏ အကြံပြုချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အကြံပြုချက်များ</p> <p>တံခွန်ဝိုင်းကျေးရွာ (အင်စိုက်)</p> <p>လမ်းကတားပြုပြင်ပေးပါရန်နှင့် လူ့ရေး၊ စီးပွားရေး</p> <p>ကုန်ပစ္စည်းဆောင်ရွက်ပေးပါရန်နှင့် ဥပဒေကြမ်းရေးရာအဖွဲ့</p> <p>စုစုပေါင်း နှင့် ပတ်ဝန်းကျင်ရေးရာစာအုပ်နှင့် အကြံပြုပါသည်။</p>	<p>Xhing (လက်မှတ်) အမည် - မခိုင်နီနီဇွန်း အလုပ်အကိုင် - စက်ရုံ ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် -</p>
<p>၁၂။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအကြံပြုချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားတင်ပြပေးပါရန် နှင့် လူကြီးပင်းတို့၏ အကြံပြုချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အကြံပြုချက်များ</p> <p>တံခွန် ဝိုင်းကျေးရွာ</p> <p>လမ်းကတားပြုပြင်ပေးပါရန် နှင့် လူ့ရေး၊ စီးပွားရေး</p> <p>ကုန်ပစ္စည်းဆောင်ရွက်ပေးပါရန် နှင့် - ဥပဒေကြမ်းရေးရာအဖွဲ့</p> <p>စုစုပေါင်း နှင့် ပတ်ဝန်းကျင်ရေးရာစာအုပ်နှင့် အကြံပြုပါသည်။</p>	<p>(လက်မှတ်) အမည် - မအိန်အိန် အလုပ်အကိုင် - လယ် ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၉-၇၃၂၂၈၈၉၂</p>
<p>၁၃။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအကြံပြုချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားတင်ပြပေးပါရန် နှင့် လူကြီးပင်းတို့၏ အကြံပြုချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အကြံပြုချက်များ</p> <p>လမ်းကတားပြုပြင်ပေးပါရန် နှင့် လူ့ရေး၊ စီးပွားရေး</p> <p>ကုန်ပစ္စည်းဆောင်ရွက်ပေးပါရန် နှင့် - ဥပဒေကြမ်းရေးရာအဖွဲ့</p> <p>စုစုပေါင်း နှင့် ပတ်ဝန်းကျင်ရေးရာစာအုပ်နှင့် အကြံပြုပါသည်။</p>	<p>(လက်မှတ်) အမည် - မမြတ်မိုးဝင်း အလုပ်အကိုင် - ငါ့အဖွဲ့အစည်း ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၄၉၂၅၅၅၅၅</p>

<p>၁၄။</p>	<p>ထိခိုက်မှုနယ်ပယ်ရှိစိတ်သတိပေးခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားထားသည့် ပေးပါရန် နှင့် လူကြီးပင်တို့၏ အခြေခံချက်များအားထိခိုက်မှုလျော့စေရန်အခြေခံချက်များ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>အင်း၊ တံတား၊ ဖြူဖြူလေး၊ ပါးလှိုင်၊ ဒါလျှောက်၊ နိုင်ငံရေးအဖွဲ့အစည်း၊ နေရာ၊ လေး၊ ချွေး၊ တွင်း၊ ပုံစံ၊ လှေ၊ ဆေးကပ်ပုံစံ၊ ပါးလှိုင် အလှူအတန်း၊ ရှိပြီး တစ်ခုစီအောက် အခြေခံချက်၊ ရက်စက်၊ မြေ၊ ဆေး၊ အောက်၊ ရင်း၊ အောက်၊ ကျေး၊ ရွှေ၊ လှိုင်၊ အောက်၊ အောက်၊ အောက်၊ အောက်၊ အောက်၊ အောက်</p>	<p>(လက်မှတ်)</p> <p>အမည် - မအ်လှ မှတ်</p> <p>အလုပ်အကိုင် - (အောက်၊ အောက်) စိုက်ပျိုးရေး</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅-၄၃၁၇၅၅၆</p>
<p>၁၅။</p>	<p>ထိခိုက်မှုနယ်ပယ်ရှိစိတ်သတိပေးခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားထားသည့် ပေးပါရန် နှင့် လူကြီးပင်တို့၏ အခြေခံချက်များအားထိခိုက်မှုလျော့စေရန်အခြေခံချက်များ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>ရွှေ၊ ရွှေ၊ ရွှေ၊ ရွှေ၊ အောက်၊</p>	<p>(လက်မှတ်)</p> <p>အမည် - မအ်လှ မှတ်</p> <p>အလုပ်အကိုင် - အောက်/အောက်</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅ ၃၃ ၇၈ ၈၂၂၃</p>
<p>၁၆။</p>	<p>ထိခိုက်မှုနယ်ပယ်ရှိစိတ်သတိပေးခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်ပြီးအခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းစွာရေးသားထားသည့် ပေးပါရန် နှင့် လူကြီးပင်တို့၏ အခြေခံချက်များအားထိခိုက်မှုလျော့စေရန်အခြေခံချက်များ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>အောက်၊ အောက်၊</p>	<p>(လက်မှတ်)</p> <p>အမည် - မအ်လှ မှတ်</p> <p>အလုပ်အကိုင် - စိုက်ပျိုးရေး</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅ / ၃၀၄၆၄၁၅၆</p>

<p>၂၅။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်၍အခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းရှာရေးသားတင်ပြပေးပါရန် နှင့် လူကြိုက်ပင်ပေါက် အခြေခံချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>၇၃။ တာလပယ်စ် - ဆွေ့ဟွာ - ပတင်စိုက် - ဝှစ်စိုက် - စက်ပြုစာနုစာဆေး - ဇွဲမီးစား - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ပတင်စိုက် - စက်ပြုစာနုစာဆေး ၁ - ရင်းစက်စိုက် - ဒေသစိုက် - အာဖရိကစာနုစာဆေး အာဖရိကစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၂ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၃ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက်</p>	<p>(လက်မှတ်) အမည် - သက်စိုက် အလုပ်အကိုင် - ဇွဲမီးစိုက် ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၄ ၂၆၃၅၆ ၂၅၀</p>
<p>၂၆။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်၍အခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းရှာရေးသားတင်ပြပေးပါရန် နှင့် လူကြိုက်ပင်ပေါက် အခြေခံချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>၇၄။ တာလပယ်စ် - ဆွေ့ဟွာ - စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ပတင်စိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၁ - ရင်းစက်စိုက် - ဒေသစိုက် - အာဖရိကစာနုစာဆေး - ဇွဲမီးစိုက် ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၂ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၃ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက်</p>	<p>(လက်မှတ်) အမည် - ဦးစောစိုက် အလုပ်အကိုင် - ဇွဲမီးစိုက် ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၄ ၇၄၅၅၀၅၅၅</p>
<p>၂၇။</p>	<p>ထိခိုက်မှုနယ်ပယ်နိမိတ်သတ်မှတ်ခြင်းလုပ်ငန်းစဉ်နှင့်ပတ်သက်၍အခြေခံချက်များကိုရင်းနှီးမြှုပ်နှံလင်းရှာရေးသားတင်ပြပေးပါရန် နှင့် လူကြိုက်ပင်ပေါက် အခြေခံချက်များအားထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများ လုပ်ဆောင်ရာတွင် ထည့်သွင်းအလေးထားဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</p> <p>အခြေခံချက်များ</p> <p>၇၅။ တာလပယ်စ် - ဆွေ့ဟွာ - စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ပတင်စိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၁ - ရင်းစက်စိုက် - ဒေသစိုက် - အာဖရိကစာနုစာဆေး - ဇွဲမီးစိုက် ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၂ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် ၃ - ဒေသစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် စက်ပြုစာနုစာဆေး - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက် - ဇွဲမီးစိုက်</p>	<p>(လက်မှတ်) အမည် - ဒေါ်အေးအေး အလုပ်အကိုင် - ဇွဲမီးစိုက် ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၄ ၄၂၆၀၁၃၅၂၅</p>

<p>၃၃။</p>	<p>ထိန်းချုပ်မှုနည်းစနစ်အသုံးပြုခြင်း၊ လုပ်ငန်းစဉ်အတွင်းမှ ထွက်ပေးသော အန္တရာယ်များကို ထိန်းချုပ်ပေးရန်အတွက် အသုံးပြုရမည့် နည်းစနစ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>အခြေအနေအထား</p> <p>၃၁.၂.၇. ၂၀၁၆</p> <p>ယခု ရရှိထားသော အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p>	<p>phaw</p> <p>(လက်မှတ်)</p> <p>အမည် - Mg phyo Han Wai</p> <p>အလုပ်အကိုင် - Du (student)</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅-၆၇၆၆၅၀၅၇၅</p>
<p>၃၄။</p>	<p>ထိန်းချုပ်မှုနည်းစနစ်အသုံးပြုခြင်း၊ လုပ်ငန်းစဉ်အတွင်းမှ ထွက်ပေးသော အန္တရာယ်များကို ထိန်းချုပ်ပေးရန်အတွက် အသုံးပြုရမည့် နည်းစနစ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>အခြေအနေအထား</p> <p>၁။ စက်ရုံအတွင်း အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>၂။ စက်ရုံအတွင်း အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>၃။ စက်ရုံအတွင်း အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p>	<p>(လက်မှတ်)</p> <p>အမည် - ဦး ရေဒီအိန်</p> <p>အလုပ်အကိုင် -</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅-၇၇၃၂၈၆၈၇၇</p>
<p>၃၅။</p>	<p>ထိန်းချုပ်မှုနည်းစနစ်အသုံးပြုခြင်း၊ လုပ်ငန်းစဉ်အတွင်းမှ ထွက်ပေးသော အန္တရာယ်များကို ထိန်းချုပ်ပေးရန်အတွက် အသုံးပြုရမည့် နည်းစနစ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>အခြေအနေအထား</p> <p>ယခု ရရှိထားသော အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p> <p>အန္တရာယ် အန္တရာယ်အဆင့် ဖြစ်ပေါ်စေနိုင်သည့် အန္တရာယ်များကို အသုံးပြုရန် လိုအပ်ပါသည်။</p>	<p>(လက်မှတ်)</p> <p>အမည် - ဦး သွန်းဟန်</p> <p>အလုပ်အကိုင် - စာရေးဆရာ</p> <p>ဆက်သွယ်ရန်လိပ်စာ/ဖုန်းနံပါတ် - ၀၅-၄၂၀၃၁၅၉၂၆</p>



Cover of 1st revised scoping report

ရန်ကုန်တိုင်းဒေသကြီး ၊ လှည်းကူးမြို့နယ်၊ ရေတလပေါင်းကျေးရွာအုပ်စု ၊ ကိုင်ဆောင်အမှတ် (၂/၁+၂/၂+၂/၄+ ၁-၂) ၊ အကွက်အမှတ် (၄၉၈) တွင်တည်ရှိသော Emerald Brewery Myanmar Limited. ၏ ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်း လုပ်ငန်းအတွက် (၂၀၁၉ ခုနှစ် ၊ ဧပြီလ) ရေးဆွဲတွင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာ(Scoping Report) အပေါ် သုံးသပ်အကြံပြုချက်များအား လိုက်နာဆောင်ရွက်ချက်များ

စဉ်	စီစစ်တွေ့ရှိချက်များ	သုံးသပ် အကြံပြုချက်များ	လိုက်နာဆောင်ရွက်ချက်များ
၁။	<p>အစီရင်ခံစာအကျဉ်းချုပ်</p> <p>အစီရင်ခံစာတွင် မြန်မာ/အင်္ဂလိပ် နှစ်ဘာသာဖြင့် ဖော်ပြထားကြောင်းအကျဉ်းချုပ်အစီရင်ခံစာတွင် စီမံကိန်းအကြောင်းအရာ ဖော်ပြချက်၊နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းအဆင့်တွင် လေ့လာတွေ့ရှိချက်များအရ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ငန်းတွင် ထည့်သွင်းလေ့လာရမည့်ဖြစ်နိုင်ချေ ရှိသည့်သက်ရောက်မှုများအားဖော်ပြထားကြောင်း၊လူထု တွေ့ဆုံ ဆွေးနွေးပွဲနှင့်ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ငန်းအတွက်ကိုးကားချက်များ၊နိဂုံးနှင့်အကြံပြုချက်များ ဖော်ပြ ထားကြောင်းစီစစ်တွေ့ရှိပါသည်။</p>	<p>အကျဉ်းချုပ်အစီရင်ခံစာတွင် အောက်ဖော်ပြပါအချက်များ ထပ်မံဖြည့် ရွက်ချိန်မဟုတ်/အင်္ဂလိပ် နှစ်ဘာသာဖြင့် ဖော်ပြရန်-</p> <ul style="list-style-type: none"> • လုပ်ငန်းကြောင့် ဖြစ်ပေါ်နိုင်သည့် အဓိကထိခိုက်မှု များအား လေ့လာပေးစေရေးနည်းလမ်းများ၊ အဆိုပါ နည်းလမ်းများ၊ အပေါ် အကောင်အထည်ဖော်ဆောင် ရွက်မည့် အစီအစဉ်များ အကျဉ်းချုပ်၊ • စီမံကိန်းလုပ်ငန်းနှင့် အဓိက သက်ဆိုင်သည့် ဥပဒေ၊ နည်း ဥပဒေ၊မူဘောင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ အကျဉ်းချုပ်၊ • နယ်ပယ်အတိုင်းအတာ သက်ဆိုင်ခြင်းအစီရင်ခံစာ ရေးသားရန် အတွက် ကွင်းဆင်းလေ့လာစဉ်အတွင်း ဆောင်ရွက်ခဲ့သော လုပ်ငန်းများ၊အဓိက တွေ့ရှိချက် များနှင့် အကြံပြုချက်များ အကျဉ်းချုပ်၊ • လေ့လာမည့်နယ်ပယ်ဧရိယာနှင့် အဆိုပါ နယ်ပယ် ဧရိယာ သတ်မှတ်ရသည့် အကြောင်းအရင်း များ ကို 	<p>အကြံပြုချက်များအား အကျဉ်းချုပ် အစီရင် ခံစာ တွင် မြန်မာ/အင်္ဂလိပ် နှစ်ဘာသာဖြင့် ဖြည့်စွက်ဖော်ပြထားပါသည်။</p>

		<p>ဖြည့်စွက် ဖော်ပြပေးရန်၊</p> <ul style="list-style-type: none"> EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ(TOR) အကျဉ်းချုပ်၊ 	
<p>၂။ မူဝါဒ၊ ဥပဒေဆိုင်ရာနှင့် အဖွဲ့အစည်းဆိုင်ရာမူဘောင် အစီရင်ခံစာ စာမျက်နှာ(၅)တွင် အောက်ဖော်ပြပါ မြန်မာနိုင်ငံမှ ထုတ်ပြန်ထားသည့် ဥပဒေ၊ နည်းဥပဒေများ၊ လုပ်ထုံးလုပ်နည်း၊ လမ်းညွှန်ချက်များနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ ကတိကဝတ်တို့ အား ဖော်ပြထားသည်ကို စိစစ်တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> The Penal Code of Offences Affecting the Public Health, Safety, Convenience, Decency and Morals,1861 The Police Act, 1945 The Myanmar Fire Brigade Law,2015 The Ward or Village Tract Administration Law,2012 The Water Power Act,1927 The Underground Water Act, 1930 The Yagon City Development Law,2018 The Myanmar Investment Law, 2016 Environmental Conservation Law, 2012 Environmental Conservation Rules,2014 Environmental Impact Assessment Procedure,2015 	<p>စီမံကိန်း၏ ကုမ္ပဏီ/ အဖွဲ့အစည်းတွင် ပတ်ဝန်းကျင်နှင့် လူမှုရေး ဆိုင်ရာ မူဝါဒများချမှတ်ထားပါက ထည့်သွင်းဖော်ပြရန်၊</p> <p>အစီရင်ခံစာတွင် လုပ်ငန်းနှင့်သက်ဆိုင်သည့် အောက်ဖော်ပြပါ တည်ဆဲဥပဒေများကို ဖော်ပြရန်နှင့် ဥပဒေများကို ရေးသား ဖော်ပြရာတွင် ဥပဒေများ၏ ပုဒ်မ၊ ပုဒ်မခွဲများကို ညွှန်း၍ စီမံကိန်းအဆိုပြုသူမှ လိုက်နာမည့် ကတိကဝတ်ကို ထည့်သွင်း ဖော်ပြရန်-</p> <ul style="list-style-type: none"> ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ(၂၀၁၂) ပုဒ်မ ၇ (က)၊ ၁၄၊၁၅၊၂၄၊၂၉ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေများ(၂၀၀၄)(နည်း ၆၉) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံး လုပ်နည်းများ၊ ၂၀၁၅(အပိုဒ် ၁၀၂၊ ၁၀၁၊ ၁၁၃၊ ၁၁၅၊ ၁၁၇) အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) တိုင်းရင်းသားလူမျိုးများအခွင့်အရေး ကာကွယ်စောင့်ရှောက်ရေး ဥပဒေ(၂၀၁၅) (ပုဒ်မ ၅) မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုဥပဒေ၊ ၂၀၁၆ (ပုဒ်မ ၅၀(ဃ)) 	<p>အခန်း(၃) စာမျက်နှာ (၃-၄) မှ စာမျက်နှာ (၃-၅) တွင်ဖော်ပြထားပါသည်။</p>	
<ul style="list-style-type: none"> National Environmental Quality (Emission)Guidelines,2015 The Income Tax Law,1974 The Money Laundering Law,2014 The Import Export Law,2012 The Assistance and Treatment of injured Emergency Patient ,2014 The Electricity Law,2014 The Boiler Law,2015 The Petroleum and Petroleum Product Law,2017 The Private Industrial Enterprise Law,1990 The Prevention of Hazard from Chemical and Related Substances Law,2013 The Factories Act,1917,Amending the Excise Ace,2016 The National Food Law,1997 The Consumer Protection Law,2014 The Standardization Law,2014 The Import Export Law,2012 The Motor Vehicle Law, 2015 and the Motor Vehicle Rules,1989 The Highway Law,2000 The Workmen's Compensation Act, 1932 The Leave and Holiday Act,1951 Employment and Skill Development Law,2013 Minimum Wages Law, 2013 and the Minimum 	<p>၅၁၊ ၆၅(စ) မှ(ထ)၊ ၇၃)</p> <ul style="list-style-type: none"> မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှုနည်းဥပဒေ၊ ၂၀၁၇(နည်း ၂၀၂၊ ၂၀၃၊ ၂၀၆၊ ၂၁၂) မြန်မာ့အာမခံလုပ်ငန်းဥပဒေ၊၁၉၉၃(ပုဒ်မ ၁၅၊ ၁၆) ပုဂ္ဂလိကစက်မှုလုပ်ငန်းဥပဒေ၊၁၉၉၀ (ပုဒ်မ ၄၊ ၁၃(ခ)(စ)(ဆ)၊ ၁၅(က) (ခ)) စာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီးကာကွယ်ခြင်း ဥပဒေ၊ ၂၀၁၃(ပုဒ်မ ၁၅၊၁၆၊၁၇၊၂၂၊၂၇) မြန်မာ့စီးသတ်တစ်ဖွဲ့ ဥပဒေ၊ ၂၀၁၅(ပုဒ်မ ၂၅) ရေနံနှင့် ရေနံထွက်ပစ္စည်းများဆိုင်ရာဥပဒေ၊ ၂၀၁၇ (ပုဒ်မ ၉(က)(င)၊ ၁၀(ခ))၊ (လောင်စာဆီ/သယ်) ပုဒ်မ ၁၁၊(က)နှင့်မြိုင်လောင်လျှင်) ပုဒ်မ၁၀(က)(ဂ)(ဃ)) မော်တော်ယာဉ်ဥပဒေ၊ ၂၀၁၅ စံချိန်စံညွှန်းသတ်မှတ်ခြင်းဆိုင်ရာဥပဒေ၊ ၂၀၁၄ (ပုဒ်မ ၁၇၊၁၉၊၂၆) ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ၊ ၁၉၉၈(ပုဒ်မ၁၃၊၁၅) ရှေးဟောင်းဝတ္ထုပစ္စည်းကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊၂ ၀၁၅(ပုဒ်မ၁၂) ရှေးဟောင်းအဆောက်အအုံကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၅(ပုဒ်မ ၁၂၊၁၅၊၂၀(ခ)) မြန်မာအင်ဂျင်နီယာကောင်စီဥပဒေ၊၂၀၁၃ (ပုဒ်မ၃၇၊၃၄) ပိုက်လိုင်းကုန်ဥပဒေ၊ ၂၀၁၂(ပုဒ်မ၇) (ရိုလျှင်) အလုပ်သမားအဖွဲ့အစည်းဥပဒေ၊၂၀၁၀ အလုပ်သမား အငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ၊ ၂၀၁၂ အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ၊ 		

<p>Wages Rules,2013</p> <ul style="list-style-type: none"> The Labor Organization Law,2011 and The Labor Organization Rules,2012 The Settlement of Labor Dispute Law,2012 The Social Security Law, 2012 and The Social Security Rules,2014 	<p>၂၀၁၃</p> <ul style="list-style-type: none"> အနည်းဆုံးအကြေးငွေဥပဒေ၊ ၂၀၁၃ အကြေးငွေပေးချေရေးဥပဒေ၊ ၂၀၁၆ လူမှုဖူလုံရေးဥပဒေ၊ ၂၀၁၂ Workmen Compensation Act, 1923 အလုပ်ရုံများအက်ဥပဒေ၊ ၁၉၅၁ ခွင့်နှင့်အလုပ်ပိတ်ရက်များ ဥပဒေ၊ ၁၉၅၁ မြန်မာနိုင်ငံပြည်သူ့ကျန်းမာရေးဥပဒေ၊ ၁၉၇၂ (ပုဒ်မ ၃၅) ကျားစပ်ရောဂါများကာကွယ်နိုင်ရေးဥပဒေ၊ ၁၉၅၅ (ပုဒ်မ ၁၀)(က)(င)(၅၁၁) စားသုံးသူအကာအကွယ်ရေး ဥပဒေ၊ ၂၀၁၄ (ပုဒ်မ ၇(ခ)၊ ၄၊ ၆(ခ)၊ ၂)၊ အစီရင်ခံစာတွင် စီမံကိန်းနှင့်သက်ဆိုင်သည့် ဥပဒေ၊ နည်းဥပဒေများ၊ လုပ်ထုံးလုပ်နည်းနှင့် လမ်းညွှန်ချက်များကို ဖော်ပြရာတွင် ထုတ်ပြန်ထားသည့် ဝန်ထမ်းကိုညွှန်၍ ဖော်ပြရန်။ 	
<p>၃။ စီမံကိန်းအကြောင်းအရာ နှင့် အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းများ</p> <p>အစီရင်ခံစာ စာမျက်နှာ ၂-၂ မှ ၂-၄ တို့တွင် စီမံကိန်းအဆိုပြုသူ၏အကြောင်းအရာများ၊ Board of Directors အဖွဲ့ဝင်များ၏အကြောင်းအရာများ၊ စီမံကိန်းတည်နေရာအား Coordinates အမှတ်များဖြင့် ဖော်ပြထားကြောင်း၊ စီမံကိန်းလိပ်စာ၊ မြေအမျိုးအစား၊ မြေအသုံးပြုမှု၊ စီမံကိန်းဧရိယာ ၃.၂၈၄ ဧက၊ အဆောက်အဦအတွက် အသုံးပြုမည့် မြေဧက ၁၈ ဧက၊ အဆောက်အဦအရေအတွက်၊ စီမံကိန်းစတင်တည်ဆောက်မည့်ကာကနှင့်စတင်</p>	<ul style="list-style-type: none"> စီမံကိန်းတွင် တစ်နေ့အသုံးပြုမည့် စွမ်းအင်လိုအပ်ချက် ဖော်ပြရန်၊ စီမံကိန်းတွင် အသုံးပြုမည့် တစ်ရက်/တစ်လ အသုံးပြုမည့် ကုန်ကြမ်း ပမာဏ ဖော်ပြရန်၊ ကုန်ချောတစ်နေ့ထုတ်လုပ်နိုင်မှုပမာဏအား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စာမျက်နှာ(၄-၁၃) ဇယား(၄-၁၂) တွင်ဖော်ပြထားပါသည်။ စာမျက်နှာ (၄-၁၁) ဇယား(၄-၇) နှင့်(၄-၈) တွင်ဖော်ပြထားပါသည်။ စာမျက်နှာ (၄-၁၂) ဇယား(၄-၁၀) တွင်ဖော်ပြထားပါသည်။
<p>လည်ပတ်မည့်ကာလ၊ စီမံကိန်းတည်နေရာ၏ မြေမျက်နှာသွင်ပြင် အမျိုးအစား၊ ရင်းနှီးမြုပ်နှံမှုကာလ၊ ရင်းနှီးမြုပ်နှံမှုပမာဏ၊ ရင်းနှီးမြုပ်နှံမှု အမျိုးအစား၊ Joint Venture စီမံကိန်းအနီး ကျေးရွာရေထုလုပ်ပေးကျေးရွာကုန်းတလပေါင်းကျေးရွာစီမံကိန်းအနီးရှိ ရေအရင်းအမြစ်ဘေးလားချောင်းနှင့် လှော်ကားကန်၊ စီမံကိန်းအနီးပတ်ဝန်းကျင်၏အရှေ့ဘက်တွင်လယ်မြေအနောက်ဘက်တွင် ဘေးလားချောင်း၊ ဘယ်ဘက်တွင် လယ်မြေ၊ ညာဘက်တွင် လယ်မြေတို့ဖြစ်ကြောင်း ဖော်ပြထားသည်ကို စိစစ်တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> စီမံကိန်းတွင်အသုံးပြုမည့် စက်ပစ္စည်းကိရိယာများနှင့် အရန် Plants(CO₂ Plant, Wastewater Treatment Plant, Wastewater Treatment Plant) တို့ ဖြစ်ကြောင်း၊ ရေအရင်းအမြစ်ရေတွင်း ၆တွင်းမှ ထုတ်ယူမည်ဖြစ်ပြီး တစ်ရက်အသုံးပြုမည့်ရေပမာဏ 170-850 m³၊ စွမ်းအင်လိုအပ်ချက်အား National Grid မှ ရယူမည်ဖြစ်ကြောင်း၊ Boilersအတွက် လောင်စာအား Diesel Fuel အသုံးပြုမည်ဖြစ်ပြီး တစ်နှစ်အတွက်လောင်စာအသုံးပြုမှု ၅၀၀၀၀ ဂါလံ၊ အသုံးပြုမည့်ကုန်ကြမ်းပစ္စည်းအမျိုးအစားများ၊ အလုပ်သမားအရေအတွက် ၁၇၀ ဦး၊ တစ်ရက် အလုပ်လုပ်ချိန် တို့အားဖော်ပြထားကြောင်းစိစစ် တွေ့ရှိရပါသည်။ အစီရင်ခံစာ စာမျက်နှာ ၄-၃ တို့တွင် လေ့လာဆန်းစစ်မည့်နယ်ပယ်အား ၁.၅ ဂီလိုမီတာ သတ်မှတ်ထားကြောင်းစိစစ်တွေ့ရှိရပါသည်။ 	<ul style="list-style-type: none"> စွန့်ပစ်ပစ္စည်းထွက်ရှိမှုပမာဏ/စီမံခန့်ခွဲမှု ဖော်ပြရန်၊ စွန့်ပစ်ရည်ထွက်ရှိမှုပမာဏနှင့် စီမံခန့်ခွဲမှုတို့အား ဖော်ပြရန်၊ စီမံကိန်းအတွင်း တည်ဆောက်ထားရှိမည့် အခြေခံ အဆောက်အဦများ၏ တည်နေရာပြ Layout Plan အား ဖော်ပြရန်၊ လောင်စာသုံးလျှော့ထိန်းမှု အခြေအနေနှင့်စီမံခန့်ခွဲမှု တို့အား ဖော်ပြရန်၊ စီမံကိန်းတွင် အသုံးပြုမည့် CO₂ Plant, Water Treatment Plant, Wastewater Treatment Plant, Boiler တို့၏ အရွယ်အစားနှင့် နည်းစနစ် တို့အား ဖော်ပြရန်၊ Boiler ခေါင်းတိုင်အမြင့်အား ဖော်ပြရန်၊ စီမံကိန်းလုပ်ငန်း၏ တည်ဆောက်ရေးနှင့် လုပ်ငန်း လည်ပတ်သည့် အဆင့်များနှင့် ဆက်စပ်ဆောင်ရွက်မည့် အခြားစီမံကိန်းများ၊ ဖွံ့ဖြိုးရေးလုပ်ငန်းများရှိပါက ဖော်ပြရန်၊ စက်ရုံဝန်ထမ်းများအတွက် ဆောင်ရွက်ထားရှိမည့် အစီအစဉ်များကို ဖော်ပြရန်၊ စီးဆင်းရေ(Storm Water) နှင့် ရေမြောင်းစနစ် Drainage System) အခြေအနေတို့အား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စာမျက်နှာ(၄-၁၄) စာပိုဒ် (၄-၁၀) တွင်ဖော်ပြထားပါသည်။ နောက်ဆက်တွဲ(၂၄) တွင်ဖော်ပြထားပါသည်။ စာမျက်နှာ(၄-၁၃) စာပိုဒ် (၄-၉) တွင် ဖော်ပြထားပါသည်။ စာမျက်နှာ(၄-၁၂) ဇယား(၄-၁၁)နှင့် နောက်ဆက်တွဲ(၂၆)၊ (၂၇)၊ (၂၈) တို့တွင်ဖော်ပြထားပါသည်။ စီမံကိန်းတည်ဆောက်ရေးနှင့် လုပ်ငန်းလည်ပတ်သည့် အဆင့်များနှင့် ဆက်စပ်အခြား စီမံကိန်းများမရှိပါ။ စာမျက်နှာ(၄-၂၁)၊ စာပိုဒ် (၄-၁၆) တွင်ဖော်ပြထားပါသည်။ စာမျက်နှာ(၄-၁၅)၊ စာပိုဒ် (၄-၁၁) တွင်ဖော်ပြထားပါသည်။

	<ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၄-၉ မှ ၄-၁၃ တို့တွင် ထုတ်လုပ်မှုလုပ်ငန်း စဉ်အဆင့်ဆင့်အား Flow Chart ၊ စာနှင့်တကွ ရှင်းလင်းဖော်ပြထားကြောင်း စိစစ် တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၄-၁၄ မှ ၄-၁၆ တို့တွင် နှစ်အလိုက်ကုန်ကြမ်း လိုအပ်ချက်အား Thailand, Singapore,China,Europe,Japan,Vietnam, Spain and Germany စသည့်နိုင်ငံများမှ တင်သွင်း မည်ဖြစ်ကြောင်းနှစ်အလိုက်ထုတ်လုပ်နိုင်မှုပမာဏတို့ အားဖော်ပြထား ကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၄-၁၈ မှ ၄-၂၀ တို့တွင်အဆောက်အဦအတွင်းရှိလိုအပ်သော ဝက်ပစ္စည်းကိရိယာများအား ဇယား ၄-၁၀ နှင့် ၄-၁၁ တို့တွင် ဖော်ပြထားကြောင်းဇယား ၄-၁၂ တွင် အဆောက်အဦအရေအတွက်နှင့်အရွယ်အစားတို့အား ဖော်ပြထားကြောင်းအဆိုပြုစီမံကိန်းအား Three Dimension (3D) Diagrams ဖြင့် ဖော်ပြထား ကြောင်းစိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၄-၁၃ မှ ၄-၂၄ တို့တွင် အခြားနည်းလမ်းရွေးချယ်ခြင်းနှင့်ပတ်သက် ၍ No Project Option ဟုဖော်ပြထားပြီးအဆိုပါ စီမံကိန်း တည်နေရာအား ရွေးချယ်ရသည့်အကြောင်းအရင်း များအား ဖော်ပြထားကြောင်းစိစစ် တွေ့ရှိရပါသည်။ • အစီရင်ခံစာနောက်ဆက်တွဲ-၁တွင် နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်း အစီရင်ခံစာ ပြုစုရေးသားသည့် တတိယအဖွဲ့အစည်းတွင်ပါဝင်သော အဖွဲ့ဝင်တစ်ဦးချင်းစီ၏ပညာအရည်အချင်း၊၎င်းတို့၏ 		
	<p>တာဝန်ဝတ္တရားနှင့် TCR လက်မှတ်တို့အား ဖော်ပြထားသည်ကိုစိစစ်တွေ့ရှိရပါသည်။</p>		
<p>၄၊ လက်ရှိပတ်ဝန်းကျင်အခြေအနေ</p>	<ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၅-၁ မှ ၅-၁၃ တို့တွင် စီမံကိန်းတည်ရှိသည့်လှည့်ကူးမြို့နယ် တည်နေရာပြ မြေပုံ၊လေ့လာမည့်နယ်ပယ်အတိုင်းအတာ၁.၅ ကီလို မီတာ အတွင်းရှိ လေ၊ဆူညံသံ၊ရေ၊မြေ၊ဇီဝဗေဒ၊ လူမှု၊ဇီဝပွားသံ နှင့်အခြား Parameters များအား လေ့လာမည်ဖြစ် ကြောင်း။ • စီမံကိန်းတည်နေရာရှိ Physical Characteristics (Topography,Geography,Geology and Soil) တို့အား ၂၀၁၇ ဧပြီလ ၂၈ ရက်တွင် Surveyed ပြုလုပ်ခဲ့ကြောင်း၊စီမံကိန်းတည်ရှိသည့် လှည့်ကူး မြို့နယ် ၏ Seidmology အားဖော်ပြထားသည်ကို စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၁၃ မှ ၅-၂၆ တို့တွင် Hydrology Study နှင့်ပတ်သက်၍ Scoping အဆင့်၌ Key Potential Issues အား အမျိုးအစားသတ်မှတ်၍ (EIA) အဆင့်တွင် ဆက်လက်လေ့လာမည် ဖြစ်ကြောင်း ဖော်ပြထားသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၂၆ မှ ၅-၃၈ တို့တွင် စီမံကိန်းဓရိယာ (လှည့်ကူးမြို့နယ်)၏ ရာသီဥတု၊ ဖိုးလေဝသအခြေအနေ၊Biodiversity အတွက် လေ့လာမည့်နယ်ပယ် သတ်မှတ်ရသည့် ရည်ရွယ်ချက် စာမျက်နှာ ၅-၃၈ မှ ၅-၄၄ စီမံကိန်းဓရိယာ မှ ၁.၅ 	<ul style="list-style-type: none"> • စီမံကိန်းလုပ်ငန်း ဆောင်ရွက်မှု ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှု များအတွက် လေ့လာသွားမည့် ဓရိယာအား သတ်မှတ်ရသည့် အကြောင်းအရင်းနှင့် လေ့လာမည့် ဓရိယာအတွင်း ပါဝင်သည့် ထူးခြားသည့် သွင်ပြင် လက္ခဏာများအကြောင်း ရှင်းလင်း ဖော်ပြပေးရန်။ 	<p>-အခန်း(၅.၃.၄.၁၂)၊ (၅.၄.၆)၊ (၅.၄.၁၂)၊(၅.၅.၃) ၊ (၅.၆.၁) စသည်တို့တွင် သက်ဆိုင်ရာကဏ္ဍအလိုက် ဖော်ပြထားပါသည်။</p>

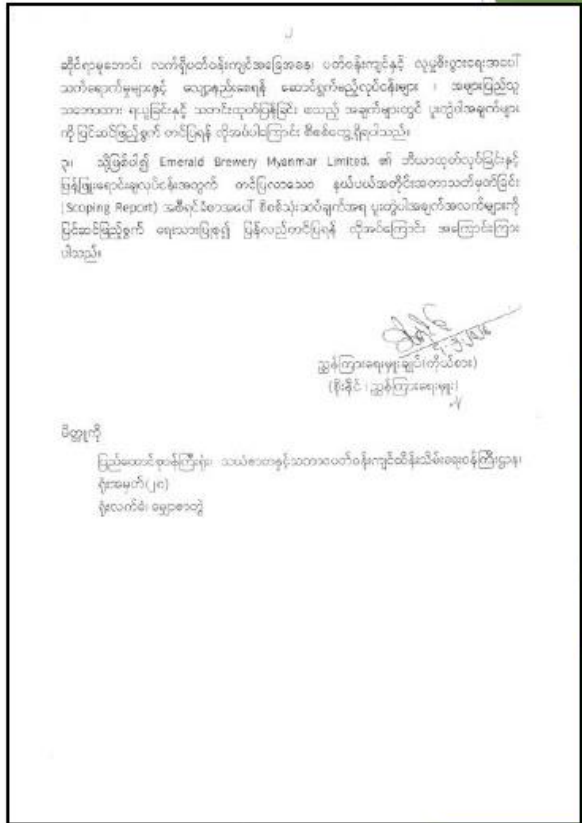
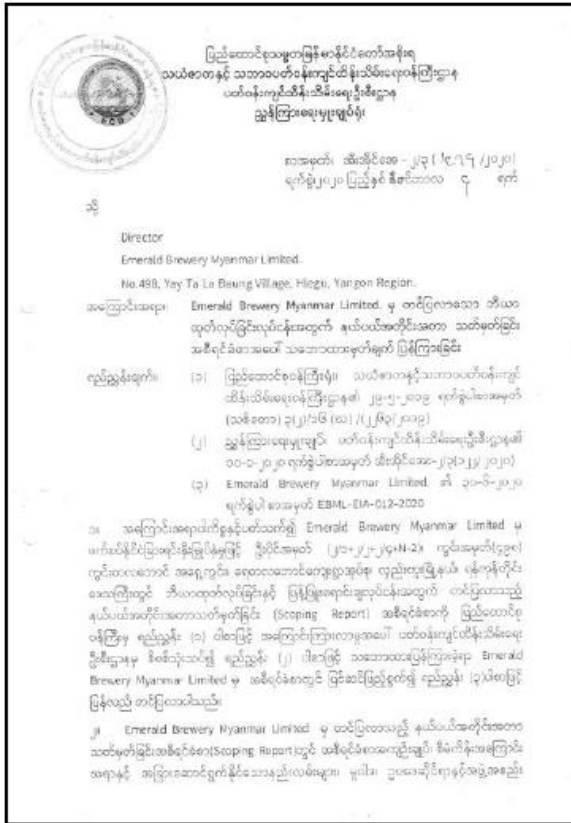
	<p>ကိရိယာအတွင်းရှိ တို့အား ဖော်ပြထား ကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> • အစီရင်ခံစာ ကျေးရွာများ၏ လူမှုစီးပွားဆိုင်ရာ အချက်အလက်များ၊စီးပွားရေးဆိုင်ရာအချက်အလက်များ၊ယဉ်ကျေးမှုဆိုင်ရာအချက်အလက်များအား Secondary Data အား အသုံးပြု၍ ဖော်ပြထားကြောင်းစိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၄၄ မှ ၅-၄၇တို့တွင် Cultural Heritage Impact Assessment for Scoping တို့အား မြေပုံနှင့်တကွဖော်ပြ ထား ကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၄၇ မှ ၅-၅၂တို့တွင် Ambient Air Quality အတွက် Materials and Methods, Methods of Sampling and Analysis, Selection of Sampling Locations ရွေးချယ်ထားသော တည်နေရာများတွင် လက်ရှိ ပတ်ဝန်းကျင် လေအရည်အသွေးတိုင်းတာ၍ ဖော်ပြထားကြောင်း၊တိုင်းတာခဲ့သည့်နေရာအား Coordinates အမှတ်များဖြင့် ဖော်ပြထားကြောင်း၊ တိုင်းတာမှုရလဒ်များအား Guideline တန်ဖိုးဖြင့် နှိုင်းယှဉ်ဖော်ပြထားကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၅၂ မှ ၅-၅၃တို့တွင် ရှေးဦးစွာတိုင်းတာ၍ NEQEG ဖြင့် နှိုင်းယှဉ်ဖော်ပြ ထားကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၅၃ မှ ၅-၆၃တို့တွင် Ground Water Quality တည်နေရာ ၉ နေရာ၌ 		
	<p>တိုင်းတာ၍ တိုင်းတာမှုရလဒ်များအား WHO, EPA, Indian Specification (IS:10500,2012) တန်ဖိုးများဖြင့် တိုင်းတာခဲ့သည့်နေရာများအား Coordinates အမှတ်များဖြင့် ဖော်ပြထားကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၅-၆၀ မှ ၅-၆၂တို့တွင် Surface Water Quality အား တိုင်းတာဖော်ပြ ထားကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၆၃ မှ ၅-၆၄တို့တွင် စီမံကိန်းတည်နေရာ အတွင်းရှိမြေအရည်အသွေးအား တိုင်းတာဖော်ပြထားကြောင်း၊တိုင်းတာခဲ့သည့်နေရာများအား Coordinates အမှတ်များဖြင့် ဖော်ပြထား ကြောင်း စိစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၆၄ မှ ၅-၆၅တို့တွင် Health Impact Assessment ပတ်သက်၍ ဖော်ပြရာတွင် စီမံကိန်းအနီးပတ်ဝန်းကျင် ရှိရပ်ကွက်/ကျေးရွာများ၏ လက်ရှိကျန်းမာရေးအခြေအနေများအား လေ့လာ မည်ဖြစ်ကြောင်းဖော်ပြထားသည်ကိုစိစစ်တွေ့ရှိရပါ သည်။ • အစီရင်ခံစာ စာမျက်နှာ ၅-၆၅ မှ ၅-၆၇တို့တွင် Traffic Assessment Study နှင့်ပတ်သက်၍ ဖော်ပြထား ကြောင်းစိစစ်တွေ့ရှိရပါသည်။ 		
<p>၅။ ပတ်ဝန်းကျင်နှင့် လူမှုစီးပွားရေးအပေါ် သက်ရောက်မှုများနှင့် လေ့လာနည်းစေရန် ဆောင်ရွက်မည့်လုပ်ငန်းများ</p> <ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၆-၁ မှ ၆-၂၀တို့တွင် Methodology and Approach, Brief Description 		<ul style="list-style-type: none"> • လုပ်ငန်းဆောင်ရွက်ခြင်းအဆင့်ဆင့် ဖြစ်ပေါ်လာနိုင် သည့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများ၏ အကွာ အဝေး၊ သက်ရောက်မှု တည်တံ့မည့် ကြာမြင့်ချိန်တို့အား ဖော်ပြရန်၊ 	<p>အခန်း(၆) စာမျက်နှာ(၆-၃) ဇယား(၆-၁) နှင့် အခန်း(၆-၄) တို့တွင် စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်နိုင်သော ထိခိုက်နိုင်မှုများနှင့် လျော့ပါးစေရေး</p>

	<p>of the process, တည်ဆောက် ရေကာလ၊ စီမံကိန်းလည်ပတ်စဉ် ကာလပတ်သိမ်းရေးကာလတို့တွင် ဖြစ်ပေါ်နိုင်သည့် ပတ်ဝန်းကျင် ဆန်းစစ် ဖော်ပြထားပြီး ဆန်းစစ်ချက်အား Exhibit 9.11 University of Washington Risk Assessment မှ Reference လူ၍ အသုံးပြုဖော်ပြထား သည်ကို စီစစ် တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၆-၁၁ မှ ၆-၁၉ တို့တွင် Traffic Impact, Air Quality, Noise Level, Biodiversity Impacts, Archaeology and Heritage, Ground and Surface (Hydrology) Impact, Wastewater and Solid Waste Impacts, Socio-economic Impacts တို့အား လျော့ချမည့် နည်းလမ်းများကို ဖော်ပြထားပြီး Key Issues များအား Environmental Impact Assessment (EIA) Phase အဆင့်တွင် အကောင်အထည်ဖော် ဆောင်ရွက်မည်ဖြစ်ကြောင်း ဖော်ပြထားသည်ကို စီစစ်တွေ့ရှိရပါသည်။ • အစီရင်ခံစာ စာမျက်နှာ ၆-၁၉ မှ ၆-၂၀ တို့တွင် Cumulative Impacts, Assessment Methodology for Cumulative Impacts, Possible Cumulative Impacts တို့အား ဖော်ပြထားကြောင်း စီစစ်တွေ့ရှိရပါသည်။ 	<ul style="list-style-type: none"> • Impact ဆန်းစစ်မှုနှင့်ပတ်သက်၍ (Extreme, High, Substantial, Medium, Low) စသည်ဖြင့် သတ်မှတ် ဖော်ပြရာတွင် သတ်မှတ်ရသည့် အကြောင်းအရာအား ထည့်သွင်းဖော်ပြရန်။ • သက်ရောက်မှုများကို သတ်မှတ်ရာတွင် ထုတ်လုပ်မှု လုပ်ငန်းစဉ်မှ ထွက်ပေါ်လာမည့် Impact များကို ဖော်ပြ၍ လျော့ချမည့် နည်းလမ်းကို ဖော်ပြပေးရန်။ 	<p>နည်းလမ်းများအား ဖော်ပြထားပါသည်။</p>
<p>၆။</p>	<p>အများပြည်သူသဘောထားရယူခြင်းနှင့် သတင်းထုတ်ပြန်ခြင်း</p> <ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ ၇-၁ မှ ၇-၅ တို့တွင် အများပြည်သူ သဘောထားရယူခြင်း နှင့်သတင်း 	<ul style="list-style-type: none"> • EIA အဆင့်တွင် လုပ်ဆောင်သွားမည့် Public Consultation Meeting များ၏ အချိန်ဇယားကို ဖြည့်စွက်ဖော်ပြရန်။ 	<ul style="list-style-type: none"> - စာမျက်နှာ(၇.၅) စာပိုဒ် ၇.၅ တွင်ဖော်ပြထားပါသည်။
	<p>ထုတ်ပြန်ခြင်းတို့အား ၂၀၂၁.၂.၂၀၁၈ ရက်နေ့တွင် အသစ် အာကိုင်များ၊အသစ်များ၊NGOs၊ INGOsနှင့် စီမံကိန်းကြောင့်တိုက်ရိုက်ဖြစ်စေ၊ သွယ်ဝိုက်၍ဖြစ်စေ ထိခိုက်နိုင်သည့် အသစ်များ လူဦးရေ ၃၇၀ တက်ရောက်ခဲ့ကြောင်း၊ အကြံပြုချက်များ၊ ဆွေးနွေး ပြောကြားချက်များအားနောက်ဆက်တွဲ ၂၈၊၂၉၊၃၀၊၃၁၊ ၃၂၊၃၃ တို့တွင် ဖော်ပြထားကြောင်းစီစစ်တွေ့ရှိ ရပါသည်။</p>	<ul style="list-style-type: none"> • အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းနှင့်ပတ်သက်၍ အများပြည်သူတို့အား အသိပေးဖိတ်ကြားဆောင်ရွက်ခဲ့မှု အခြေအနေ၊ အများပြည်သူတို့အား စီမံကိန်းအကြောင်း အရာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာသက်ရောက်နိုင်မှုတို့အား ရှင်းလင်း ဆွေးနွေးပြသည့် အချက်အလက်တို့အား ဖော်ပြပေးရန်။ • စီမံကိန်းလုပ်ငန်းဆောင်ရွက်စဉ်အတွင်း မကျေနပ်မှုများရှိ လာပါက ဖြေရှင်းဆောင်ရွက်ပေးမည့် အစီအစဉ် အသေးစိတ် ထည့်သွင်း ဖော်ပြရန်။ 	<ul style="list-style-type: none"> - နောက်ဆက်တွဲ(၃၃) တွင်ဖော်ပြထားပါသည်။ - စာမျက်နှာ (၇.၅) အခန်း(၇.၅) တွင်ဖော်ပြထားပါသည်။
<p>၇။</p>	<p>EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ(TOR) အစီရင်ခံစာ စာမျက်နှာ ၉-၁ မှ ၉-၃ တို့တွင် EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ (ToR)နှင့်ပတ်သက်၍ EIA အစီရင်ခံစာတွင် ရေးဆွဲဆောင်ရွက်မည့် Report Structure အတိုင်း ဖော်ပြထားကြောင်း စီစစ်တွေ့ရှိရပါသည်။</p>	<ul style="list-style-type: none"> • EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ (TOR)နှင့် ပတ်သက်၍ ဖော်ပြရာတွင် EIA အစီရင်ခံစာတွင် ပြင်ဆင်ရာတွင် စီမံကိန်းလုပ်ငန်းဆောင်ရွက်မှုကြောင့် အဓိက ဖြစ်ပေါ်လာနိုင်သည့်ထိခိုက်နိုင်မှုများအတွက် EIA အစီရင်ခံစာတွင် လေ့လာဆောင်ရွက်သွားမည့် အချက် အလက်များကို ဖြည့်စွက်ဖော်ပြရန်။ • EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ(TOR)နှင့် ပတ်သက်၍ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၄၉၊ ၅၀၊၅၁ နှင့်အညီ ရေးသားပြုစုတင်ပြရန်။ 	<ul style="list-style-type: none"> - စာမျက်နှာ(၉.၄) တွင်ဖော်ပြ ထားပါသည်။ - ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် အညီ ရေးသားပြုစုသွားမည်ဖြစ် ပါသည်။
<p>၈။</p>	<p>အထွေထွေ</p> <ul style="list-style-type: none"> • စီမံကိန်းအဆိုပြုသူမှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီး ဌာန၏ သုံးသပ်ချက်နှင့်အကြံပြုချက်များအတိုင်း ပြင်ဆင် 	<ul style="list-style-type: none"> • စီမံကိန်းအဆိုပြုသူမှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီး ဌာန၏ သုံးသပ်ချက်နှင့်အကြံပြုချက်များအတိုင်း ပြင်ဆင် ၍ ပြန်လည်ရေးဆွဲ ပြင်ဆင်ထားသည့် ဖြေရှင်းချက် 	<ul style="list-style-type: none"> - ညွှန်ကြားထားသည့်အတိုင်း(comment respond table) ဖြင့် ဖော်ပြထားပါသည်။
	<p>၍ ပြန်လည်ရေးဆွဲ ပြင်ဆင်ထားသည့် ဖြေရှင်းချက် များအား ပူးတွဲတင်ပြရန်နှင့် အစီရင်ခံစာ၏ မည်သည့် အပိုင်းတွင် ရေးသားထားသည်ကို (Comment Respond Table) ဖြင့် ဖော်ပြရန်။</p>	<p>များအား ပူးတွဲတင်ပြရန်နှင့် အစီရင်ခံစာ၏ မည်သည့် အပိုင်းတွင် ရေးသားထားသည်ကို (Comment Respond Table) ဖြင့် ဖော်ပြရန်။</p>	

Comment response table of 1st revised scoping report

APPENDIX (3) Instruction letter of ECD to revise Upon The First Revised Scoping Report (June,2020); Suggestion and Compliance Form

Instruction letter of ECD to revise upon the first revised scoping report (June,2020); cover of 2nd revised scoping report; suggestion and compliance form (comment response table) are following:



Instruction letter of ECD , to revise upon 1st revised scoping report



Cover of 2nd revised scoping report

Emerald Brewery Myanmar Ltd. မှ ပြုစုတင်ပြလာသော ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်း လုပ်ငန်းနှင့် ပတ်သက်သည့် နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်း ပထမအကြိမ် ပြင်ဆင်တင်ပြသည့် အစီရင်ခံစာများအပေါ် စိစစ်တွေ့ရှိချက် နှင့် သုံးသပ်အကြံပြုချက်များကို ဒုတိယအကြိမ် ပြင်ဆင်လိုက်နာ ဆောင်ရွက်ချက်များ

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
၁။	အစီရင်ခံစာအကျဉ်းချုပ်			
	<p>အကျဉ်းချုပ် အစီရင်ခံစာ တွင် အောက်ဖော်ပြပါ အချက်များ ထပ်မံ ဖြည့်စွက်၍ မြန်မာ/အင်္ဂလိပ် နှစ်ဘာသာဖြင့် ဖော်ပြရန်-</p> <ul style="list-style-type: none"> • လုပ်ငန်း ကြောင့် ဖြစ်ပေါ်နိုင်သည့် အဓိက ထိခိုက်မှုများအား လျော့ပါးစေရေး နည်းလမ်းများ၊ အဆိုပါ နည်းလမ်းများ အပေါ် အကောင် အထည်ဖော် ဆောင်ရွက်မည့် အစီအစဉ်များ အကျဉ်းချုပ်၊ 	<p>အကျဉ်းချုပ်အစီရင်ခံစာတွင် အောက်ဖော်ပြပါ အချက်များကို မြန်မာ/ အင်္ဂလိပ် နှစ်ဘာသာဖြင့် အောက်ပါတို့ကို ဖော်ပြထားကြောင်း စိစစ်တွေ့ရှိရပါသည်။</p> <ul style="list-style-type: none"> • စီမံကိန်း လုပ်ငန်းနှင့် အဓိက သက်ဆိုင်သည့် ဥပဒေ၊ နည်းဥပဒေ၊ မူဘောင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ အကျဉ်းချုပ်၊ 	<p>အကျဉ်းချုပ် အစီရင်ခံစာတွင် အောက်ဖော်ပြပါ အချက်များ ပြည့်စုံစွာ ဖြည့်စွက်၍ မြန်မာ/ အင်္ဂလိပ် နှစ်ဘာသာဖြင့် ဖော်ပြရန်-</p> <ul style="list-style-type: none"> • အကျဉ်းချုပ် အစီရင်ခံစာတွင် EIA အတွက် နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာနှင့် လုပ်ငန်းတာဝန်များ ပြင်ဆင်ခြင်းမှ ထွက်ပေါ်လာ သော အဓိက တွေ့ရှိချက်များနှင့် အကြံပြုချက်များကို အကျဉ်းချုပ် ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> • အကျဉ်းချုပ် အစီရင်ခံစာတွင် EIA အတွက် နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာနှင့် လုပ်ငန်းတာဝန်များ ပြင်ဆင်ခြင်းမှ ထွက်ပေါ်လာသော အဓိက တွေ့ရှိချက်များနှင့် အကြံပြုချက်များကို အကျဉ်းချုပ် အစီရင်ခံစာ (မြန်မာဘာသာ စာမျက်နှာ (၂) တွင် နယ်ပယ်သတ်မှတ်ခြင်း အဓိကတွေ့ရှိချက်နှင့် အကြံပြုချက်များ ခေါင်းစဉ်ဖြင့်လည်းကောင်း၊ Executive Summary (အင်္ဂလိပ်ဘာသာ) စာမျက်နှာ (၁၅) တွင် Scoping, Main Facts and Suggestion ခေါင်းစဉ်ဖြင့် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> • စီမံကိန်းလုပ်ငန်း နှင့် အဓိက သက်ဆိုင်သည့် ဥပဒေ၊ နည်းဥပဒေ၊ မူဘောင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ အကျဉ်းချုပ်၊ 	<ul style="list-style-type: none"> • စီမံကိန်း အကြောင်းအရာ နှင့် ပတ်ဝန်းကျင် အကြောင်းအရာများကို အကျဉ်းချုပ် 	<ul style="list-style-type: none"> • အဓိက ထိခိုက်နိုင်မှုများကို လျော့ပါးစေရေး နည်းလမ်းများနှင့် ယင်းတို့အား စီမံခန့်ခွဲမှု အကျဉ်းချုပ် 	<ul style="list-style-type: none"> • အဓိက ထိခိုက်နိုင်မှုများကို လျော့ပါးစေသော နည်းလမ်းများနှင့် စီမံခန့်ခွဲမှု အကျဉ်းချုပ်ကို မြန်မာဘာသာ အကျဉ်းချုပ် အစီရင်ခံစာ စာမျက်နှာ (၃) တွင်

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
				<p>အဓိကထိခိုက်မှုများနှင့် လျော့နည်းရန် ဆောင်ရွက်ချက်များ ခေါင်းစဉ်ဖြင့် လည်းကောင်း၊ အင်္ဂလိပ်ဘာသာဖြင့် စာမျက်နှာ (၁၆)တွင် Potential Impacts and Mitigation Measure in Brief ခေါင်းစဉ်ဖြင့် လည်းကောင်း တင်ပြထားပါသည်။</p>
	<ul style="list-style-type: none"> နယ်ပယ် အတိုင်းအတာ သတ်မှတ်ခြင်း အစီရင်ခံစာ ရေးသားရန်အတွက် ကွင်းဆင်း လေ့လာစဉ်အတွင်း ဆောင်ရွက်ခဲ့ သော လုပ်ငန်းများ၊ အဓိက တွေ့ရှိချက်များနှင့်အကြံပြုချက်များ အကျဉ်းချုပ်၊ 	<ul style="list-style-type: none"> လေ့လာမည့် နယ်ပယ်ဧရိယာနှင့် အဆိုပါ နယ်ပယ်ဧရိယာ သတ်မှတ်ရသည့် အကြောင်းအရင်းများကို ဖြည့်စွက်ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် လုပ်ငန်းတာဝန်များတွင် ပါဝင်သော အဓိကပြဿနာများ အကျဉ်းချုပ် ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် လုပ်ငန်းတာဝန်များတွင် ပါဝင်သော အဓိကပြဿနာများကို မြန်မာဘာသာဖြင့် အကျဉ်းချုပ် အစီရင်ခံစာ စာမျက်နှာ(၄) တွင် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်တွင် အဓိက ပြဿနာများ ခေါင်းစဉ်ဖြင့်လည်းကောင်း၊ အင်္ဂလိပ်ဘာသာဖြင့် စာမျက်နှာ (၁၇)တွင် Main Problems of EIA Procedure ခေါင်းစဉ်ဖြင့် လည်းကောင်းတင်ပြထားပါသည်။
	<ul style="list-style-type: none"> လေ့လာမည့် နယ်ပယ်ဧရိယာနှင့် အဆိုပါ နယ်ပယ်ဧရိယာ သတ်မှတ် ရသည့် အကြောင်းအရင်းများကို ဖြည့်စွက် ဖော်ပြပေးရန်၊ 		<ul style="list-style-type: none"> စီမံကိန်း ဆောင်ရွက်မှုကြောင့် ဖြစ်ပေါ်သော အဓိက ထိခိုက်မှုများနှင့် ဘေးအန္တရာယ် ဆိုင်ရာ သက်ရောက်မှုများကို ဖော်ပြရန်နှင့် လျော့ချနိုင်မည့် နည်းလမ်းများကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> ဖြစ်ပေါ်နိုင်သော အဓိက ထိခိုက်မှုများနှင့် ဘေးအန္တရာယ် ဆိုင်ရာ သက်ရောက်မှုများနှင့် လျော့ချနိုင်မည့် နည်းလမ်းများကို အကျဉ်းချုပ် အစီရင်ခံစာ မြန်မာဘာသာဖြင့် စာမျက်နှာ(၅) တွင်လည်းကောင်း၊ အင်္ဂလိပ်ဘာသာဖြင့် စာမျက်နှာ(၁၇)တွင်လည်းကောင်း ဖော်ပြထားပါသည်။
	<ul style="list-style-type: none"> EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ (TOA) အကျဉ်းချုပ်၊ 			



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
၂။	မူဝါဒ၊ ဥပဒေဆိုင်ရာနှင့် အဖွဲ့အစည်းဆိုင်ရာမူဘောင်			
	<p>စီမံကိန်း၏ ကုမ္ပဏီ/အဖွဲ့အစည်းတွင် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ မူဝါဒများ ချမှတ်ထားပါက ထည့်သွင်း ဖော်ပြရန်၊</p> <p>အစီရင်ခံစာတွင် လုပ်ငန်းနှင့် သက်ဆိုင်သည့် အောက်ဖော်ပြပါ တည်ဆဲ ဥပဒေများကို ဖော်ပြရန်နှင့် ဥပဒေများကို ရေးသားဖော်ပြရာတွင် ဥပဒေများ၏ ပုဒ်မ၊ ပုဒ်မခွဲများကို ညွှန်း၍ စီမံကိန်းအဆိုပြုသူမှ လိုက်နာဆောင်ရွက်မည့် ကတိကဝတ်ကို ထည့်သွင်း ဖော်ပြထားပါသည်။</p> <ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)၊ ပုဒ်မ (၇(က))၊ ၁၄၊ ၁၅၊ ၂၄၊ ၂၉) 	<p>အစီရင်ခံစာတွင် လုပ်ငန်းနှင့် သက်ဆိုင်သည့် အောက်ဖော်ပြပါ တည်ဆဲ ဥပဒေများနှင့် ဥပဒေများကို ရေးသားဖော်ပြရာတွင် ဥပဒေများ၏ ပုဒ်မ၊ ပုဒ်မခွဲများကို ညွှန်း၍ စီမံကိန်း အဆိုပြုသူမှ လိုက်နာ ဆောင်ရွက်မည့် ကတိကဝတ်ကို ထည့်သွင်း ဖော်ပြထားပါသည်။</p> <ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)၊ ပုဒ်မ ၇(က)၊ ၁၄၊ ၁၅၊ ၂၄၊ ၂၉) 	<p>အစီရင်ခံစာတွင် လုပ်ငန်းနှင့် သက်ဆိုင်သည့် အောက်ဖော်ပြပါ တည်ဆဲဥပဒေများ၏ ပုဒ်မ၊ ပုဒ်မခွဲများကို ဖြည့်စွက်ဖော်ပြပေးရန်။</p> <ul style="list-style-type: none"> • ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ ၂၀၁၅ (အပိုဒ် ၁၁၃၊ ၁၁၅၊ ၁၁၇) 	<ul style="list-style-type: none"> • ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများကို အပိုဒ် ၃.၅.၁ တွင် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး နည်းဥပဒေများ (၂၀၀၄) (နည်း ၆၉) 	<ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး နည်းဥပဒေများ (၂၀၀၄) (နည်း ၆၉) 	<ul style="list-style-type: none"> • မြန်မာ့အာမခံ လုပ်ငန်းဥပဒေ ၁၉၉၃ (ပုဒ်မ ၁၅) 	<ul style="list-style-type: none"> • မြန်မာ့အာမခံ လုပ်ငန်းဥပဒေကို အပိုဒ် ၃.၅.၂ တွင် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ ၂၀၁၅ (အပိုဒ် ၁၀၂ မှ ၁၁၀၊ ၁၁၃၊ ၁၁၅၊ ၁၁၇) 	<ul style="list-style-type: none"> • ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ ၂၀၁၅ (အပိုဒ် ၁၀၂ မှ ၁၁၀) 	<ul style="list-style-type: none"> • စံချိန်စံညွှန်း သတ်မှတ်ခြင်းဆိုင်ရာ ဥပဒေ ၂၀၁၄ (ပုဒ်မ ၁၇၊ ၁၉၊ ၂၆) 	<ul style="list-style-type: none"> • စံချိန်စံညွှန်း သတ်မှတ်ခြင်းဆိုင်ရာ ဥပဒေကို အပိုဒ် ၃.၅.၃ တွင် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> • အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ 	<ul style="list-style-type: none"> • အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ 	<ul style="list-style-type: none"> • စီမံကိန်းနှင့် သက်ဆိုင်သည့် မြန်မာ 	<ul style="list-style-type: none"> • စီမံကိန်းနှင့် သက်ဆိုင်သည့် မြန်မာ



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)	အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)	နိုင်ငံမှ လက်မှတ်ရေးထိုးထား သော သို့မဟုတ် အတည်ပြုထားသော နိုင်ငံ တကာ နှင့် ဒေသဆိုင်ရာ သဘောတူ စာချုပ်များကို ထည့်သွင်း ဖော်ပြပေး ရန်၊	နိုင်ငံမှ လက်မှတ် ရေးထိုးထားသော သို့မဟုတ် အတည်ပြုထားသော နိုင်ငံ တကာ နှင့် ဒေသဆိုင်ရာ သဘောတူ စာချုပ်များကို အပိုဒ် ၃.၅.၄ တွင်တင်ပြ ထားပါသည်။
	<ul style="list-style-type: none"> တိုင်းရင်းသား လူမျိုးများ အခွင့် အရေး ကာကွယ်စောင့်ရှောက် ရေးဥပဒေ၊ (၂၀၁၅) (ပုဒ်မ ၅) 	<ul style="list-style-type: none"> တိုင်းရင်းသား လူမျိုးများ အခွင့် အရေး ကာကွယ်စောင့်ရှောက် ရေးဥပဒေ၊ (၂၀၁၅) (ပုဒ်မ ၅) 	<ul style="list-style-type: none"> စီမံကိန်း အဆိုပြုသူမှ ဘီယာထုတ် လုပ်ခြင်း လုပ်ငန်းနှင့် သက်ဆိုင်သည့် လိုက်နာ ဆောင်ရွက်ရမည့် စံချိန် စံညွှန်းများကို ပြည့်စုံစွာ ထည့်သွင်း ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> စီမံကိန်း အဆိုပြုသူမှ ဘီယာထုတ် လုပ် ခြင်းလုပ်ငန်းနှင့် သက်ဆိုင်သည့် လိုက် နာဆောင်ရွက်ရမည့် စံချိန်စံညွှန်းများကို အပိုဒ် ၃.၅.၅ တွင် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှုဥပဒေ၊ ၂၀၁၆ (ပုဒ်မ ၅၀(ဃ)၊ ၅၁၊ ၆၅(စ) မှ (ထ)၊ ၇၃) 	<ul style="list-style-type: none"> မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှုဥပဒေ၊ ၂၀၁၆ (ပုဒ်မ ၅၀(ဃ)၊ ၅၁၊ ၆၅(စ) မှ (ထ)၊ ၇၃) 		
	<ul style="list-style-type: none"> မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု နည်း ဥပဒေများ၊ ၂၀၁၇ (နည်း ၂၀၂၊ ၂၀၃၊ ၂၀၆၊ ၂၁၂) 	<ul style="list-style-type: none"> မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု နည်း ဥပဒေများ၊ ၂၀၁၇ (နည်း ၂၀၂၊ ၂၀၃၊ ၂၀၆၊ ၂၁၂) 		
	<ul style="list-style-type: none"> မြန်မာ့အာမခံလုပ်ငန်း ဥပဒေ၊ ၁၉၉၃ (ပုဒ်မ ၁၅၊ ၁၆) 	<ul style="list-style-type: none"> မြန်မာ့အာမခံလုပ်ငန်း ဥပဒေ၊ ၁၉၉၃ (ပုဒ်မ ၁၅၊ ၁၆) 		
	<ul style="list-style-type: none"> ပုဂ္ဂလိက စက်မှုလုပ်ငန်းဥပဒေ၊ ၁၉၉၀ (ပုဒ်မ ၄၊ ၁၃ (ခ) (စ) (ဆ)၊ ၁၅ (က) (ခ)) 	<ul style="list-style-type: none"> ပုဂ္ဂလိက စက်မှုလုပ်ငန်းဥပဒေ၊ ၁၉၉၀ (ပုဒ်မ ၄၊ ၁၃ (ခ) (စ) (ဆ)၊ ၁၅ (က) (ခ)) 		
	<ul style="list-style-type: none"> ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်း များ အန္တရာယ်မှ တားဆီးကာ ကွယ် ခြင်းဥပဒေ၊ ၂၀၁၃ (ပုဒ်မ ၁၅၊ ၁၆၊ ၁၇၊ ၂၂၊ ၂၇) 	<ul style="list-style-type: none"> ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်း များ အန္တရာယ်မှ တားဆီးကာ ကွယ် ခြင်းဥပဒေ၊ ၂၀၁၃ (ပုဒ်မ ၁၅၊ ၁၆၊ ၁၇၊ ၂၂၊ ၂၇) 		
	<ul style="list-style-type: none"> မြန်မာ့မီးသတ် တပ်ဖွဲ့ဥပဒေ၊ 	<ul style="list-style-type: none"> မြန်မာ့မီးသတ် တပ်ဖွဲ့ဥပဒေ၊ 		



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	၂၀၁၅ (ပုဒ်မ ၂၅)	၂၀၁၅ (ပုဒ်မ ၂၅)		
	<ul style="list-style-type: none"> ရေနံနှင့် ရေနံထွက် ပစ္စည်းဆိုင်ရာဥပဒေ၊ ၂၀၁၇ (ပုဒ်မ ၉ (က) (င)၊ ၁၀ (ခ)၊ (လောင်စာဆီ/သယ်) ပုဒ်မ ၁၁၊ (ကန်ဖြင့် လှောင်လျှင်) ပုဒ်မ ၁၀(က)(ဂ) (ဃ)) 	<ul style="list-style-type: none"> ရေနံနှင့် ရေနံထွက် ပစ္စည်းဆိုင်ရာဥပဒေ၊ ၂၀၁၇ (ပုဒ်မ ၉ (က) (င)၊ ၁၀ (ခ)၊ (လောင်စာဆီ/သယ်) ပုဒ်မ ၁၁၊ (ကန်ဖြင့် လှောင်လျှင်) ပုဒ်မ ၁၀(က)(ဂ) (ဃ)) 		
	<ul style="list-style-type: none"> မော်တော်ယာဉ်ဥပဒေ၊ ၂၀၁၅ 	<ul style="list-style-type: none"> မော်တော်ယာဉ်ဥပဒေ၊ ၂၀၁၅ 		
	<ul style="list-style-type: none"> စံချိန်စံညွှန်း သတ်မှတ်ခြင်းဆိုင်ရာ ဥပဒေ၊ ၂၀၁၄ (ပုဒ်မ ၁၇၊ ၁၉၊ ၂၆) 	<ul style="list-style-type: none"> စံချိန်စံညွှန်း သတ်မှတ်ခြင်းဆိုင်ရာ ဥပဒေ၊ ၂၀၁၄ (ပုဒ်မ ၃(ဂ)၊ (င)၊ ၂၉) 		
	<ul style="list-style-type: none"> ယဉ်ကျေးမှု အမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ၊ ၁၉၉၈ (ပုဒ်မ ၁၃၊ ၁၅) 	<ul style="list-style-type: none"> ယဉ်ကျေးမှု အမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ၊ ၁၉၉၈ (ပုဒ်မ ၁၃၊ ၁၅) 		
	<ul style="list-style-type: none"> ရှေးဟောင်း ဝတ္ထုပစ္စည်း ကာကွယ် ထိန်းသိမ်းရေး ဥပဒေ၊ ၂၀၁၅ (ပုဒ်မ ၁၂) 	<ul style="list-style-type: none"> ရှေးဟောင်းဝတ္ထုပစ္စည်း ကာကွယ် ထိန်းသိမ်းရေး ဥပဒေ၊ ၂၀၁၅ (ပုဒ်မ ၁၂) 		
	<ul style="list-style-type: none"> ရှေးဟောင်းအဆောက်အအုံ ကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၅ (ပုဒ်မ ၁၂၊ ၁၅၊ ၂၀(ခ)) 	<ul style="list-style-type: none"> ရှေးဟောင်း အဆောက်အအုံ ကာကွယ်ထိန်းသိမ်းရေးဥပဒေ၊ ၂၀၁၅ (ပုဒ်မ ၁၂၊ ၁၅၊ ၂၀(ခ)) 		
	<ul style="list-style-type: none"> မြန်မာ အင်ဂျင်နီယာ ကောင်စီ ဥပဒေ၊ ၂၀၁၃ (ပုဒ်မ ၃၇၊ ၃၄) 	<ul style="list-style-type: none"> မြန်မာ အင်ဂျင်နီယာ ကောင်စီ ဥပဒေ၊ ၂၀၁၃ (ပုဒ်မ ၃၇၊ ၃၄) 		
	<ul style="list-style-type: none"> ပို့ကုန်သွင်းကုန်ဥပဒေ၊ ၂၀၁၂ (ပုဒ်မ ၇) ရှိလျှင် 	<ul style="list-style-type: none"> ပို့ကုန်သွင်းကုန် ဥပဒေ၊ ၂၀၁၂ (ပုဒ်မ ၇) ရှိလျှင် 		



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	• အလုပ်သမားအဖွဲ့အစည်း ဥပဒေ၊ ၂၀၁၁	• အလုပ်သမားအဖွဲ့အစည်း ဥပဒေ၊ ၂၀၁၁		
	• အလုပ်သမား အငြင်းပွားမှု ဖြေရှင်းရေးဥပဒေ၊ ၂၀၁၂	• အလုပ်သမား အငြင်းပွားမှု ဖြေရှင်းရေးဥပဒေ၊ ၂၀၁၂		
	• အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ၊ ၂၀၁၃	• အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ၊ ၂၀၁၃		
	• အနည်းဆုံးအခကြေးငွေဥပဒေ၊ ၂၀၁၃	• အနည်းဆုံးအခကြေးငွေဥပဒေ၊ ၂၀၁၃		
	• အခကြေးငွေပေးချေရေးဥပဒေ၊ ၂၀၁၆	• အခကြေးငွေပေးချေရေးဥပဒေ၊ ၂၀၁၆		
	• လူမှုဖူလုံရေးဥပဒေ၊ ၂၀၁၂	• လူမှုဖူလုံရေးဥပဒေ၊ ၂၀၁၂		
	• Workmen Compensation Act, 1923	• Workmen Compensation Act, 1923		
	• အလုပ်ရုံများအက်ဥပဒေ၊ ၁၉၅၁	• အလုပ်ရုံများအက်ဥပဒေ၊ ၁၉၅၁		
	• ခွင့်နှင့် အလုပ်ပိတ်ရက်များ ဥပဒေ၊ ၁၉၅၁	• ခွင့်နှင့် အလုပ်ပိတ်ရက်များ ဥပဒေ၊ ၁၉၅၁		
	• မြန်မာနိုင်ငံ ပြည်သူ့ကျန်းမာရေး ဥပဒေ၊ ၁၉၇၂ (ပုဒ်မ ၃၊ ၅)	• မြန်မာနိုင်ငံ ပြည်သူ့ကျန်းမာရေး ဥပဒေ၊ ၁၉၇၂ (ပုဒ်မ ၃၊ ၅)		
	• ကူးစက်ရောဂါများ ကာကွယ် နှိမ်နင်းရေးဥပဒေ၊ ၁၉၉၅ (ပုဒ်မ ၃ (က) (င)၊ ၄၊ ၁၁)	• ကူးစက်ရောဂါများ ကာကွယ် နှိမ်နင်းရေးဥပဒေ၊ ၁၉၉၅ (ပုဒ်မ ၃ (က) (င)၊ ၄၊ ၁၁)		
	• စားသုံးသူ အကာအကွယ်ပေးရေး ဥပဒေ ၂၀၁၄ (ပုဒ်မ ၇(ခ)၊ ၄၊ ၆(ခ)၊ ၂)	• စားသုံးသူ အကာအကွယ်ပေးရေး ဥပဒေ ၂၀၁၄ (ပုဒ်မ ၇(ခ)၊ ၄၊ ၆(ခ)၊ ၂)		



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	အစီရင်ခံစာတွင် စီမံကိန်းနှင့် သက်ဆိုင်သည့် ဥပဒေ၊ နည်းဥပဒေများ၊ လုပ်ထုံးလုပ်နည်းနှင့် လမ်းညွှန်ချက်များကို ဖော်ပြရာတွင် ထုတ်ပြန်ထားသည့် ခုနှစ်များကို ညွှန်း၍ ဖော်ပြရန်၊			
၃။	စီမံကိန်းအကြောင်းအရာ			
	<ul style="list-style-type: none"> စီမံကိန်းတွင် တစ်နေ့ အသုံးပြုမည့် စွမ်းအင်လိုအပ်ချက် ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> အစီရင်ခံစာ စာမျက်နှာ (၄-၁၃) နှင့် (၄-၁၄) တို့တွင် အသုံးပြုမည့် Transformer နှင့် Generator များ၏ Capacity များကို ထည့်သွင်း ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> အစီရင်ခံစာတွင် စီမံကိန်းတွင် အသုံးပြုမည့် CO2 Plant, Water Treatment Plant, Wastewater Treatment Plant, Boiler နှင့် ပတ်သက်၍ System Process များ ရှင်းလင်း ဖော်ပြပေးရန်နှင့် အဆိုပါ စနစ် တပ်ဆင်ရသည့် အကြောင်းအရင်းများဖြင့် ရှင်းလင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> စီမံကိန်းတွင် အသုံးပြုမည့် CO₂ Plant နှင့်စပ်လျဉ်းသည့် အချက်အလက်များကို စာမျက်နှာ ၄-၁၅ အပိုဒ်ခွဲ ၄.၁၀.၄ တွင်လည်းကောင်း၊ အသေးစိတ် drawing များကို နောက်ဆက်တွဲ(၅) တွင်လည်းကောင်း၊ တင်ပြထားပါသည်။ စီမံကိန်းတွင် အသုံးပြုမည့် water treatment Plant နှင့်စပ်လျဉ်း၍ စာမျက်နှာ ၄-၂၁ တွင် အပိုဒ်ခွဲငယ် ၄.၁၃.၁ Water Treatment Plant ခေါင်းစဉ်ဖြင့်လည်းကောင်း၊ အသေးစိတ် drawing ကို နောက်ဆက်တွဲ(၈) တွင်လည်းကောင်း၊ တင်ပြထားပါသည်။ စီမံကိန်းတွင် အသုံးပြုမည့် Wastewater treatment Plant နှင့်စပ်လျဉ်း၍ စာမျက်နှာ ၄-၂၂ တွင် အပိုဒ်ခွဲငယ် ၄.၁၃.၂ WasteWater Treatment Plant ခေါင်းစဉ်ဖြင့် လည်းကောင်း၊

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
				<p>အသေးစိတ် drawing ကို နောက်ဆက်တွဲ(၉) တွင်လည်းကောင်း၊ တင်ပြထားပါသည်။</p> <ul style="list-style-type: none"> • စီမံကိန်းတွင် အသုံးပြုမည့် Boiler နှင့် ပတ်သက်၍ စာမျက်နှာ ၄-၁၆ တွင် အပိုဒ်ခွဲငယ် ၄.၁၀.၅ Boiler Section ခေါင်းစဉ်ဖြင့် လည်းကောင်း၊ ဘွိုင်လာ အသုံးပြုခွင့် လက်မှတ်များကို နောက်ဆက်တွဲ(၆) တွင်လည်းကောင်း၊ တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> • စီမံကိန်းတွင် အသုံးပြုမည့် တစ်ရက်/ တစ်လ အသုံးပြုမည့် ကုန်ကြမ်း ပမာဏ ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> • အစီရင်ခံစာ စာမျက်နှာ (၄-၁၁) တွင် အသုံးပြုမည့် ကုန်ကြမ်း ပမာဏများကို ထည့်သွင်းဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> • စက်ရုံများနှင့် အခြေခံအဆောက်အအုံများ ဒီဇိုင်းရေးဆွဲခြင်းနှင့် ကန်ထရိုက် စာချုပ်များ ချုပ်ဆိုခြင်း၊ အကြိုတည်ဆောက်ခြင်း၊ တည်ဆောက်ခြင်း၊ လုပ်ငန်းလည်ပတ် ဆောင်ရွက်ခြင်းနှင့် ပိတ်သိမ်းခြင်းတို့၏ စီမံကိန်း လုပ်ငန်းများအတွက် စီစဉ်ထားသော အချိန်ဇယားအား ထည့်သွင်းဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> • စက်ရုံများနှင့် အခြေခံ အဆောက်အအုံများ ဒီဇိုင်းရေးဆွဲခြင်း၊ ကန်ထရိုက် စာချုပ်များ ချုပ်ဆိုခြင်း၊ အကြိုတည်ဆောက်ခြင်း၊ တည်ဆောက်ခြင်း၊ လုပ်ငန်းလည်ပတ် ဆောင်ရွက်ခြင်း တို့အတွက် စီစဉ်ထားသော အချိန်ဇယားကို စာမျက်နှာ ၄-၉ နှင့် ၄-၁၀ တို့တွင် အပိုဒ် ၄.၆ Implementation Schedule ခေါင်းစဉ်ဖြင့် လည်းကောင်း၊ လုပ်ငန်း လုပ်ကိုင်သည့် ကုမ္ပဏီနှင့် ဆပ်လိုင်ယာ စာရင်းကို အပိုဒ် ၄-၅ List of Suppliers/ Contractors for the Project ခေါင်းစဉ်ဖြင့် တင်ပြထားပါသည်။

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	<ul style="list-style-type: none"> ကုန်ချော တစ်နေ့ ထုတ်လုပ်နိုင်မှု ပမာဏအား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> ကုန်ချောတစ်နေ့ ထုတ်လုပ်နိုင်မှု ပမာဏအား အစီရင်ခံစာ စာမျက်နှာ (၄-၁၂) တွင် ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> အခြား ဆောင်ရွက်နိုင်သော စီမံကိန်း နည်းလမ်း များကိုလည်း ရှင်းလင်း ဖော်ပြပေးရန် နှင့် အစားထိုးနည်းလမ်းများအား နှိုင်းယှဉ်၍ စီမံကိန်း နည်းလမ်းတစ်ခုအား အပြီးသတ် ရွေးချယ်သည့် နည်းစနစ်ကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> အခြား ဆောင်ရွက်နိုင်သော စီမံကိန်း နည်းလမ်းများကို Project Alternative ခေါင်းစဉ်ဖြင့် အပိုဒ် ၄.၂၀.၁ တွင် no project option ဟု တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> စွန့်ပစ်ပစ္စည်း ထွက်ရှိမှုပမာဏ/ စီမံခန့်ခွဲမှု ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စွန့်ပစ်ပစ္စည်း ထွက်ရှိမှုပမာဏ/ စီမံခန့်ခွဲမှု နှင့် စွန့်ပစ်ရည် ထွက်ရှိမှုပမာဏ/ စီမံခန့်ခွဲမှု တို့အား စာမျက်နှာ (၄-၁၄)၊ (၄-၁၅)၊ Appendices 26, 27 တို့တွင် ထည့်သွင်းဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> အခြား ဆောင်ရွက်နိုင်သည့် နည်းလမ်း တစ်ခုချင်းအလိုက် ကြိုတင်ခန့်မှန်းချက်နှင့်အတူ ထိခိုက်ဖွယ် ရှိနိုင်သည့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ သက်ရောက်မှုများနှင့် ဘေးအန္တရာယ်များ အပေါ် အကဲဖြတ်၍ အသေးစိတ်တို့အား ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> အပိုဒ် ၄.၂၀.၂ Site Alternative ခေါင်းစဉ်ဖြင့် တင်ပြထားပါသည်။ ယင်းတွင် သယ်ယူပို့ဆောင်ရေး ကောင်းမွန်ခြင်း၊ ဖွံ့ဖြိုးပြီး နေရာဒေသဖြစ်ခြင်းနှင့် ရေလုံလောက်ခြင်း၊ စွမ်းအင်လုံလောက်ခြင်းတို့ကို ဖော်ပြထားပါသည်။ အပိုဒ် ၄.၂၀.၃ Raw Materials Alternative ခေါင်းစဉ်ဖြင့် Refrigerant နှင့် Adjunct တို့ကို တင်ပြထားပါသည်။ ပတ်ဝန်းကျင် လူမှုရေးဆိုင်ရာ ဘေးအန္တရာယ် ဖော်ထုတ်မှုများကို Chosen Alternatives and Impacts Assessment ခေါင်းစဉ်ဖြင့် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> စွန့်ပစ်ရည် ထွက်ရှိမှုပမာဏ/ စီမံခန့်ခွဲမှု တို့အားဖော်ပြရန်၊ 		<ul style="list-style-type: none"> အမှန်ဖြစ်နိုင်သော အခြားဆောင်ရွက်နိုင်သည့် နည်းလမ်းများမှာ စီမံကိန်းပိုင်ရှင် အနေဖြင့် လုပ်ကိုင်နိုင်သည့် ဧရိယာ/ နယ်ပါယ် အတွင်း ရှိ/မရှိ 	<ul style="list-style-type: none"> Adjunct အဖြစ် အသုံးပြုသော rice ကို စီမံကိန်းပိုင်ရှင် အနေဖြင့် ပြောင်းလဲ အသုံးပြုနိုင်ပါသည်။

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
			ဆန်းစစ်ဖော်ပြပေးရန်၊	
	<ul style="list-style-type: none"> စီမံကိန်းအတွင်း တည်ဆောက်ထားရှိမည့် အခြေခံအဆောက်အအုံများ၏ တည်နေရာပြ Layout Plan အား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စီမံကိန်းအတွင်း တည်ဆောက်ထားရှိမည့် အခြေခံအဆောက်အအုံများ၏ တည်နေရာပြ Layout Plan အား စာမျက်နှာ ၄-၁၈ နှင့် ၄-၁၉ နှင့် နောက်ဆက်တွဲ ၂၄ တို့တွင် ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> ဖြစ်နိုင်သော အခြား ဆောင်ရွက်နိုင်သည့် နည်းလမ်းများကို နှိုင်းယှဉ်ဖော်ပြပေးရန် နှင့် နှစ်သက်သော အခြား ဆောင်ရွက်နိုင်သည့် နည်းလမ်း ရွေးချယ်ခြင်းအတွက် အကျိုးအကြောင်း ဖော်ပြချက်များကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> ဖြစ်နိုင်သော အခြား ဆောင်ရွက်နိုင်သည့် နည်းလမ်းများကို အမိုးနီးယား နှင့် ဟိုက်ဒရိုကလိုရို ကာဗွန်၊ ဆန် နှင့် မော့တို့ကို တင်ပြထားပြီး ယင်းတို့ကို ရွေးချယ်ရသည့် အကျိုးအကြောင်းကို အပိုဒ် ၄.၂၀.၃ Raw Materials Alternative ခေါင်းစဉ်ဖြင့် တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> လောင်စာ သိုလှောင် ထားရှိမှု အခြေအနေ နှင့် စီမံခန့်ခွဲမှု တို့အား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> လောင်စာ သိုလှောင် ထားရှိမှု အခြေအနေ နှင့် စီမံခန့်ခွဲမှု တို့အား စာမျက်နှာ (၄-၁၃) တွင် ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> နည်းပညာဆိုင်ရာ အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းများကို ထည့်သွင်း စဉ်းစားထားမှုများကို ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> နည်းပညာဆိုင်ရာ အခြား ဆောင်ရွက်နိုင်သော နည်းလမ်းများကို ထည့်သွင်း စဉ်းစားထားမှု မရှိပါ။
	<ul style="list-style-type: none"> စီမံကိန်းတွင် အသုံးပြုမည့် CO₂ Plant, Water Treatment Plant, Wastewater Treatment Plant, Boiler တို့၏ အရွယ်အစားနှင့် နည်းစနစ်တို့အား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စီမံကိန်းတွင် အသုံးပြုမည့် CO₂ Plant, Water Treatment Plant, Wastewater Treatment Plant, Boiler တို့၏ Capacity များနှင့် System Layout များကို စာမျက်နှာ (၄-၁၂) နှင့် နောက်ဆက်တွဲ ၂၆၊ ၂၇ နှင့် ၂၈ တို့တွင် ထည့်သွင်း ဖော်ပြ ထားသော်လည်း ပြည့်စုံမှု မရှိပါကြောင်း စိစစ်တွေ့ရှိရပါသည်။ 		
	<ul style="list-style-type: none"> Boiler ခေါင်းတိုင် အမြင့်အား 	<ul style="list-style-type: none"> Boiler ခေါင်းတိုင် အမြင့်အား စာ 		



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	<p>ဖော်ပြရန်၊</p> <ul style="list-style-type: none"> စီမံကိန်း လုပ်ငန်း၏ တည်ဆောက်ရေးနှင့် လုပ်ငန်းလည်ပတ်သည့် အဆင့်များနှင့် ဆက်စပ်ဆောင်ရွက်မည့် အခြားစီမံကိန်းများ၊ ဖွံ့ဖြိုးရေးလုပ်ငန်းများ ရှိပါက ဖော်ပြရန်၊ 	<p>မျက်နှာ ၄-၁၂ တွင် ဖော်ပြထားပါသည်။</p>		
	<ul style="list-style-type: none"> စက်ရုံ ဝန်ထမ်းများ အတွက် ဆောင်ရွက် ထားရှိမည့် အစီအစဉ်များကို ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စက်ရုံ ဝန်ထမ်းများ အတွက် ဆောင်ရွက် ထားရှိမည့် အစီအစဉ်များကို စာမျက်နှာ ၄-၂၁ မှ ၂၂ အထိ ဖော်ပြထားပါသည်။ 		
	<ul style="list-style-type: none"> စီးဆင်းရေ (Storm Water) နှင့် ရေမြောင်း စနစ် (Drainage System) အခြေအနေတို့ အား ဖော်ပြရန်၊ 	<ul style="list-style-type: none"> စီးဆင်းရေ (Storm Water) နှင့် ရေမြောင်းစနစ် (Drainage System) အခြေအနေ တို့နှင့် ပတ်သက်၍ ဓာတ်ပုံမှတ်တမ်းများဖြင့် စာမျက်နှာ ၄-၁၅ တွင် ဖော်ပြထားပါသည်။ 		
၄။	လက်ရှိပတ်ဝန်းကျင်အခြေအနေ			
	<ul style="list-style-type: none"> စီမံကိန်းလုပ်ငန်း ဆောင်ရွက်မှု ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများအတွက် လေ့လာသွားမည့် ဧရိယာအား သတ်မှတ်ရသည့် အကြောင်းအရင်းနှင့် လေ့လာမည့်ဧရိယာအတွင်း ပါဝင်သည့် 	<ul style="list-style-type: none"> စီမံကိန်းလုပ်ငန်း ဆောင်ရွက်မှု ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများအတွက် လေ့လာသွားမည့် ဧရိယာအား သတ်မှတ်ရသည့် အကြောင်းအရင်းနှင့် လေ့လာမည့်ဧရိယာအတွင်း ပါဝင်သည့် 	<ul style="list-style-type: none"> အခြေပြု အချက်အလက်များ တွင် စီမံကိန်း လုပ်ငန်းများ မစတင်မီ ဖြစ်နိုင်သည့် ပြောင်းလဲမှုများနှင့် ပတ်သက်သော အချက်အလက်များ ရှိပါက ထည့်သွင်းဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> အခြေပြု အချက်အလက်များတွင် စီမံကိန်းလုပ်ငန်းများ မစတင်မီ ဖြစ်နိုင်သည့် ပြောင်းလဲမှုများကို မင်္ဂလာဒုံမြို့နယ်၏ ပြောင်းလဲမှုများအဖြစ် အပိုဒ် ၅.၂.၁ တွင် Day time temperature; Night time temperature; Wet and dry season

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	ထူးခြားသည့် သွင်ပြင်လက္ခဏာ များ အကြောင်း ရှင်းလင်းဖော်ပြ ပေးရန်၊	ထူးခြားသည့် သွင်ပြင်လက္ခဏာ များ အကြောင်းကို အခန်း (၅.၃.၁၂)၊ (၅.၄.၆)၊ (၅.၄.၁၂)၊ (၅.၅.၃) နှင့် (၅.၆.၁) တို့တွင် သက်ဆိုင်ရာ Element များအလိုက် ထည့်သွင်း ဖော်ပြထားပါသည်။		contribution to annual rainfall in Mingaladon; Most Extreme Rainfall Events Recorded in Mingaladon; Extreme Rainfall Events Recorded in Dry Season; Annual Average Maximum Temperature in Mingaladon; Annual Average Minimum Temperature in Mingaladon; တို့ကို တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> ထိခိုက်ခံရ နိုင်သည့် ဧရိယာများ (Affected Areas) အပါအဝင်၊ လေ့လာသည့် ဧရိယာ (Study Area) နှင့် သက်ရောက်မှုဧရိယာ (Area of Influence-AOI) တို့နှင့် လေ့လာမှု အချိန်ဇယားများကို သတ်မှတ် ဖော်ပြ ပေးရန်၊ 	<ul style="list-style-type: none"> Affective Area ကို အပိုင်း ၅.၂.၂ တွင် လည်းကောင်း၊ Study Area ကို 1.5km radius အဝန်းအဝိုင်းကို အပိုင်း ၁.၃.၂.၁ တွင်လည်းကောင်း၊ Area of Influence (AOI) နှင့် လေ့လာမှု အချိန်ဇယားတို့ကို အပိုင်း ၅.၂.၂ တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> အဆိုပြုစီမံကိန်း၏ အဆင့် အမျိုးမျိုး တွင် ဖြစ်နိုင်သော သိသာထင်ရှားသည့် ပတ်ဝန်းကျင် ထိခိုက်မှုများကို ဆန်းစစ်ဖော်ထုတ် ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> အဆိုပြုစီမံကိန်း၏ အဆင့် အမျိုးမျိုး တွင် ဖြစ်နိုင်သော သိသာထင်ရှားသည့် ပတ်ဝန်းကျင် ထိခိုက်မှုများကို အပိုင်း ၅.၂.၂.၁ တွင် Construction phase, Operation phase နှင့် Decommissioning phase များတွင် တင်ပြထားပါသည်။

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
			<ul style="list-style-type: none"> စီမံကိန်းနှင့် အခြား ဆောင်ရွက်နိုင်သော နည်းလမ်းများ၏ ထိခိုက်မှုကို ဆန်းစစ်ရန် အသုံးပြုထားသော 'စံ' နှင့် ညွှန်းကိန်းများ ကို ကျန်ရစ်ခဲ့ခြင်း မရှိစေဘဲ သတ်မှတ်ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> စီမံကိန်းနှင့် အခြား ဆောင်ရွက်နိုင်သော နည်းလမ်းများ၏ ထိခိုက်မှုကို ဆန်းစစ်ရန် အချက်အလက်များ ကို အပိုဒ် ၄.၂၀.၃ တွင်တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> 'စံ' နှင့် ညွှန်းကိန်းများသည် ပြောင်းလဲနိုင်ကြောင်းနှင့် ပတ်ဝန်းကျင် လေ့လာ ဆန်းစစ်ချိန်အတွင်း ထပ်မံပြင်ဆင်ရမည် ဖြစ်ကြောင်းကို ရှင်းလင်း တိကျစွာ ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> 'စံ' နှင့် ညွှန်းကိန်းများသည် ပြောင်းလဲနိုင်ကြောင်းနှင့် ပတ်ဝန်းကျင် လေ့လာဆန်းစစ်ချိန် အတွင်း ထပ်မံပြင်ဆင်ရမည်ကို အပိုဒ် ၁.၃.၂.၁ နှင့် ၁.၃.၂.၂ တို့တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> 'စံ' နှင့် ညွှန်းကိန်းများအတွက် ဖြစ်နိုင်သော အချက်အလက် ဖော်ပြချက်များကို မှတ်သား ဖော်ပြထားမှုများကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> 'စံ' နှင့် ညွှန်းကိန်းများအတွက် ဖြစ်နိုင်သော အချက်အလက်များကို အပိုဒ် ၁.၃.၂.၃ တွင်တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> ဖြစ်နိုင်သော ပတ်ဝန်းကျင် ထိခိုက်မှုများနှင့် ထိခိုက်မှုစီမံခန့်ခွဲရေး နည်းလမ်းများကို ဆန်းစစ်ရန် အတွက် အသုံးပြုသော နည်းလမ်းများ ကို လည်းကောင်း၊ ထိုနည်းလမ်းများကို ရွေးချယ်ရသည့် အကြောင်းရင်း များကိုလည်းကောင်း သတ်မှတ်ဖော်ပြ ထားမှုများကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> ဖြစ်နိုင်သော ပတ်ဝန်းကျင်၏ ထိခိုက်မှုများနှင့် ထိခိုက်မှုစီမံခန့်ခွဲရေး နည်းလမ်းများကို ဆန်းစစ်ရန် အသုံးပြုမည့်နည်းလမ်း၊ ရွေးချယ်ရသည့် အကြောင်းရင်းများကို အပိုဒ် ၁.၄ တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> ဆန်းစစ် ဆောင်ရွက်သွားမည့် ပတ် 	<ul style="list-style-type: none"> ပတ်ဝန်းကျင် ထိခိုက်မှုများ၏ အစိတ်



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
			<p>ဝန်းကျင် ထိခိုက်မှုများ၏ အစိတ်အပိုင်း တစ်ခုချင်းစီအတွက် Spatial and Temporal Boundary များဖြင့် ဆန်းစစ် ဆောင်ရွက်သွားမည့် အခြေအနေများကို ထည့်သွင်းဖော်ပြပေးရန်။</p>	<p>အပိုင်း တစ်ခုချင်းစီအတွက် Spatial and Temporal Boundary များဖြင့် phase သုံးခုအတွက် ဆန်းစစ်ချက်များကို အပိုင်း ၅.၂.၂.၂ တွင်တင်ပြထားပါသည်။</p>
၅။	ဖြစ်နိုင်သော အဓိကပတ်ဝန်းကျင်ထိခိုက်မှုများနှင့် ထိခိုက်နိုင်မှုလျော့ပါးစေရေးနည်းလမ်းများ			
	<ul style="list-style-type: none"> လုပ်ငန်းဆောင်ရွက်ခြင်း အဆင့်ဆင့်၌ ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများ၏ အကွာအဝေး၊ သက်ရောက်မှု တည်တံ့မည့် ကြာမြင့်ချိန်တို့အား ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> အခန်း (၆)တွင် လုပ်ငန်း ဆောင်ရွက်ခြင်း အဆင့်ဆင့်၌ ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်နိုင်မှုများကို ဆန်းစစ်ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> လုပ်ငန်းဆောင်ရွက်ခြင်း အဆင့်ဆင့်၌ ဖြစ်ပေါ်လာနိုင်သည့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်နိုင်မှုများကို ဖော်ပြရာတွင် ထိခိုက်မှုများကို ဖြစ်စေနိုင်သည့် အဓိကရင်းမြစ်များ (Main Sources) ကို အသေးစိတ် ထည့်သွင်း ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> လုပ်ငန်းဆောင်ရွက်ခြင်း အဆင့်ဆင့်၌ ဖြစ်ပေါ် လာနိုင်သည့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်နိုင်မှုများ၏ အဓိကရင်းမြစ်များ (Main Sources) ကို Construction phase အတွက် အပိုင်း ၆.၃.၁.၁ တွင်လည်းကောင်း၊ operation phase အတွက် အပိုင်း ၆.၃.၁.၂ တွင်လည်းကောင်း၊ Decommissioning phase အတွက် အပိုင်း ၆.၃.၁.၃ တွင်လည်းကောင်း တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> Impact ဆန်းစစ်မှုနှင့် ပတ်သက်၍ (Extreme, High, Substantial, Medium, Low) စသည်ဖြင့် သတ်မှတ် ဖော်ပြရာတွင် သတ်မှတ်ရသည့် အကြောင်းအရင်းအား ထည့်သွင်းဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> အဆိုပါ သက်ရောက်မှုများအပေါ် လျော့ချမည့် နည်းလမ်းများကို ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> ထိခိုက်မှုများကို သတ်မှတ် ဖော်ထုတ်မည့် နည်းလမ်းများနှင့် ထိခိုက်နိုင်မှု အတိုင်းအတာတို့အား အကဲဖြတ် ဆန်းစစ်ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> ထိခိုက်မှုများကို သတ်မှတ် ဖော်ထုတ်သည့် နည်းလမ်းများကို အပိုင်း ၆.၁ တွင်လည်းကောင်း၊ ထိခိုက်နိုင်မှု အတိုင်းအတာများကို အကဲဖြတ် ဆန်းစစ်ဖော်ပြချက်ကို အပိုင်း ၆.၃.၂ နှင့် Construction phase အတွက် အပိုင်း ၆.၃.၂.၁ တွင်လည်းကောင်း၊ operation phase အတွက် ၆.၃.၂.၂ တွင်လည်းကောင်း

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
				ကောင်း၊ Decommissioning phase အတွက် အပိုဒ် ၆.၃.၂.၃ တွင်လည်း ကောင်း တင်ပြထားပါသည်။
	<ul style="list-style-type: none"> သက်ရောက်မှုများကို သတ်မှတ်ရာတွင် ထုတ်လုပ်မှု လုပ်ငန်းစဉ်မှ ထွက်ပေါ်လာမည့် Impact များကို ဖော်ပြ၍ လျော့ချမည့် နည်းလမ်းကို ဖော်ပြပေးရန်၊ 		<ul style="list-style-type: none"> အစီရင်ခံစာတွင် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း ဆောင်ရွက်သွားမည့် နည်းလမ်းများနှင့် ပတ်သက်၍ ရှင်းလင်းဖော်ပြ ပေးရန်နှင့် စီမံကိန်းလုပ်ငန်းစဉ် အဆင့်ဆင့် အလိုက် ထွက်ပေါ်လာမည့် သက်ရောက်မှုများအပေါ် အခြေခံ၍ လျော့ချမည့် နည်းလမ်းများကို ထည့်သွင်းဖော်ပြ ပေးရန်၊ 	<ul style="list-style-type: none"> ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အတွက် ဆောင်ရွက်သွားမည့် နည်းလမ်းများကို အပိုဒ် ၆.၁ တွင်လည်း ကောင်း၊ စီမံကိန်း လုပ်ငန်းစဉ် အဆင့်ဆင့်အလိုက် လျော့ချမည့် နည်းလမ်းများကို Construction phase အတွက် အပိုဒ် ၆.၃.၃.၁ တွင်လည်းကောင်း၊ operation phase အတွက် ၆.၃.၃.၂ တွင်လည်းကောင်း၊ Decommissioning phase အတွက် အပိုဒ် ၆.၃.၃.၃ တွင်လည်းကောင်း တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> အဆိုပြုထားသော လျော့ပါးစေရေး နည်းလမ်းများနှင့် မျှော်မှန်းထားသော ကြွင်းကျန် သက်ရောက်မှုများကို လည်း အကျဉ်းချုပ် ထည့်သွင်းဖော်ပြ ပေးရန်၊ 	<ul style="list-style-type: none"> လျော့ပါးစေသော နည်းလမ်းများ ဆောင်ရွက်ပြီးနောက် ကြွင်းကျန် သက်ရောက်မှုများကို Construction Phase အတွက် အပိုဒ် ၆.၃.၄.၁ တွင်လည်းကောင်း၊ Operation Phase အတွက် ၆.၃.၄.၂ တွင် လည်းကောင်း၊ Decommissioning Phase အတွက် အပိုဒ် ၆.၃.၄.၃ တွင်လည်းကောင်း တင်ပြထားပါသည်။
၆။	အများပြည်သူသဘောထားရယူခြင်းနှင့် သတင်းထုတ်ပြန်ခြင်း			
	<ul style="list-style-type: none"> EIA အဆင့်တွင် လုပ်ဆောင် 	<ul style="list-style-type: none"> EIA အဆင့်တွင် လုပ်ဆောင် 	<ul style="list-style-type: none"> အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေး 	<ul style="list-style-type: none"> နယ်ပယ် တိုင်းတာသတ်မှတ် ခြင်း

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	သွားမည့် Public Consultation Meeting များ၏ အချိန်ဇယားကို ဖြည့်စွက်ဖော်ပြပေးရန်။	သွားမည့် Public Consultation Meeting များ၏ အချိန်ဇယားကို စာမျက်နှာ (၇-၅) တွင် ဖြည့်စွက် ဖော်ပြထားပါသည်။	ခြင်းနှင့် ပတ်သက်၍ အများပြည်သူ တို့အား အသိပေး ဖိတ်ကြားဆောင် ရွက်ခဲ့မှု အခြေအနေများကို ထည့် သွင်းဖော်ပြပေးရန်။	အတွက် အများပြည်သူနှင့် တိုင်ပင်ဆွေး နွေးခြင်းနှင့် ပတ်သက်၍ အများပြည်သူ တို့အား အသိပေး ဖိတ်ကြားဆောင် ရွက်ခြင်းကို အပိုဒ် ၇.၄.၃ တွင်တင်ပြ ထားပါသည်။
	<ul style="list-style-type: none"> အများပြည်သူနှင့် တိုင်ပင်ဆွေး နွေးခြင်းနှင့် ပတ်သက်၍ အများ ပြည်သူတို့အား အသိပေး ဖိတ် ကြား ဆောင်ရွက်ခဲ့မှု အခြေ အနေ၊ အများပြည်သူ တို့အား စီမံကိန်း အကြောင်းအရာ နှင့် ပတ်ဝန်းကျင် ဆိုင်ရာ သက် ရောက်နိုင်မှုတို့အား ရှင်းလင်း ဆွေးနွေးပြသည့် အချက်အလက် တို့အား ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> အများပြည်သူနှင့် တိုင်ပင်ဆွေး နွေးခြင်းနှင့် ပတ်သက်၍ အများ ပြည်သူတို့ အား စီမံကိန်း အ ကြောင်းအရာနှင့် ပတ်ဝန်းကျင် ဆိုင်ရာ သက်ရောက်နိုင်မှု တို့ အား ရှင်းလင်း ဆွေးနွေးပြသည့် အချက်အလက် တို့အား နောက် ဆက်တွဲ-၃၃ တွင် ထည့်သွင်း ဖော်ပြထားပါသည်။ 	<ul style="list-style-type: none"> သတင်းအချက်အလက် ထုတ်ပြန်ခြင်း (ဥပမာ-သတင်းစာရှင်းလင်းပွဲ၊ ဝက်ဘ် ဆိုဒ်၊ သတင်းလွှာများ စသဖြင့်) ထည့် သွင်းဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> နယ်ပယ် တိုင်းတာသည့် လူထုတွေ့ဆုံ ပွဲကို လူမှုကွန်ယက်တွင် တင်ပြထားပါ သည်။ ဓာတ်ပုံမှတ်တမ်းများကို ၂၃-၁၂- ၂၀၁၈ ခုနှစ် အစည်းအဝေးတွင် တင်ပြ ထားပုံကို အပိုဒ် ၇.၄.၄ တွင် တင်ပြထား ပါသည်။
	<ul style="list-style-type: none"> စီမံကိန်းလုပ်ငန်း ဆောင်ရွက်စဉ် အတွင်း မကျေနပ်မှုများ ရှိလာပါ က ဖြေရှင်းဆောင်ရွက် ပေးမည့် အစီအစဉ် အသေးစိတ် ထည့် သွင်းဖော်ပြရန်။ 	<ul style="list-style-type: none"> စီမံကိန်းလုပ်ငန်း ဆောင်ရွက်စဉ် အတွင်း မကျေနပ်မှုများ ရှိလာပါ က ဖြေရှင်းဆောင်ရွက် ပေးမည့် အစီအစဉ်အား စာမျက်နှာ (၇-၅) မှ (၇-၉) အထိ ဖော်ပြထားပါ သည်။ 	<ul style="list-style-type: none"> EIA Report ပြင်ဆင်ချိန်အတွင်း ဆောင်ရွက်ရန် ကျန်ရှိသည့် အဆင့် များတွင် ဆောင်ရွက်သွားမည့် အများ ပြည်သူ သဘောထား ရယူခြင်း လုပ်ငန်းများ အတွက် တတိယ အဖွဲ့ အစည်း၏ အကြံပြုချက်များကို ထည့် သွင်း ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> EIA အတွက် public meeting ကျင်းပ ရာတွင် တင်ပြပါမည်။
၇။	EIA ဆောင်ရွက်ရမည့် လုပ်ငန်းတာဝန်များ (TOR)			
	<ul style="list-style-type: none"> EIA ဆောင်ရွက်ရမည့် လုပ်ငန်း 	<ul style="list-style-type: none"> အစီရင်ခံစာ အခန်း(၉)တွင် လုပ် 	<ul style="list-style-type: none"> စီမံကိန်း အဆိုပြုသူသည် EIA လုပ် 	<ul style="list-style-type: none"> စီမံကိန်း အဆိုပြုသူသည် EIA လုပ်ငန်း



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
	<p>တာဝန်များ (TOR) နှင့်ပတ်သက်၍ ဖော်ပြရာတွင် EIA အစီရင်ခံစာတွင် ပြင်ဆင်ရာတွင် စီမံကိန်း လုပ်ငန်း ဆောင်ရွက်မှုကြောင့် အဓိက ဖြစ်ပေါ်လာနိုင်သည့် ထိခိုက်နိုင်မှုများ အတွက် EIA အစီရင်ခံစာတွင် လေ့လာဆောင်ရွက်သွားမည့် အချက်အလက်များကို ဖြည့်စွက်ဖော်ပြပေးရန်၊</p>	<p>ငန်း တာဝန်များ (TOR) နှင့် ပတ်သက်၍ EIA အစီရင်ခံစာတွင် ပါဝင်ရမည့် အချက်အလက် ဖြစ်သည့် EIA Report Structure ကို ထည့်သွင်း ဖော်ပြထားပါသည်။</p>	<p>ငန်း ပြင်ဆင်ရေးအတွက် လုံလောက်စွာ အချိန်ရယူထားကြောင်း ဖော်ပြနိုင်သည့် အချိန်ဇယားအား ထည့်သွင်းဖော်ပြပေးရန်၊</p>	<p>ပြင်ဆင်ရေး အတွက် လုံလောက်စွာ အချိန်ရယူထားကြောင်း Implementation Schedule အပိုဒ် ၄.၆ တွင် တင်ပြထားပါသည်။</p>
	<ul style="list-style-type: none"> EIA ဆောင်ရွက်ရမည့် လုပ်ငန်း တာဝန်များ (TOR) နှင့် ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၄၉၊ ၅၀၊ ၅၁ နှင့် အညီ ရေးသားပြုစုတင်ပြရန်၊ 		<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် လုပ်ငန်း တာဝန်များ (TOR)၏ ရည်ရွယ်ချက်များအား ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် လုပ်ငန်း တာဝန်များ (TOR)၏ ရည်ရွယ်ချက်များကို အခန်း ၉.၀ ဖြင့် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> စီမံကိန်း၏ ရည်ရွယ်ချက်များနှင့် အဓိက အစိတ်အပိုင်းများနှင့် စီမံကိန်းအဆိုပြုသူ၏ အသေးစိတ် အချက်အလက်များကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> စီမံကိန်း၏ ရည်ရွယ်ချက်များကို အပိုဒ် ၂.၂ တွင်လည်းကောင်း၊ အဓိက အစိတ်အပိုင်းများနှင့် စီမံကိန်း အဆိုပြုသူ၏ အသေးစိတ် အချက်အလက်များကို အပိုဒ် ၂.၄၊ ၂.၅ နှင့် နောက်ဆက်တွဲ (၂) တွင်လည်းကောင်း တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> မူဝါဒ၊ ဥပဒေနှင့် အဖွဲ့အစည်းဆိုင်ရာ မူဘောင်များနှင့် ပတ်သက်၍ ဆက်လက် လေ့လာလိုက်နာ ဆောင်ရွက်ရမည့် အချက်များကို ထည့်သွင်းဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> မူဝါဒ၊ ဥပဒေနှင့် အဖွဲ့အစည်းဆိုင်ရာ မူဘောင်များကို အပိုဒ် ၃ တွင် တင်ပြထားပါသည်။

စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
			<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် ဧရိယာနှင့် နယ်ပယ် သတ်မှတ်ခြင်း လုပ်ငန်း ရလဒ်များကို အခြေခံလျက် EIA ဆောင်ရွက်သည့် အဆင့်အတွင်း တွင် ဆက်လက် ဆောင်ရွက်သည့် လုပ်ငန်း နယ်ပယ်များကို ထည့်သွင်း ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> EIA ဆောင်ရွက်မည့် ဧရိယာနှင့် နယ် ပယ်သတ်မှတ်ခြင်း လုပ်ငန်း ရလဒ်များ ကို အခြေခံလျက် EIA ဆောင်ရွက်သည့် အဆင့်အတွင်းတွင် ဆက်လက် ဆောင် ရွက်သည့် လုပ်ငန်း နယ်ပယ်များကို အပိုဒ် ၆.၄ တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> စီမံကိန်းအကြောင်း ရှင်းလင်း ဖော်ပြ ခြင်း နှင့် အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းများ နှင့်ပတ်သက်၍ ဆက် လက် ဆောင်ရွက်သွားရမည့် လုပ်ငန်း များကို ထည့်သွင်းဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> စီမံကိန်းအကြောင်း ရှင်းလင်းတင်ပြခြင်း ကို အပိုဒ် ၂.၄၊ ၂.၅ တို့တွင်လည်း ကောင်း၊ အခြား ဆောင်ရွက်နိုင်သော နည်းလမ်းများကို အပိုဒ် ၄.၂၀ တွင် လည်းကောင်း တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> အနီး ပတ်ဝန်းကျင် အခြေအနေ အကြောင်း ရှင်းလင်းဖော်ပြခြင်းနှင့် ပတ်သက်၍ ဆက်လက် လေ့လာ သွားရမည့် အချက်များကို ထည့်သွင်း ဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> အနီး ပတ်ဝန်းကျင် အခြေအနေများကို အပိုဒ် ၅.၁၊ ၅.၃၊ ၅.၄၊ ၅.၅၊ ၅.၆၊ ၅.၇ တို့တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> ထိခိုက်မှုနှင့် ဆုံးရှုံးနိုင်မှု ဆန်းစစ်ခြင်း နှင့် လျော့ပါးစေရေး နည်းလမ်းများနှင့် ဆက်စပ် ထိခိုက်မှုများကို ဆန်းစစ် ခြင်းနှင့် ပတ်သက်၍ ဆက်လက် ဆောင်ရွက် သွားရမည့် လုပ်ငန်းများ ကို ထည့်သွင်းဖော်ပြပေးရန်။ 	<ul style="list-style-type: none"> ထိခိုက်မှုများကို ဆန်းစစ်ခြင်းနှင့် ဆက် လက် ဆောင်ရွက်မည့် လုပ်ငန်းများကို အပိုဒ် ၆.၄ တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်အား 	<ul style="list-style-type: none"> ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို



စဉ်	ကနဦးစိစစ်သုံးသပ်ချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှု အပေါ် စိစစ်တွေ့ရှိချက်	ပထမအကြိမ် ပြင်ဆင်တင်ပြလာမှုအပေါ် သုံးသပ်အကြံပြုချက်များ	ဒုတိယအကြိမ် ပြင်ဆင်တင်ပြ လိုက်နာ ဆောင်ရွက်ချက်များ
			ထည့်သွင်းဖော်ပြပေးရန်၊	EIA တွင် ရေးသားတင်ပြသွားပါမည်။
			<ul style="list-style-type: none"> • အများပြည်သူ သဘောထား ရယူခြင်း နှင့် သတင်းထုတ်ပြန်ခြင်း နှင့် ပတ်သက်၍ ဆက်လက် ဆောင်ရွက်သွားမည့် လုပ်ငန်းများကို ထည့်သွင်း ဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> • အများပြည်သူ သဘောထား ရယူခြင်းကို တင်ပြမည့် အစီအစဉ်ကို အပိုဒ် ၇.၄.၅ တွင် တင်ပြထားပါသည်။
			<ul style="list-style-type: none"> • အစီရင်ခံစာ၏ ကဏ္ဍ အသီးသီး အတွက် လိုအပ်သော လေ့လာမှု၊ ဆောင်ရွက်မည့် လုပ်ငန်းများ၊ နည်းပညာများနှင့် ကျွမ်းကျင် ပညာရှင်များ၏ အကြံဉာဏ်များ ပါဝင်သည့် EMP ဆိုင်ရာ အချက်အလက်များကို အသေးစိတ် ထည့်သွင်းဖော်ပြပေးရန်၊ 	<ul style="list-style-type: none"> • EMP ဆိုင်ရာ အချက်အလက်များကို EIA တွင် တင်ပြသွားပါမည်။
၈။	အထွေထွေ			
	စီမံကိန်းအဆိုပြုသူမှ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ သုံးသပ်ချက်နှင့် အကြံပြုချက်များအတိုင်း ပြင်ဆင်၍ ပြန်လည်ရေးဆွဲ ပြင်ဆင်ထားသည့် ဖြေရှင်းချက်များအား ပူးတွဲတင်ပြရန်နှင့် အစီရင်ခံစာ၏ မည့်သည့်အပိုင်းတွင် ရေးသားထားသည်ကို (Comment Respond Table) ဖြင့် ဖော်ပြရန်၊			<ul style="list-style-type: none"> • ညွှန်ကြားချက် အတိုင်း တင်ပြထားပါသည်။

Comment response table of 2nd revised scoping report



APPENDIX (5) EIA TEAM

1. EIA TEAM OF GMES

No.	Title of Post	Term of Reference	Nominee and Organization & Transitional Consultant Registration Number
1	Team Leader	<ul style="list-style-type: none"> ▪ Overall management of EIA operation ▪ Work plan ▪ Technical meeting and workshop ▪ Document reviewing and process flow studying ▪ Lead in facilitation of public consultation ▪ Data compilation & analysis ▪ Coordination with stakeholders 	Engr. U Kyaw Soe Win Managing Director Green Myanmar Environmental Services Co., Ltd. Experience in EIA/IEE/EMP processing No.0019
2	Environmental Consultant	<ul style="list-style-type: none"> ▪ Advise on the design of EIA and develop term of reference for duty and responsibility among EIA team ▪ Advise on the environmental baseline and on the field survey ▪ Facilitate technical analysis ▪ Streamline the Environmental Management Plan 	Engr. Daw Khin Swe Aye Former Lecturer, Chemical Engineering Department, Yangon Technological University. No.0021
3	Consultant on Wastewater Management	<ul style="list-style-type: none"> ▪ Collecting field data for industrial and municipal wastewater ▪ Assist in laboratory testing ▪ Data processing, computing, projection, modeling and analysis ▪ Assist in report preparation 	Engr. Daw Tin May Soe Consultant Green Myanmar Environmental Services Co., Ltd. Retired Professor and Head, Chemical Engineering Department,



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

			Mandalay Technological University. No.0028
4	Consultant on Air Quality Management	<ul style="list-style-type: none"> ▪ Give advice on collecting field data for air quality and assist on air quality control system ▪ Give advice on air pollution evaluate and mitigation ▪ Give advice for data processing, and report preparation 	Engr. U Sein Thaug Oo Chairman Green Myanmar Environmental Services Co., Ltd. Professional Engineer No.0023
5	Consultant for Laboratory Analysis	<ul style="list-style-type: none"> ▪ Advise on data processing and laboratory testing and prepare instruction for laboratory testing ▪ Check the result of environmental laboratory testing ▪ Compare the laboratory result and verification 	U Myo Myint Consultant Green Myanmar Environmental Services Co., Ltd. Retired Former Factory Manager, Ministry of Industry (1) No.0026
6	Consultant on Energy Saving Management and Chemical Risk Assessment & Hazardous Chemical Management	<ul style="list-style-type: none"> ▪ Advise on energy saving management ▪ Advise on the risk assessment preparation ▪ Develop terms of reference for duty and responsibility among EIA team ▪ Advise on the environmental baseline ▪ Advise on the field survey 	Daw Kyaw Kyaw Win Director (Retired) Myanmar Petrochemical Enterprise Ministry of Electrical and Energy
7	Consultant on Environmental Quality	<ul style="list-style-type: none"> ▪ Assist in preparation of guideline for environmental sampling of air and water 	Engr. Daw Khin Shwe Htay



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

	Management	<p>quality</p> <ul style="list-style-type: none"> ▪ Register and inspect the sample collected ▪ Assist in report preparation for environmental baseline 	<p>Former Lecturer, Chemical Engineering Department, Yangon Technological University. (Environmental Engineer)</p> <p>No.0022</p>
8	Social Operation and Field Coordinator	<ul style="list-style-type: none"> ▪ Develop operational checklist for social survey ▪ Facilitate technical meeting and record keeping ▪ Assist in data mining and secondary data collection and coordinate with local authority and communities for village level meeting 	<p>U Khin Aung Consultant Green Myanmar Environmental Services Co., Ltd.</p> <p>No.0025</p>
9	Field Supervisor	<ul style="list-style-type: none"> ▪ Develop operational checklist for environmental study ▪ In charge for preliminary field visit ▪ Establish field operational office for field survey ▪ Supervise field survey ▪ Finalize checking for report and report formatting 	<p>U Kyi Han Bo B.E (Aerospace Fuel and Propellant Engineer) Myanmar Aerospace Engineering University, Quality Engineer and Senior Environmental Experts</p>
10	Junior Environmental Experts	<ul style="list-style-type: none"> ▪ Environmental and social survey ▪ Data collection ▪ Document reviewing ▪ Process studying ▪ Preparation of impact evaluation and assessment, and management plan ▪ Report preparing and formatting 	<p>Daw Aye Thuzar Hein B.E (Chemical) Thanlyin Technological University</p> <p>Daw Chaw Htet Htet Soe (BE Civil Engineering)</p>



			<p>Daw Hnin Htet Htet Hlaing B.E (Port and Harbour) Myanmar Maritime University</p> <p>Daw Wai Wai Mon B.E (Port and Harbour) Myanmar Maritime University</p> <p>Daw No No Hnin Nu Nway B.E - Port and Harbor Myanmar Maritime University</p>
11	Environmental Monitoring Team	<ul style="list-style-type: none"> ▪ Environmental baseline measuring ▪ Data analysis ▪ Coordinate for public consultation meeting ▪ Environmental baseline report preparing and formatting 	<p>U Pyae Phyo Kyaw B.Sc (Forestry) (Monitoring Team Leader)</p> <p>U Myo Thet Naung B.E (Aerospace Fuel and Propellant Engineer) (Assistant Team Leader)</p> <p>U Aung Ko Min B.E (Chemical) (Monitoring Technician)</p> <p>U Thiha Zaw (Assistant Monitoring Technician)</p>
12	Public Coordinator	<ul style="list-style-type: none"> ▪ Assist in stakeholder meeting ▪ Assist in public consultation meeting 	<p>U Aung Kyaw Than B.E (Chemical)</p>

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

		<ul style="list-style-type: none"> ▪ Preparation for public consultation meeting 	West Yangon Technological University
13	Laboratory Experts	<ul style="list-style-type: none"> ▪ Water sampling and laboratory testing ▪ Preparation for water and wastewater sampling ▪ Preparation for laboratory testing ▪ Laboratory testing ▪ Reporting for laboratory result 	<p>Daw Cherry Thwin B.E (Chemical) (Laboratory Head)</p> <p>Daw Wint Phyu Htway B.E (Chemical) (Senior Assistant Engineer)</p> <p>U Thet Min Paing B.E (Chemical) (Junior Assistant Engineer)</p> <p>Daw Htun Eaindra Soe B.E(Chemical) (Junior Assistant Engineer)</p>

The EIA process has been led and coordinated by GMES Co., Ltd. on behalf of the applicant. A team of technical specialists as detailed below is recruited to undertake further detailed investigation in order to determine which activities are likely to result in significant environmental effects.

2. EIA Project Consultant List of GMES. Co., Ltd

No.	Title of Post	Term of Reference	Nominee, Organization, Transitional Consultant Registration Number
1.	Culture & Heritage Consultant	<ul style="list-style-type: none"> • Design of culture and heritage survey • Supervise culture and heritage field survey • Data processing and analysis • Report on relevant section 	<p>Dr. Pyiet Phyo Kyaw Culture & Heritage Expert Lecturer of Yangon University, Cultural & Heritage Department, No.0114</p>
2.	Biodiversity	<ul style="list-style-type: none"> • Studies of Flora and Fauna 	Biodiversity Experts



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	Consultant	<ul style="list-style-type: none"> • Field survey (Flora and Fauna) • Data collections • Mapping of Flora and Fauna survey • Reporting for Biodiversity result 	<p>Dr. Kyaw Zay Moe Flora Expert Lecturer of Yangon University (Botany Department)</p> <p>Dr. Ko Myint Fauna Expert Lecturer of Yangon University (Botany Department) No. 0037</p>
3.	SIA Consultants	<ul style="list-style-type: none"> • Advise on the design of SIA • Develop term of reference for duty and responsibility among SIA team • Advise on the environmental baseline • Advise on the field survey • Advise on data processing and laboratory testing • Facilitate technical analysis • Streamline the SIA report and Social Management Plan • SIA team Leading 	<p>Dr. Kyaw Swar Tint (Social Expert) Professor of Mining Department, YTU U Khin Aung General Manager Green Myanmar Environmental Co.,Ltd. U Thein Soe Facilitation of Meeting, Waste Management</p>
4.	Public Health Consultant	<ul style="list-style-type: none"> • Design of public health survey • Supervise public health field survey • Data processing and analysis • Report on relevant section 	<p>Dr. Myint Thein M.B.B.S (MDY) SAMA 6858</p>
5.	Hydrology Consultant	<ul style="list-style-type: none"> • Design of hydrological survey • Supervise hydrological survey • Advise impacts of Jetty design • Report on relevant section 	<p>U Sai Soe Thant Hydrological Expert</p>
6.	Legal Consultant	<ul style="list-style-type: none"> • To manage environmental conflicts • To arrange resettlement 	<p>Daw Tin Yi Win Director (Retired), Union Attorney General's Office</p>



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

		<p>discussion for resolution of environmental disputes</p> <ul style="list-style-type: none">• To create a mechanism for the resolution of land-use conflicts• To review relevant environmental impact assessment law for the proposed project	
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ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်
Certificate of Incorporation

စိမ်းလန်းမြန်မာ ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်
GREEN MYANMAR ENVIRONMENTAL SERVICES COMPANY LIMITED
Company Registration No. 110299931


မြန်မာနိုင်ငံကုမ္ပဏီများအက်ဥပဒေ ၁၉၁၄ ခုနှစ် အရ
စိမ်းလန်းမြန်မာ ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်
အား ၂၀၁၂ ခုနှစ် အောက်တိုဘာလ ၃ ရက်နေ့တွင်
အစုရှယ်ယာအားဖြင့် တာဝန်ကန့်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ
အဖြစ် ဖွဲ့စည်းမှတ်ပုံတင်ခွင့် ပြုလိုက်သည်။

This is to certify that
GREEN MYANMAR ENVIRONMENTAL SERVICES COMPANY LIMITED
was incorporated under the Myanmar Companies Act 1914 on 3 October
2012 as a Private Company Limited by Shares.


ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ
Registrar of Companies
ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန
Directorate of Investment and Company Administration



Former Registration No. 2744/2012-2013




REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0006 Date 01 JUL 2017


The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်ဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

(a) Name of Organization (အဖွဲ့အစည်းအမည်) (b) Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်) (c) Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား) (d) Identity Card /Passport Number of the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) (e) Address of organization (ဆက်သွယ်ရန်လိပ်စာ) (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	Green Myanmar Environmental Services Co., Ltd. Engr. U Sein Thaug Oo Myanmar 12/ Ma Ya Ka (N) 082871 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon. gmescompany@gmail.com , 09 5122448 Organization 31 March 2018	
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EXTENSION
 သက်တမ်းတိုးချိန်ဖြည့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၀-၄-၂၀၁၈) မှစ၍ (၃၁.၃.၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးချိန်သည်

For Director General
 (Soc Naing, Director)
 Environmental Conservation Department


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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023)
ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)

The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)
ဤလက်မှတ်အား (၁-၁-၂၀၂၁) ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Facilitation of meeting
3. Meteorology, Modeling for Air Quality
4. Risk Assessment and Hazard Management
5. Socio-Economy
6. Water Pollution Control
7. Waste Management
8. Chemical Engineering Plant Design
9. Chemical Engineering Process Design
10. Chemical Engineering, Laboratory Analysis for water and waste water
11. Environmental Management
12. Industrial Management

Green Myanmar Environmental Services Co., Ltd.

A-65



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0023 Date 14.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)




(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Engr. U Sein Thuang Oo
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်)	12/ Ma Ya Ka (N) 082871
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	No. 17/D, Aung Theikdi Yeik Thar, Mayangone Township, Yangon. gmescompany@gmail.com , seinthaungoo@gmail.com 09 5122448
(e) Organization (အဖွဲ့အစည်း)	Green Myanmar Environmental Services Co.,Ltd.
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION

သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။

Soe Naing
14.3.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control

2. Chemical Engineering Process Design, Industrial Management

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019) ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်း တိုးမြှင့်သည်။
Soe Naing
12.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021) ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020) ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
16.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022) ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
25.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department

(အထွေထွေအားဖြင့်)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
EXTENSION

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023) ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023) ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
 Ministry of Natural Resources and Environmental Conservation
 CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION



(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 0019 Date 07/03/2017

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- | | |
|---|--|
| (a) Name of Consultant
(အကြံပေးပုဂ္ဂိုလ်အမည်) | Engr. U Kyaw Soe Win |
| (b) Citizenship
(နိုင်ငံသား) | Myanmar |
| (c) Identity Card / Passport Number
(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/ Ou Ka Ta (Naing) 038453 |
| (d) Address
(ဆက်သွယ်ရန်လိပ်စာ) | No. 155, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone(1), Hlaing Thar Yar Township, Yangon
gmescompany@gmail.com
ksw1963@gmail.com , 09 5081451 |
| (e) Organization
(အဖွဲ့အစည်း) | Green Myanmar Environmental Services Company Limited |
| (f) Type of Consultancy
(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) | Person |
| (g) Duration of validity
(သက်တမ်းကုန်ဆုံးရက်) | 31 March 2018 |



EXTENSION
 သက်တမ်းတိုးပွင့်ခြင်း
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးပွင့်သည်။
 Soe Naing
 14.9.2018
 For Director General
 (Soe Naing, Director)
 Environmental Conservation Department

Handwritten signature in blue ink.

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



Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

- 1. Facilitation of meeting
- 2. Industrial Management

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်း တိုးမြှင့်သည်။
Soe Naing
12.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
16.1.2021
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
25.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023)
ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Chemical Engineering, Laboratory Analysis for Water and Wastewater

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023)
ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0021 Date 11.03.2018

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- | | | |
|---|--|--|
| (a) Name of Consultant
(အကြံပေးပုဂ္ဂိုလ်အမည်) | Engr. Daw Khin Swe Aye | |
| (b) Citizenship
(နိုင်ငံသား) | Myanmar | |
| (c) Identity Card / Passport Number
(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/Sa Kha Na (N) 017708 | |
| (d) Address
(ဆက်သွယ်ရန်လိပ်စာ) | 14 B, Wai Lu Wun Main Street, Sanchaung,
Yangon.
khinsweaye.daw@gmail.com , 09 5015475 | |
| (e) Organization
(အဖွဲ့အစည်း) | Green Myanmar Environmental Services Co.,Ltd. | |
| (f) Type of Consultancy
(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) | Person | |
| (g) Duration of validity
(သက်တမ်းကုန်ဆုံးရက်) | 31 March 2018 | |

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၀-၄-၂၀၁၈) ရက်နေ့မှ (၃၁.၃.၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။
Soe Naing
14.9.2018
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Soe Naing

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



Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control

2. Waste Management

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing 12.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
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ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing 16.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing 27.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control

2. Chemical Engineering Process Design

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

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
2023-2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 10022 Date 31.03.2018

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- (a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်) Daw Khin Shwe Htay
- (b) Citizenship (နိုင်ငံသား) Myanmar
- (c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) 12/ Tha Ga Ka (N) 008808
- (d) Address (ဆက်သွယ်ရန်လိပ်စာ) No. 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon
shwehtay.khin@gmail.com , 09 5032910
- (e) Organization (အဖွဲ့အစည်း) Green Myanmar Environmental Services Co.,Ltd.
- (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) Person
- (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်) 31 March 2018



EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၀-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။
See No. 3
14.9.2018
For Director General (Soe Naing, Director)
Environmental Conservation Department

Soe Naing

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



Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

- 1. Water Pollution Control
- 2. Waste Management

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021) ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022) ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

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

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023) ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023) ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0025 Date 17.11.18

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- (a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်) U Khin Aung
- (b) Citizenship (နိုင်ငံသား) Myanmar
- (c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်) 12/ Ma Ya Ka (N) 047032
- (d) Address (ဆက်သွယ်ရန်လိပ်စာ) 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon.
khinaung1@gmail.com , 09 43066741
- (e) Organization (အဖွဲ့အစည်း) Green Myanmar Environmental Services Co.,Ltd.
- (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) Person
- (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်) 31 March 2018



EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှတ်တမ်းမှတ်ပုံတင်ရက်စွဲအထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။
Soe Naing
14.9.2018
For Director General (Soe Naing, Director)
Environmental Conservation Department

Handwritten signature

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



Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Socio-Economy

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019) ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021) ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022) ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023) ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023) ဤလက်မှတ်အား (၁-၇-၂၀၂၃) ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လ သက်တမ်းတိုးမြှင့်သည်။
Sa Aung Thu
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department



THE REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation



CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 00275

Date 13 FEB 2023

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015. (ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယ်ဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို ထုတ်ပေးလိုက်သည်။)

- (a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်) Mr. Kyi Han Bo
- (b) Citizenship (နိုင်ငံသား) Myanmar
- (c) Identity Card / Passport Number (မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်) 12/DaGaMa (N) 022231
- (d) Address (ဆက်သွယ်ရန်လိပ်စာ) No.(8), Room (201), Yuzana Street, Sittaung Villa, Dagon Myothit Satekan Tsp, Yangon. Mobile phone: 0943197960 E mail: kyihanbo@gmail.com
- (e) Organization (အဖွဲ့အစည်း) Green Myanmar Environmental Services Co., Ltd
- (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) Person
- (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်) 30th June, 2023.

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for two months from (1.7.2023) to (31.8.2023) ဤလက်မှတ်အား(၁-၇-၂၀၂၃)ရက်နေ့မှ (၃၁-၈-၂၀၂၃) ရက်နေ့အထိ (၂)လသက်တမ်းတိုးမြှင့်သည်။
For Director General (Sa Aung Thu, Director) Environmental Conservation Department

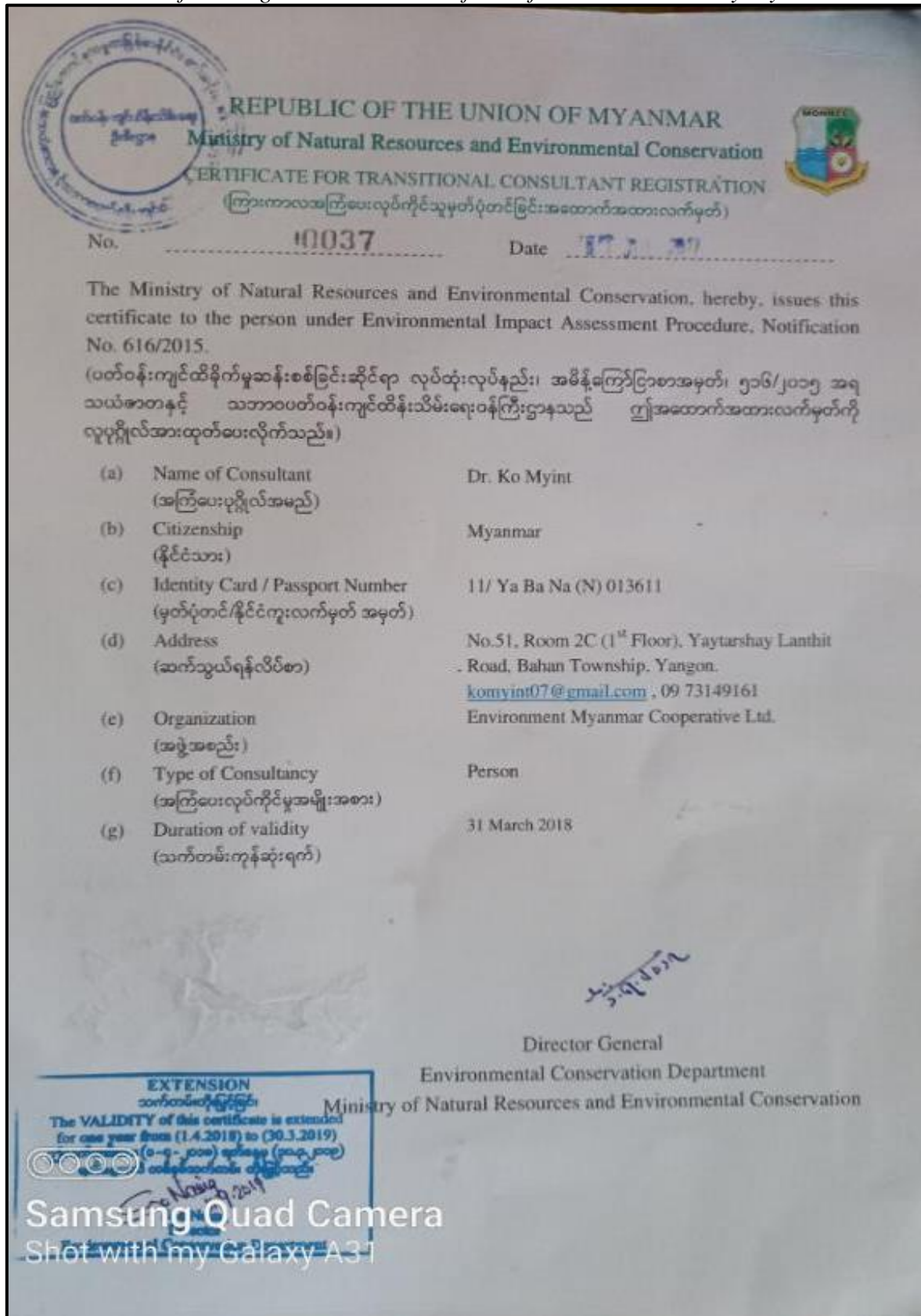


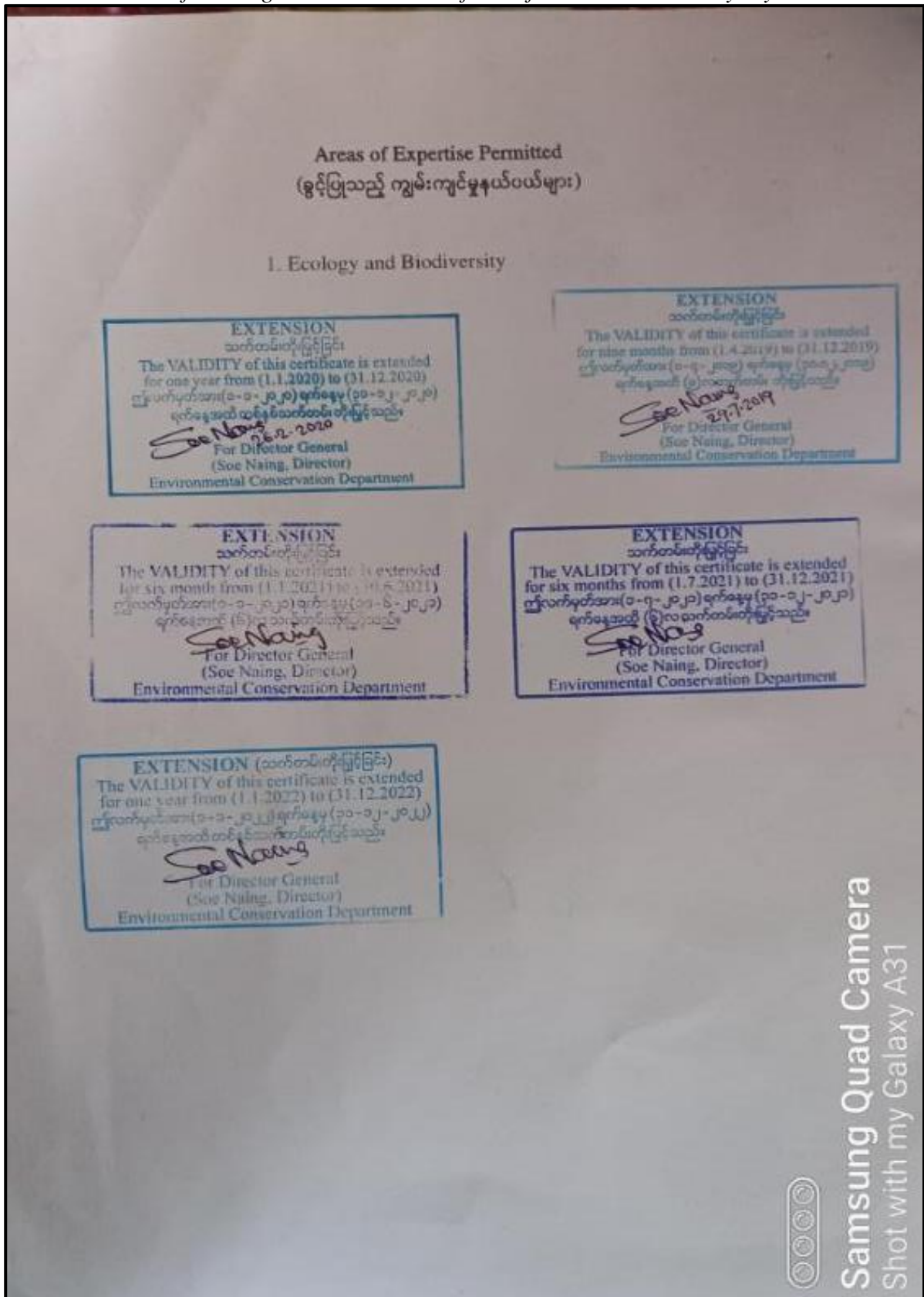
၁၃-၂-၂၀၂၃


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

ဤအထောက်အထားလက်မှတ်သည် အနည်းပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပြုလုပ်သည့် တတိယပုဂ္ဂိုလ် သို့မဟုတ် အဖွဲ့အစည်းများလုပ်ငန်းလိုင်စင်ဆိုင်ရာ လုပ်ထုံးလုပ်နည်း ထုတ်ပြန်သည့်ရက်မှစ၍ (၆) လ ပြည့်မြောက်သည့်နေ့တွင် ပျက်ပြယ်မည် ဖြစ်သည်။


Areas of Expertise Permitted (ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)	
1. Noise and Vibration;	2. O (Air Quality and Odor).
3.	4.
5.	6.
7.	8.
9.	10.
11.	12.
13.	14.
စည်းကမ်းချက်များ	
<p>၁။ ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်ရရှိသူသည်-</p> <p>(က) ဤအထောက်အထားလက်မှတ်ကို ဖျက်ဆီးခြင်း၊ ပြင်ဆင်ခြင်း၊ မသက်ဆိုင်သူတစ်ဦးဦးသို့ ငှားရမ်းခြင်း၊ အမည်ခံ အသုံးပြုခြင်းနှင့် တစ်ဆင့်လွှဲပြောင်းခြင်းဆောင်ရွက်ခြင်းမပြုရ။</p> <p>(ခ) ဤအထောက်အထားလက်မှတ်ကို သတ်မှတ်သည့် စည်းကမ်းဘောင်အတွင်း လုပ်ငန်းလုပ်ကိုင်ခွင့် အငြင်းပွားမှုများ၊ စောဒကတက်မှုများနှင့်စပ်လျဉ်း၍ တာဝန်ယူဖြေရှင်းရမည်။ ယင်းသို့ ဖြေရှင်းနိုင်ခြင်း မရှိပါက အထောက်အထားလက်မှတ် ရုပ်ဆိုင်းခြင်း သို့မဟုတ် ပယ်ဖျက်ခြင်း ခံရမည်။</p> <p>(ဂ) ဤအထောက်အထားလက်မှတ်တွင် ခွင့်ပြုထားသည့် ကျွမ်းကျင်မှုနယ်ပယ်များအတွက်သာ တာဝန်ယူ လေ့လာဆန်းစစ်ရေးဆွဲခွင့်ရှိသည်။</p> <p>(ဃ) မိမိအဖွဲ့အစည်းတွင် ပါဝင်သည့် အကြံပေးပုဂ္ဂိုလ်များ ပြောင်းလဲမှု တစ်စုံတစ်ရာရှိပါက ကြားကာလ အကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်း အထောက်အထားလက်မှတ် ရရှိထားသူဖြင့်သာ အစားထိုး ပြောင်းလဲရမည်။</p> <p>(င) အဖွဲ့အစည်းဖြစ်ပါက အဖွဲ့အစည်းတွင် ဒါရိုက်တာဘုတ်အဖွဲ့ (Board of Director)၊ အကြံပေးပုဂ္ဂိုလ် (Consultant) များ ပြောင်းလဲလိုလျှင် တည်ဆဲဥပဒေများနှင့်အညီ ဆောင်ရွက်ပြီး ရက်ပေါင်း ၃၀ အတွင်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ မပျက်မကွက် အကြောင်းကြားရမည်။</p> <p>(စ) ဝန်ကြီးဌာနက အခါအားလျော်စွာ သတ်မှတ်သည့် စည်းကမ်းချက်များကိုလိုက်နာရမည်။</p> <p>(ဆ) ဖော်ပြပါ စည်းကမ်းချက်တစ်ရပ်ရပ်ကို ဖောက်ဖျက်ခြင်း၊ လိုက်နာရန်ပျက်ကွက်ခြင်း တစ်စုံတစ်ရာ ပေါ်ပေါက်ပါက အထောက်အထားလက်မှတ် ရုပ်ဆိုင်းခြင်း သို့မဟုတ် ပယ်ဖျက်ခြင်း ခံရမည်။</p>	<p>၂။ အထောက်အထားလက်မှတ်ရရှိသူသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနက ခွင့်ပြုထားသော ပတ်ဝန်းကျင် ဆန်းစစ်ခြင်းအမျိုးအစားကိုသာ ဆောင်ရွက်ရမည်။</p> <p>၃။ အထောက်အထားလက်မှတ်ရရှိသူသည် မြန်မာနိုင်ငံ၏ တည်ဆဲဥပဒေတစ်ရပ်ရပ်ကို ဖောက်ဖျက်ကြောင်း သို့မဟုတ် ဆန်းစစ်ခြင်းလုပ်ငန်းများ ဆောင်ရွက်ရာတွင် သိသာထင်ရှားသော မှားယွင်းမှုများ ပါရှိနေပြီး သတ်မှတ် စံချိန်စံညွှန်း သို့မဟုတ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ နည်းဥပဒေများ၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းမှု ဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းတို့အရ စိစစ်သုံးသပ်ပြီး ကနဦးသဘောထားမှတ်ချက်နှင့်အညီ ပြန်လည်ပြင်ဆင်ခြင်း မရှိကြောင်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၏ သတ်မှတ်ဆုံးဖြတ်ခြင်းခံရလျှင် အထောက်အထားလက်မှတ် ရုပ်ဆိုင်းခြင်း သို့မဟုတ် ပယ်ဖျက်ခြင်း ခံရမည်။</p> <p>၄။ အထောက်အထားလက်မှတ်ရရှိသော အဖွဲ့အစည်းသည် သက်ဆိုင်ရာစီမံကိန်းအတွက် လေ့လာဆန်းစစ်ရေးဆွဲ ဆောင်ရွက်ရန် တတိယအဖွဲ့အစည်းအတည်ပြုချက်ရယူရာ၌ မိမိအဖွဲ့အစည်းတွင် မှတ်ပုံတင်ထားသည့် အကြံပေး ပုဂ္ဂိုလ်များ၏ အမည်စာရင်းကိုသာ တင်ပြရမည်။</p> <p>၅။ အထောက်အထားလက်မှတ်ရရှိသော အဖွဲ့အစည်းသည် မိမိအဖွဲ့အစည်းက လက်လှမ်းမမီသော ကျွမ်းကျင်မှု နယ်ပယ်များအတွက် လေ့လာဆန်းစစ်ရေးဆွဲ ဆောင်ရွက်နိုင်ရန် ကြားကာလအကြံပေးလုပ်ကိုင်သူ မှတ်ပုံတင်ခြင်း အထောက်အထားလက်မှတ် ရရှိပြီးဖြစ်သည့် တစ်သီးပုဂ္ဂလလုပ်ကိုင်သူ (Freelancer) ကို သက်ဆိုင်ရာစီမံကိန်း အတွက်သာ ငှားရမ်းဆောင်ရွက်ရမည်။</p>







REPUBLIC OF THE UNION OF MYANMAR
Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြိမ်းပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 10029 Date 17.03.2018

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

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြီးပေးပုဂ္ဂိုလ်အမည်)	U Thein Soe
(b) Citizenship (နိုင်ငံသား)	Myanmar
(c) Identity Card / Passport Number (မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Ya Ka Na (N) 059643
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	Room 24, Building 13, Shwe Ohn Pin Housing (1), Yan Aye Street, No. (5) Ward, Yankin Township, Yangon. ktsoester@gmail.com , 09 5084203
(e) Organization (အဖွဲ့အစည်း)	Environment Myanmar Cooperative (EMC)
(f) Type of Consultancy. (အကြီးပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018

EXTENSION
 သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended
 for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှတ်တမ်းမှတ်ပုံတင်ပြီး (၃၁-၃-၂၀၁၉)
 ရက်နေ့အထိ ထပ်မံသက်တမ်း တိုးမြှင့်သည်။

Soe Naing
 17.3.2018
 For Director General
 (Soe Naing, Director)
 Environmental Conservation Department

Soe Naing

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

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting

2. Socio-economy

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
29.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။
Soe Naing
21.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
25.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting

2. Socio-economy

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
29.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။
Soe Naing
21.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department


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

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။
Soe Naing
25.3.2022
For Director General
(Soe Naing, Director)
Environmental Conservation Department





Ministry of Natural Resources and Environmental Conservation
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION
 (ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)




No. 10114 Date _____

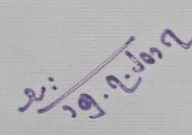
The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.
 (ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

(a) Name of Consultant (အကြံပေးပုဂ္ဂိုလ်အမည်)	Dr. Pyiet Phyo Kyaw	 
(b) Citizenship (နိုင်ငံသား)	Myanmar	
(c) Identity Card / Passport Number (မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်)	12/ Da Ga Ta (Naing) 018059	
(d) Address (ဆက်သွယ်ရန်လိပ်စာ)	No. 21 (I), U Kyaw Hla Street, 7 Mile, Mayangone Township, Yangon. admin@m-sde.com , 09 73175448	
(e) Organization (အဖွဲ့အစည်း)	Myanmar Sustainable Development Engineering Services Co., Ltd.	
(f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)	Person	
(g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်)	31 March 2018	

EXTENSION
 သက်တမ်းတိုးမြှင့်ခြင်း


The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၀-၄-၂၀၁၈) မှတ်ပုံတင် (၃၁.၃.၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။



 For Director General
 (Soe Naing, Director)
 Environmental Conservation Department


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

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

၁) Cultural Heritage Assessment

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁-၁၂-၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။

For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)
The VALIDITY of this certificate is extended for six months from (1.1.2023) to (30.6.2023)
ဤလက်မှတ်အား (၁-၁-၂၀၂၃) ရက်နေ့မှ (၃၀-၆-၂၀၂၃) ရက်နေ့အထိ (၆)လသက်တမ်းတိုးမြှင့်သည်။

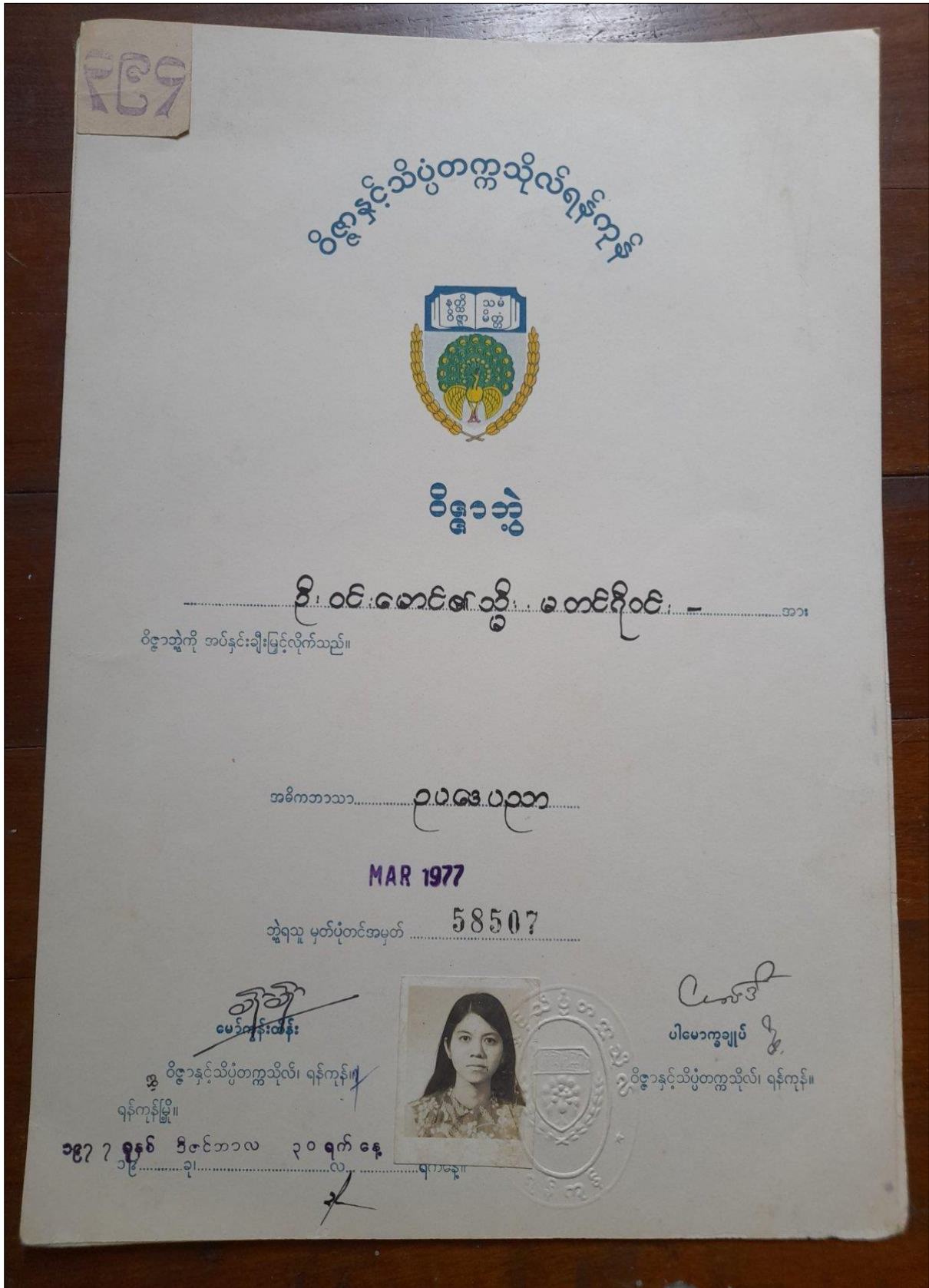
For Director General
(Sa Aung Thu, Director)
Environmental Conservation Department

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

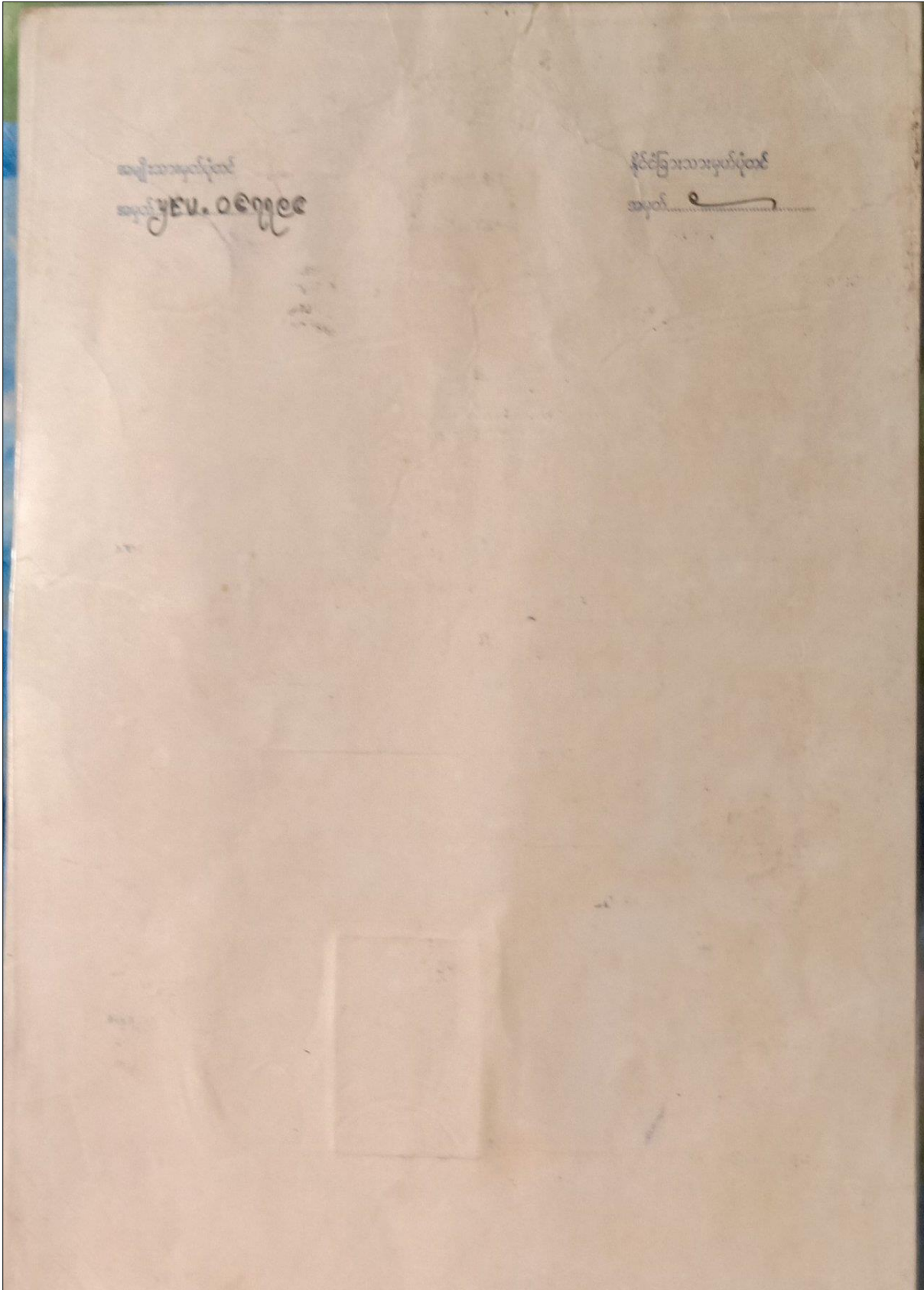














Creating Markets, Creating Opportunities



Certificate of Completion

In recognition that the following course was successfully completed by

Dr. Myint Thein

Online Training on

Health Impact Assessment

October 12-16, 2020

Handwritten signature of Kate Lazarus in black ink.

Kate Lazarus
Asia ESG Advisory Lead
International Finance Corporation

Handwritten signature of Dr. Janis Shandro in black ink.

Dr. Janis Shandro
Director
Arrowsmith Gold Inc.

Handwritten signature of Zaw Naing Oo in blue ink.

Zaw Naing Oo
Chairman
Myanmar Environmental Assessment Association



APPENDIX (6) RECORDED PHOTOS DURING CONSTRUCTION PHASE



No. 3 Main Road and Entrance of the project's inner road





Concrete Paved Road of the Project





Entrance of The Project Site























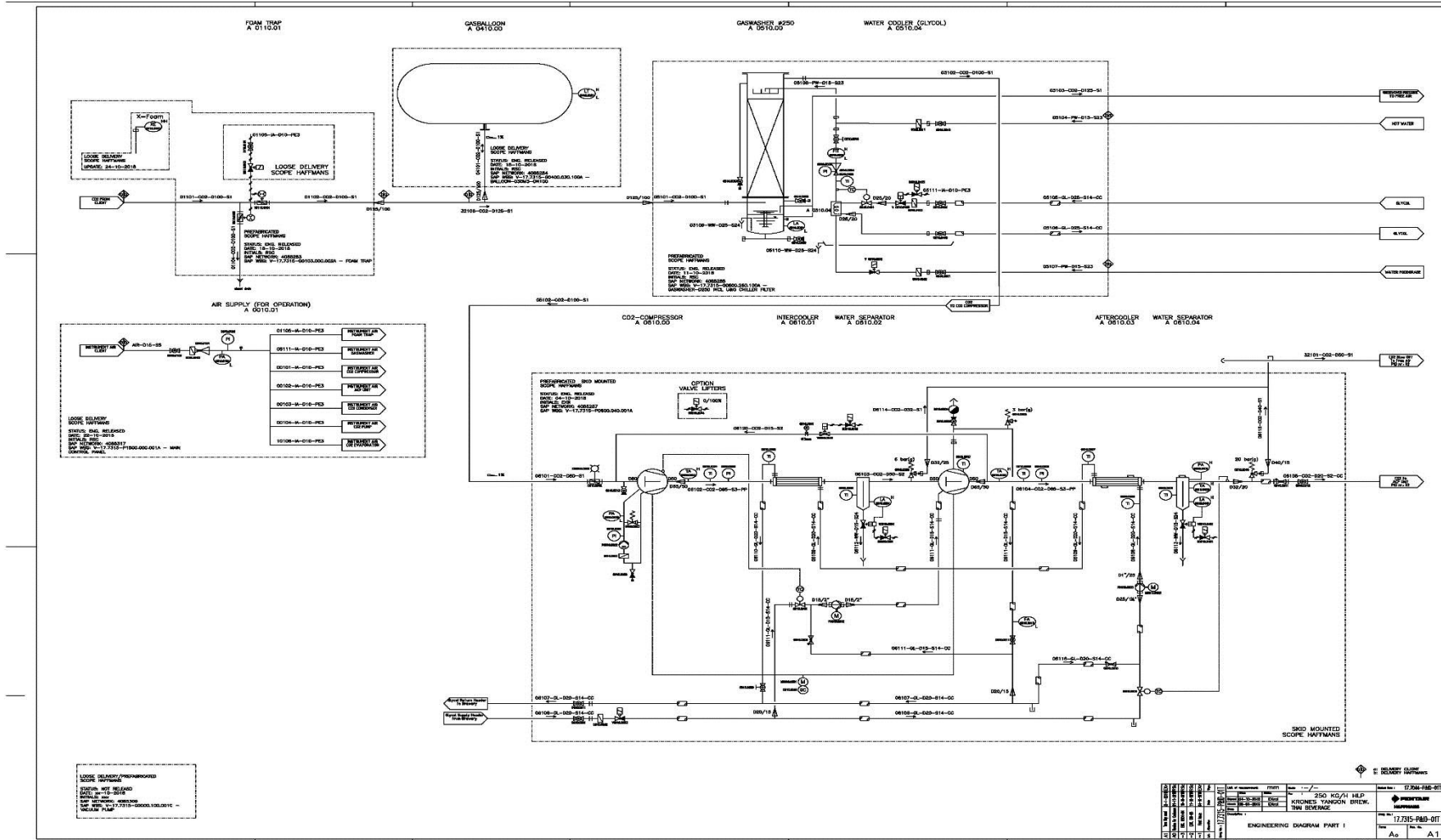


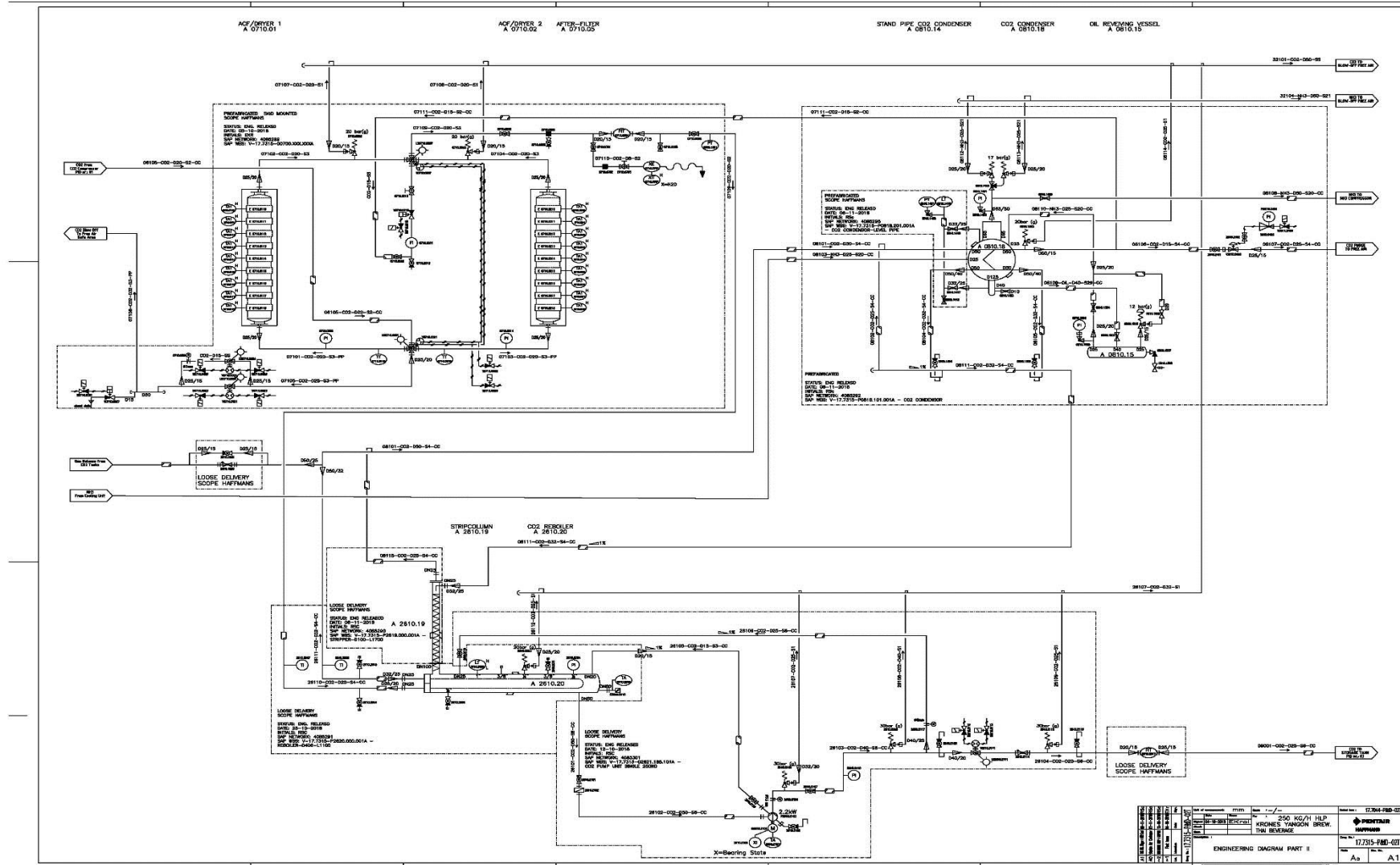


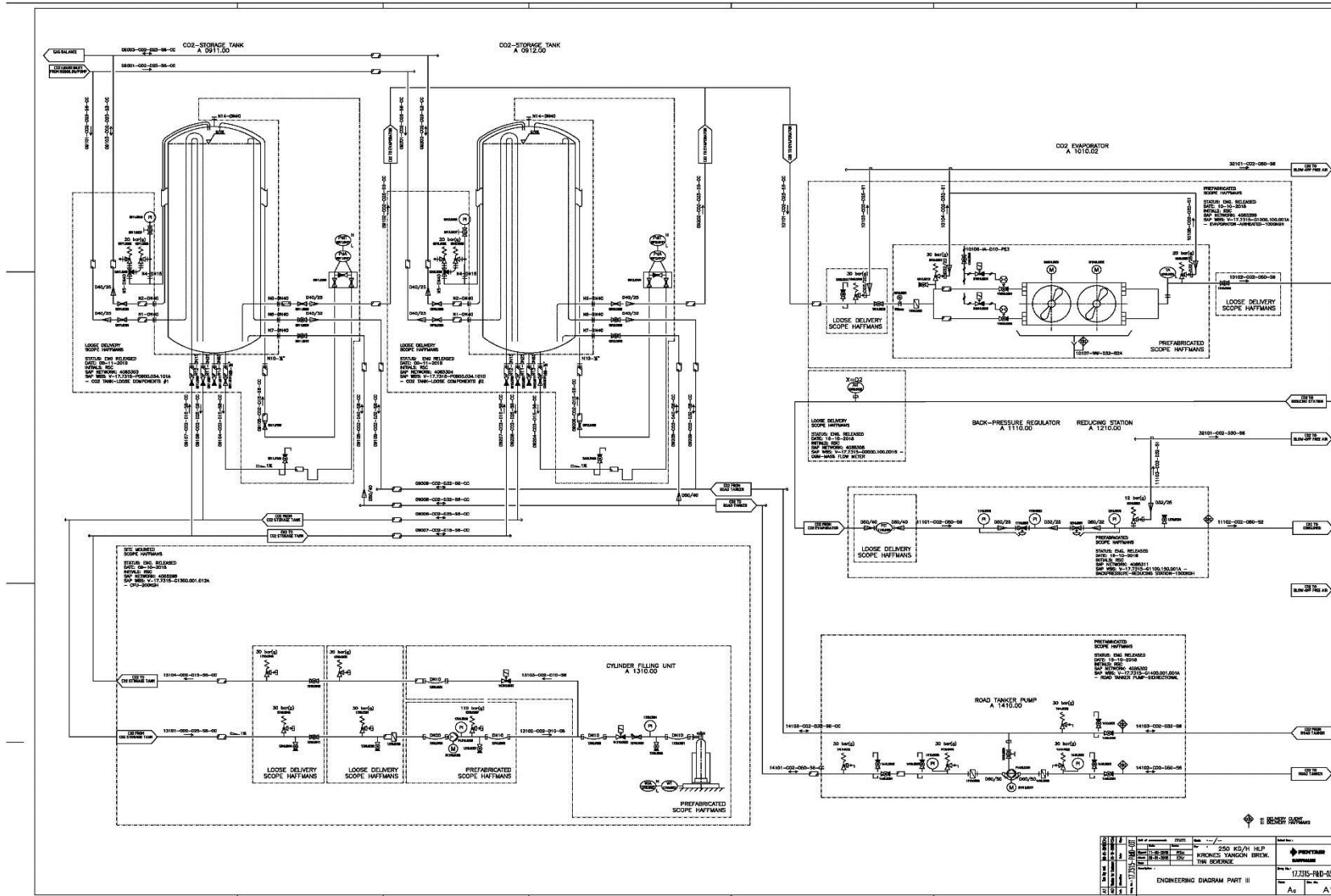


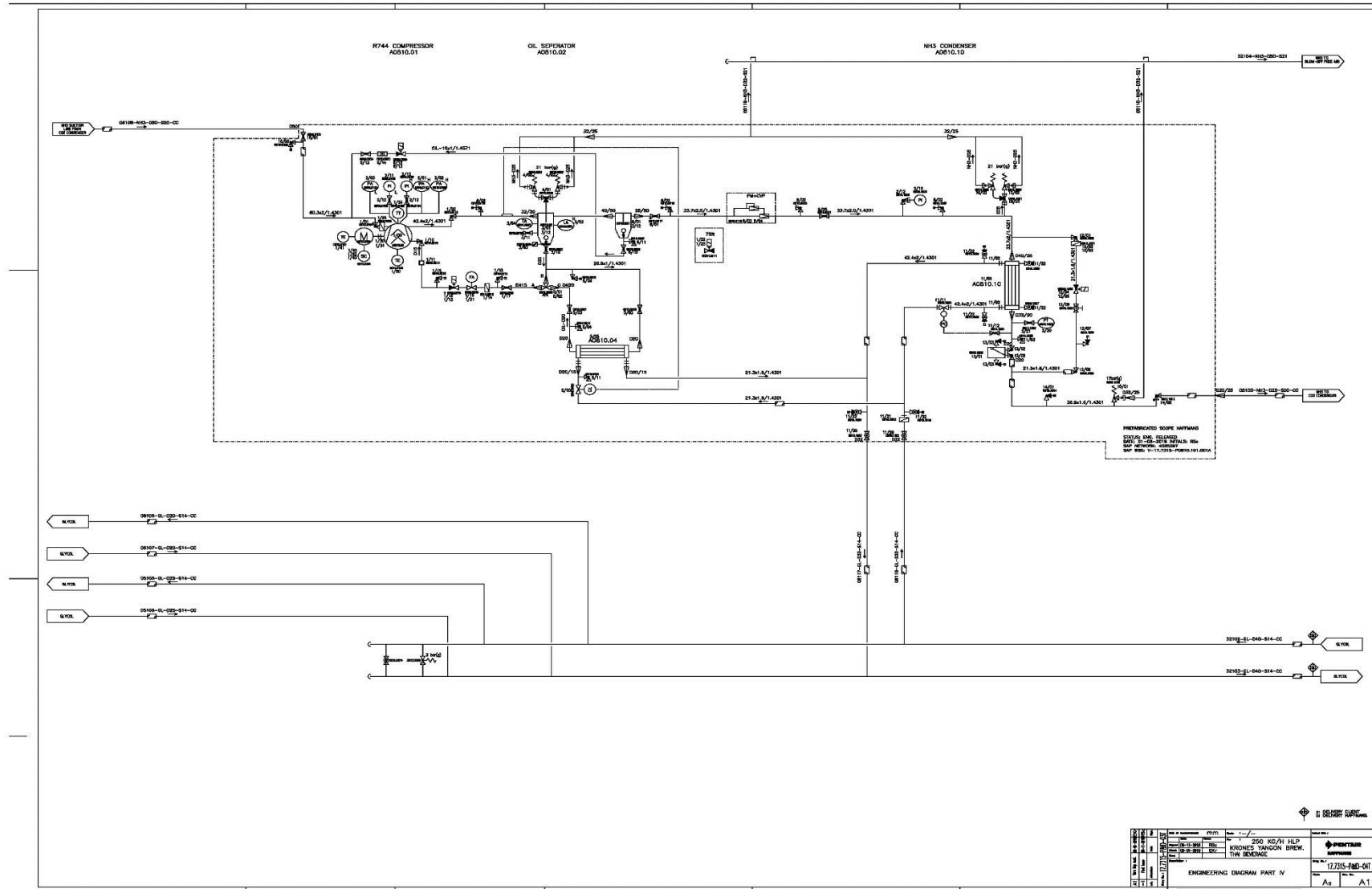


APPENDIX (7) CO₂ RECOVERY PLANT DETAILED DRAWING



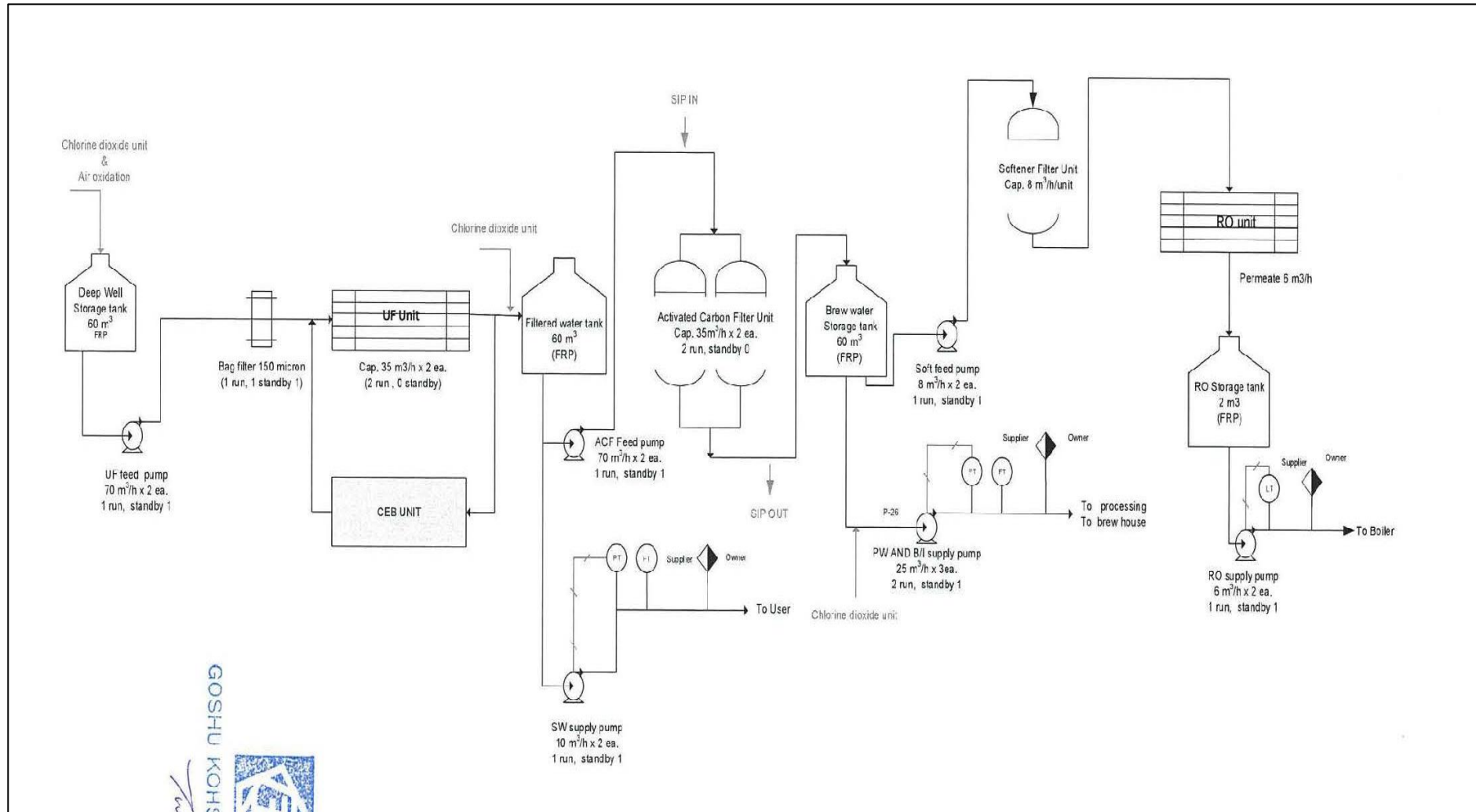




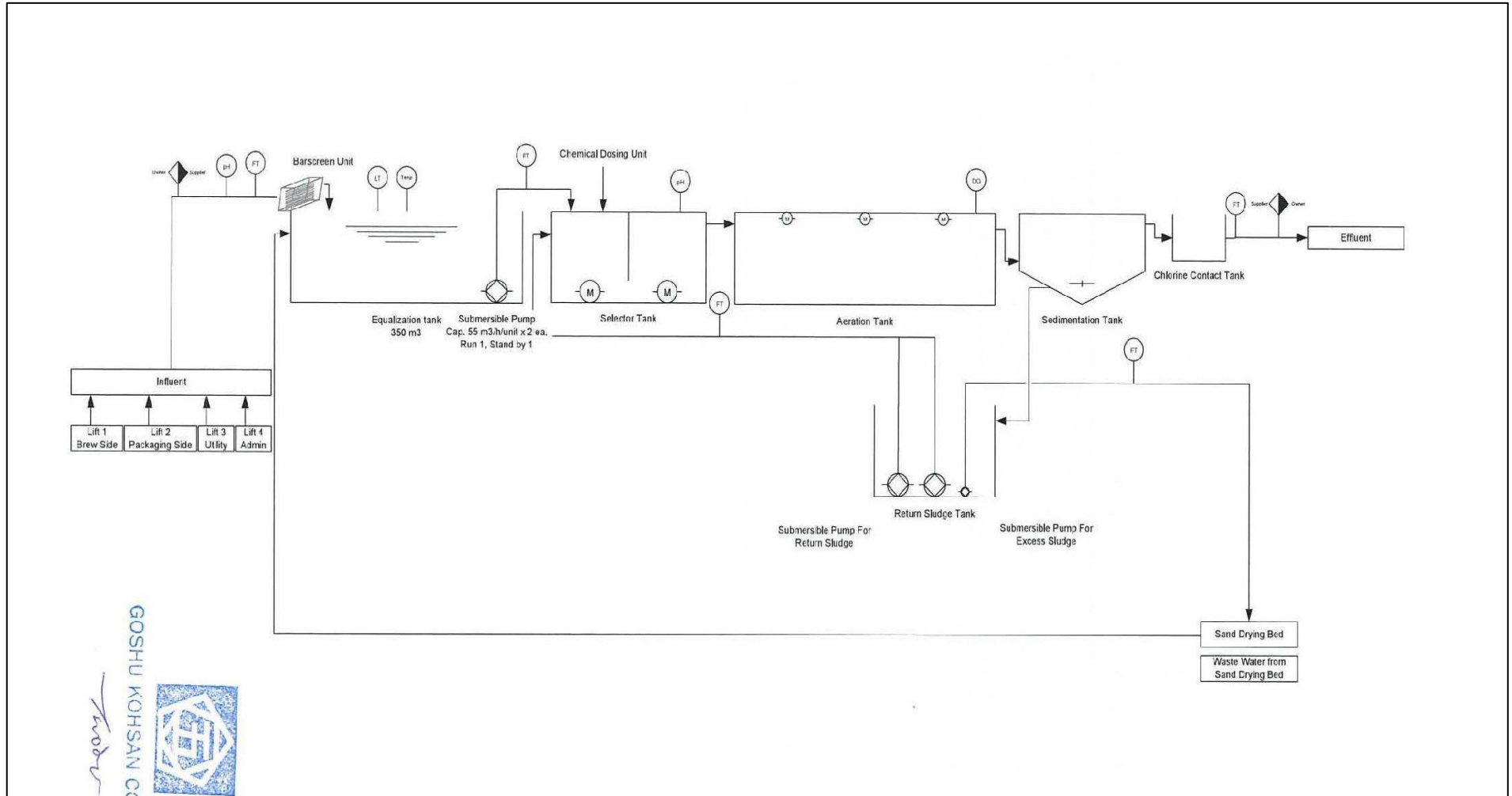




APPENDIX (8) WATER TREATMENT SYSTEM LAYOUT



APPENDIX (9) WASTEWATER TREATMENT SYSTEM LAYOUT



APPENDIX (10) Certificates, Licences and Instructions Conducted by Emerald Brewery Myanmar Limited



Myanmar Companies Online Registry - Company Extract

Company Name (English) EMERALD BREWERY MYANMAR LIMITED	Company Name (Myanmar) -
--	------------------------------------

Company Information		
Registration Number 104783007	Registration Date 15/12/2017	Status Registered
Company Type Private Company Limited by Shares	Foreign Company Yes	Small Company No
Principal Activity 11 - Manufacture of beverages	Date of Last Annual Return 01/12/2022	Previous Registration Number 870FC/2017-2018(YGN)

Addresses	
Location Of Registers And Indexes	BOGYOKE AUNG SAN ROAD , SUITE 8, LEVEL 14, JUNCTION CITY TOWER PABEDAN TOWNSHIP , YANGON REGION, MYANMAR
Registered Office In Union	PLOT NO. 498, YAY TA LA BAUND VILLAGE TRACT HLEGU TOWNSHIP, YANGON REGION, MYANMAR 11371 Email Address: Dennis.yeo@emeraldbrewery.com Telephone Number: (+95)09422456448
Principal Place Of Business In Union	PLOT NO. 498, YAY TA LA BAUND VILLAGE TRACT HLEGU TOWNSHIP, YANGON REGION, MYANMAR 11371

Officers			
Name:	MYINT MYINT WIN	Type:	DIRECTOR
Date of Appointment:	N/A	Date of Birth:	25/03/1971
Nationality:	MYANMAR	N.R.C./Passport:	12/LaThaNa(N)006833
Gender:	FEMALE	Business Occupation:	BUSINESSWOMAN
Name:	MR. HUI CHOON KIT	Type:	DIRECTOR
Date of Appointment:	N/A	Date of Birth:	24/07/1964
Nationality:	SINGAPORE	N.R.C./Passport:	PP. NO. K2023019R
Gender:	MALE	Business Occupation:	BUSINESSMAN
Name:	MR. KOH TAI HONG	Type:	DIRECTOR
Date of Appointment:	03/07/2019	Date of Birth:	22/10/1960
Nationality:	SINGAPORE	N.R.C./Passport:	K3739071Z
Gender:	MALE	Business Occupation:	DIRECTOR
Name:	MR. NEO KIM SOON EDMOND	Type:	DIRECTOR
Date of Appointment:	26/10/2018	Date of Birth:	08/03/1965





Myanmar Companies Online Registry - Company Extract

Company Name (English)
EMERALD BREWERY MYANMAR LIMITED

Company Name (Myanmar)
-

Nationality:	SINGAPORE	N.R.C./Passport:	K0788272K
Gender:	MALE	Business Occupation:	-
Name:	MR. DENNIS YEO TING TECK	Type:	SECRETARY
Date of Appointment:	03/12/2021	Date of Birth:	22/06/1972
Nationality:	SINGAPORE	N.R.C./Passport:	K2055989K
Gender:	MALE	Business Occupation:	FINANCE DIRECTOR

Ultimate Holding Company

Name of Ultimate Holding Company	Jurisdiction of Incorporation	Registration Number
-	-	-

Share Capital Structure

Total Shares Issued by Company	Currency of Share Capital
61,850,000	USD

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	61,850,000	61,850,000.00	0.00

Members

Name of Company:	F&N Investments Pte Ltd
Registration Number:	198502513G
Jurisdiction of Incorporation:	Singapore

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	49,480,000	49,480,000.00	0.00

Name of Company:	SUN ACE CORPORATION COMPANY LIMITED
Registration Number:	105374259
Jurisdiction of Incorporation:	Myanmar

Class	Description	Total Number	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	12,370,000	12,370,000.00	0.00

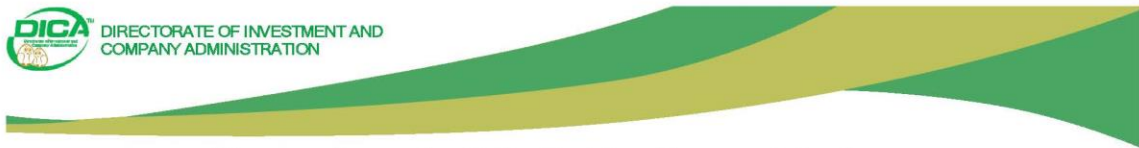
Mortgages and Charges

Form / Filing Type	Effective Date
No records available	

Details about all mortgages and charges can be accessed from the Company Profile Filing History at no charge.

Filing History





Myanmar Companies Online Registry - Company Extract

Company Name (English)	Company Name (Myanmar)
EMERALD BREWERY MYANMAR LIMITED	-

Form / Filing Type	Effective Date
D-1 Particulars of directors and secretary	09/03/2023
AR Annual Return	01/12/2022
C-10 Notice of location of company registers and indexes	22/07/2022
AR Annual Return	06/01/2022
D-1 Particulars of directors and secretary	06/12/2021
D-1 Particulars of directors and secretary	24/05/2021
AR Annual Return	15/12/2020
D-1 Particulars of directors and secretary	15/10/2020
D-1 Particulars of directors and secretary	12/06/2020
C-3 Change to share capital or register of members	30/01/2020
AR Annual Return	23/12/2019
C-4 Notice of change of registered office or principal place of business	23/12/2019
C-3 Change to share capital or register of members	19/12/2019
C-10 Notice of location of company registers and indexes	18/12/2019
C-3 Change to share capital or register of members	28/11/2019
C-3 Change to share capital or register of members	30/09/2019
C-3 Change to share capital or register of members	30/08/2019
C-3 Change to share capital or register of members	31/07/2019
D-1 Particulars of directors and secretary	22/07/2019
C-3 Change to share capital or register of members	03/07/2019
C-3 Change to share capital or register of members	06/06/2019
D-1 Particulars of directors and secretary	30/05/2019
C-3 Change to share capital or register of members	06/05/2019
C-1 Notice of alteration of constitution	28/03/2019
C-3 Change to share capital or register of members	13/02/2019
C-3 Change to share capital or register of members	25/01/2019
C-3 Change to share capital or register of members	04/12/2018
D-1 Particulars of directors and secretary	26/10/2018
C-3 Change to share capital or register of members	26/10/2018
C-1 Notice of alteration of constitution	24/10/2018
B-1 Application for re-registration of a private company limited by shares	18/09/2018



011020



The Government of The Republic of the Union of Myanmar
Ministry of Commerce
Department of Trade

CERTIFICATE OF EXPORTER/IMPORTER REGISTRATION

<p>1. Enterprise Name (မြန်မာ/အင်္ဂလိပ်) EMERALD BREWERY MYANMAR LIMITED</p>	<p>2. Registration No: 53801(06-11-18)</p>
<p>3. Registration Term: FIVE YEAR</p>	<p>4. Start Date: 06-11-2018</p>
<p>5. End Date: 05-11-2023</p>	
<p>6. Address (မြန်မာ/အင်္ဂလိပ်) Plot No. 498 Yay Ta La Baund Village Tract Hlegu Township, Yangon-Region, Myanmar Yangon, Myanmar</p>	
<p>7. Business Registration No: 104783007(15/12/2017)</p>	
<p>8. Type of Business (မြန်မာ/အင်္ဂလိပ်): <input type="checkbox"/> Sole Proprietorship (တစ်ဦးတည်းခိုင်) <input type="checkbox"/> Partnership (အစုအဝေး) <input checked="" type="checkbox"/> Limited Company (လီမိတက်ကုမ္ပဏီ) (Myanmar/Foreign) <input type="checkbox"/> Co-operative Society (သမဝါယမအသင်း) <input type="checkbox"/> Others (Please specify) (အခြား (ဖော်ပြရန်) သင်း၊ ဖွဲ့မှတ်တမ်းပါလုပ်ငန်း (မျိုးဆောင်ရွက်ခွင့်ရှိသည်))</p>	
<p>9. Type of Service: <input checked="" type="radio"/> New <input type="radio"/> Extension</p>	
<p>10. Contact No: 01-2305312 Telephone No: _____ Fax No: _____ e-mail: _____</p>	
<p>11. Remarks: MIC Permit No-071/2018(27-03-2018)</p>	
<p>12. Terms and Conditions: စည်းကမ်းချက်များ I hereby register the above mentioned enterprise as Exporter/Importer subject to the following terms and conditions: (အောက်ဖော်ပြပါစည်းကမ်းချက်များဖြင့် ပို့ကုန်သွင်းကုန် လုပ်ငန်းရှင်အဖြစ် မှတ်တမ်းတင်ခွင့်ပြုသည်) (a) Line of goods permitted - all items except prohibited and restricted items. (ခွင့်ပြုသည့်ကုန်ပစ္စည်းအမျိုးအမည် - တားမြစ်ကုန်ပစ္စည်းများမှလွဲ၍ ကျန်ကုန်ပစ္စည်းများအားလုံး) (b) The enterprise must abide by the Export/Import rules and Regulations prescribed for the registered Exporters/Importers. (လုပ်ငန်းရှင်သည် မှတ်ပုံတင် ပို့ကုန်သွင်းကုန်လုပ်ငန်းလုပ်ကိုင်သူများ လိုက်နာရမည့်စည်းကမ်းချက်များကို လိုက်နာရမည်)</p>	



စာအမှတ် ၀၀၆
ရက်စွဲ 6.11.2018
Stamp

For Director General


 6.11.2018
 ဝင်းဝင်းစမ်းလက်ထောက်ညွှန်ကြားရေးမှူး

EIREG11185EIREGEX12130012

ယစ်မျိုးပုံစံ B-1

(ပူရင်းနှင့်ပူရင်းခွဲ)

ဖြစ်ရည်မျိုးလုပ်ဆောင်သည့်စက်ရုံ လက်ရှိထား၍ လုပ်ဆောင်ခွင့်လိုင်စင်
(ပုဒ်မ - ၁၂ နှင့် နည်းဥပဒေ - ၃)



<p>ခရိုင် လိုင်စင်အမှတ်စဉ် အမည် နိုင်ငံသားစိစစ်ရေးကော်မရှင်အမှတ် ဆိုင်တည်နေရာ (လိပ်စာအပြည့်အစုံဖော်ပြရန်)</p>	<p>လှည်းကူးခရိုင် ၀၀၁/၂၀၂၃-၂၀၂၄ ဦးအောင်ချမ်းသာ (Emerald Brewery Myanmar Co:Ltd) ၁၂/အေးလမ်း၊ ဝိပဿနာလမ်း၊ ကွင်းအမှတ်(၄၉၈) ကွင်းထုလမ်း၊ ရွှေဘိုမြို့နယ်၊ တံခွန်တိုင်(အင်းစိန်)ကျေးရွာအုပ်စု လှည်းကူးမြို့နယ်</p>
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၁။ ယခုလိုင်စင်ထုတ်ပေးသည့်နေ့က ၂၀၂၃ ခုနှစ်၊ ဧပြီလ(၁)ရက်တိုင် ဖြစ်ရည်မျိုးလုပ်ဆောင်သည့် စက်ရုံလက်ရှိ ထားလုပ်ဆောင်၍ လှည်းကူးမြို့နယ်နေ ဦး/ဒေါ် ----- ဦးအောင်ချမ်းသာ (Emerald Brewery Myanmar Co:Ltd) ကိုခွင့်ပြုသည်။ ယခု လိုင်စင်မှာ ၂၀၂၄ ခုနှစ်၊ မတ်လ(၃၁)ရက်နေ့လွန်နောက်ဆုံးခန်းတိုင်ရောက်စေရမည်။

၂။ ယခုလိုင်စင်အတည်ဖြစ်လျက်ရှိနေစေရန် လိုင်စင်ရသူမှာ အောက်ပါစည်းကမ်းချက်များကို ကောင်းမွန်တည်ကြည်စွာ လိုက်နာဆောင်ရွက်ရမည် -

- (က) လိုင်စင်ရသူမှာ အစိုးရမင်းတို့ထံ အခငွေ ----- ကိုထမ်းဆောင်ရမည်။
- (ခ) လိုင်စင်ရသူမှာ ကော်လီထွက်အရာရှိအခွန်အခိန်စာမရရှိဘဲ မိမိလိုင်စင်ကို အခြားသူမည်သူမျှ တဆင့် ငှားရမ်းလွှဲပြောင်းခြင်းမရှိစေရေး။
- (ဂ) လိုင်စင်ရသူမှာ မည်သည့်ယစ်မျိုးအရာရှိကမဆို ဆင့်ဆိုလျှင် လိုင်စင်ကိုထုတ်ပြရမည်။
- (ဃ) လိုင်စင်ရသူမှာ ဖြစ်ရည်မျိုးလုပ်ဆောင်သည့်ရုံများနှင့် သက်ဆိုင်သည့် ယစ်မျိုးနည်းဥပဒေ အရပ်ရပ်မှစ၍ ၁၉၁၇ ခုနှစ်၊ မြန်မာနိုင်ငံယစ်မျိုးအက်ဥပဒေပြဋ္ဌာန်းရာ နောက်ထပ်နည်းဥပဒေများကိုလည်း လိုက်နာ စောင့်ရှောက်ရမည်။



၃။ လိုင်စင်ရသူနှင့်ပတ်သက်သည့် ကိုယ်စားလှယ်(သို့) ၎င်းလိုင်စင်ထုတ်ပေးသည့် ဆိုင်ပိုင်နက်အတွင်း ခိုင်းစေခြင်းခံရသည့် အခြားမည်သူကမဆို ၁၉၁၇ ခုနှစ်၊ မြန်မာနိုင်ငံတော်ယစ်မျိုးအက်ဥပဒေကိုဖြစ်စေ၊ ၎င်းအရ ပြဋ္ဌာန်းပိုင်းခြားသည့် နည်းဥပဒေများကို ဖြစ်စေ၊ အထက်ဖော်ပြပါ စည်းကမ်းချက်များကိုဖြစ်စေ၊ တစ်စုံတစ်ရာကျူးလွန်လျှင် ယခုလိုင်စင်ကို ကော်လီထွက်အရာရှိက နုတ်သိမ်း ပယ်ဖျက်ခွင့်ရသည်။

OMJ
၁/၄/၂၀၂၃
ကော်လီထွက်အရာရှိ
(ခရိုင်အုပ်ချုပ်ရေးမှူး)
ခရိုင်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
လှည်းကူးခရိုင်
၆- ၂၀၂၃

လှည်းကူး
ရက်စွဲ၊ ၂၀၂၃ ခုနှစ်၊ ဧပြီလ (၁) ရက်

ယစ်မျိုးပုံစံ FL-8

မြန်မာနိုင်ငံအတွင်းရှိ ဗျစ်ရည်စက်ရုံမှ ထုတ်လုပ်သော ဗျစ်ရည်များကို
လက်ကားရောင်းချခွင့်လိုင်စင်
(ယစ်မျိုးဥပဒေပုဒ်မ - ၁၈ နည်းဥပဒေ - ၄)

ခရိုင် _____ လှည်းကူးခရိုင် _____
 လိုင်စင်အမှတ်စဉ် _____ ၁၂၀/၂၀၂၃ _____
 အမည် _____ ဦးအောင်ချမ်းသာ (Emerald Brewery Myanmar Co., Ltd.)
 နိုင်ငံသားစိစစ်ရေးကော်မရှင်အမှတ် _____ ၁၂ / အစအ (နိုင်ငံ) ၀၁၁၁ ၆၆ _____
 ဆိုင်တည်နေရာ(လိပ်စာအပြည့်အစုံဖော်ပြရန်) _____ ကွင်းအမှတ်(၄၉၈) ရေတလဘောင်ကျေးရွာ၊
 တံခွန်တိုင်(အင်းစိန်)ကျေးရွာအုပ်စုလှည်းကူးမြို့နယ်

၂၀၂၃ခုနှစ်၊ ဧပြီလ(၁)ရက်နေ့မှ ၂၀၂၄ခုနှစ်၊ မတ်လ(၃၁)ရက်နေ့အထိ မြန်မာနိုင်ငံ ယစ်မျိုးဥပဒေ ပုဒ်မ(၁၂)အရ လိုင်စင်ရရှိသော အရက်ချက်စက်ရုံ မှ ထုတ်လုပ်သည့် နိုင်ငံခြားအရက်/ဘီယာအဖြစ် သတ်မှတ်ကြော်ငြာထား သော လက်ကားရောင်းချခွင့်ကို လှည်းကူးမြို့ _____ တံခွန်တိုင်(အင်းစိန်) _____ ကျေးရွာအုပ်စုနေ ဦး/မအိ... ဦးအောင်ချမ်းသာ (Emerald Brewery Myanmar Co., Ltd.) အား ခွင့်ပြုလိုက်သည်။ ဖော်ပြပါနေ့ရက်ထက် ကျော်လွန်လျှင် ဤလိုင်စင်အကျိုး သက်ရောက်ခြင်း မှ ရပ်စဲသည်။

ဤလိုင်စင်ရသူသည် မြန်မာနိုင်ငံယစ်မျိုးဥပဒေ - ၂၀ ပါစည်းကမ်းချက်များအပြင် အောက်ပါစည်းကမ်းချက်များ ကိုလည်း လိုက်နာဆောင်ရွက်ရမည် -

- (၁) လိုင်စင်ရသူသည် လိုင်စင်အခွန်ငွေ ----- ကိုကြိုတင်ပေးသွင်းရမည်။
- (၂) ဤလိုင်စင်အတည်ဖြစ်သည့်နေ့ရက်မတိုင်မီ ကော်လိထွက်အရာရှိ၏ ခွင့်ပြုအမိန့်စာမရရှိဘဲ နိုင်ငံခြား အရက်/ဘီယာ စုဆောင်းခြင်းမပြုရ။
- (၃) လိုင်စင်ရသူသည် နိုင်ငံခြားအရက် ကို တစ်ကြိမ်ရောင်းချတိုင်း (၂) ဂါလံ ကွပ်ပုလင်း (၁၂) ပုလင်းထက် ကျော်လွန်သောပမာဏကိုသာရောင်းချရမည်။
- (၄) လိုင်စင်ရသူသည် လိုင်စင်ရထားသည့် ဥပစာအတွင်း၌ အရက်ကို ပေါင်းစပ်ခြင်း၊ ရောနှောခြင်း၊ အနံ့ အရသာထည့်သွင်းခြင်းနှင့် အရောင်တင်ခြင်း မပြုလုပ်ရ။ ယင်းသို့ပြုလုပ်ခြင်းကိုလည်း ခွင့်မပြုရ။
- (၅) ပုလင်းသွပ်သွင်းခွင့်လိုင်စင် FL-5 မရရှိပဲ ဆိုင်ဥပစာအတွင်းအရက်ပုလင်းသွပ်ခြင်းမပြုလုပ်ရ။ အရက် ပုလင်းသွပ်သွင်းခြင်းကိုလည်း ခွင့်မပြုရ။
- (၆) မြန်မာနိုင်ငံတွင် ထုတ်လုပ်သည့် အရက်၊ ဘီယာများကို “ မြန်မာပြည်တွင် ထုတ်လုပ်သည် ” ဟူသော အမှတ်တံဆိပ်ကို ပေါ်လွင်မြင်သာအောင် ကပ်နှိပ်ထားရမည့်အပြင် မြန်မာနိုင်ငံကုန်အမှတ်တံဆိပ်များ အက်ဥပဒေပါ ပြဋ္ဌာန်းချက်များနှင့် အညီ အမှတ်တံဆိပ်များကိုလည်း ကပ်နှိပ်ထားရမည်။ ပုလင်းတိုင်းကို ချိတ်တံဆိပ် ရိုက်နှိပ်ပိတ်ထားပြီး သတ္တုနန်းကြိုးဖြင့် ချည်ထားရမည် (သို့မဟုတ်) သတ္တုမျက်ပါးဖြင့်ဖြစ်စေ သတ္တုထိပ်ဖုံးဖြင့်ဖြစ်စေ အခိုင်အမာပိတ်ထားရမည်။

၂


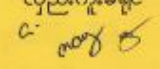
(၇) ပုလင်းသွတ်ခွင့် လိုင်စင် FL -5 ပါစည်းကမ်းချက်များနှင့်အညီ ပြုလုပ်ခြင်းမှတစ်ပါး အရက်သွင်းပြီး ပုလင်းတစ်ခုခုပေါ်မှ တံဆိပ်အမှတ်အသားကို ပြောင်းလဲခြင်း၊ ဖယ်ပစ်ခြင်း၊ နောက်ထပ်အမှတ်တံဆိပ်တစ်မျိုးမျိုးဖြင့် ဖုံးအုပ်ထားခြင်းတို့ကို မပြုလုပ်ရ။

(၈) လိုင်စင်ရသူ၏ ဆိုင်ဥပစာအတွင်း၌ အရက်ပြင်းအား ၃၅ ဒီဂရီထက်မပိုသော ဂျင်အရက်ပါရှိသည့် ပုလင်း (သို့မဟုတ်) အရက်ပြင်းအား ၂၅ ဒီဂရီထက်မပိုသော အခြားအရက်ပါရှိသည့် ပုလင်းများတွင် အမှန်တကယ်ပါရှိသည့်အရက်ပြင်းအားကို အပိုအလို ၅ ရာခိုင်နှုန်းအတွင်း အကွာရာနှင့် ဂဏန်းစာလုံးအကြီးများဖြင့် အမှတ်တံဆိပ်ရေးသားထားရမည်။

(၉) လိုင်စင်ရသူသည် ဆိုင်ဥပစာအတွင်းရှိ ၂၆ အောင်စထက်လျော့နည်း၍ အရက်ပါဝင်သော ကွပ်ပုလင်း (သို့မဟုတ်) ၁၃ အောင်စထက်လျော့နည်း၍ အရက်ပါဝင်သော ပိုင်ပုလင်းများတွင် အနည်းဆုံးပါဝင်သည့် အရက်ပမာဏကိုဖော်ပြလျှက် အကွာရာဂဏန်းကြီးများဖြင့်ရေးသား၍ အမှတ်တံဆိပ်ကပ်ထားရမည်။

(၁၀) လိုင်စင်ရသူသည် မိမိရောင်းချသည့် ဆိုင်နေရာတွင် အောက်ပါအတိုင်း ဆိုင်းဘုတ်တစ်ခုကို အမြဲရေးသားထားရှိရမည် -
 " မြန်မာနိုင်ငံအတွင်း လိုင်စင်ရ အရက်ချက်စက်ရုံ (အမည်)မှ ချက်လုပ်သည့် အရက်အရင်းအမြစ်နှင့် လိုင်စင်ရသည် "

(၁၁) လိုင်စင်ရသူသည် ၎င်းနှင့်ဖက်စပ်လုပ်သူ ကိုယ်စားလှယ် ဆိုင်ဥပစာအတွင်း ခိုင်းစေထားသူတစ်ဦးဦးက မြန်မာနိုင်ငံယစ်မျိုးဥပဒေနှင့် အထက်ဖော်ပြပါစည်းကမ်းများကို ချိုးဖောက်ခဲ့လျှင်ဖြစ်စေ ဆိုင်ဥပစာအနည်းတစ်ခုတွင် အများပြည်သူတို့ကို အနှောက်အယှက်ဖြစ်စေလောက်အောင် မူးယစ်မှုဖြစ်ပွားလျှင်ဖြစ်စေ ကော်လံထွက်အရာရှိသည် ဤလိုင်စင်ကို ပယ်ဖျက်နိုင်သည်။


 ကော်လံထွက်အရာရှိ
 (ခရိုင်အုပ်ချုပ်ရေးမှူး)
 ခရိုင်အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
 လှည်းကူးခရိုင်


လှည်းကူး

ရက်စွဲ၊ ၂၀၂၃ခုနှစ်၊ ဧပြီလ (၄)ရက်



THE REPUBLIC OF THE UNION OF MYANMAR
The Myanmar Investment Commission
PERMIT



Permit No. 071/2018

Date 27th March, 2018

This Permit is issued by the Myanmar Investment Commission according to the section 25, sub-section (c) of the Myanmar Investment Law-

- (1) Name of Investor DAW MYINT MYINT WIN
- (2) Citizenship MYANMAR
- (3) Residence Address NO. (1-2), SABAI STREET, SANCHAUNG TOWNSHIP, YANGON
- (4) Name and Address of Principal Organization THAN LWIN AYE YAR INDUSTRIAL PRODUCTION & CONSTRUCTION COMPANY LIMITED, NO.269/271, YARZARDIYIT HOUSING COMPLEX, LOWER PAZUNDAUNG ROAD, BOTAH TAUNG TOWNSHIP, YANGON
- (5) Place of incorporation MYANMAR
- (6) Type of Business MANUFACTURING AND DISTRIBUTION OF BEER
- (7) Place(s) of investment project HOLDING NO. (2/1+2/2+2/4+N-2), KWIN TA LA BAUN (EAST), KWIN NO. 498, YAY TA LA BAUN VILLAGE TRACT, HLEGU TOWNSHIP, YANGON REGION
- (8) Amount of Foreign Capital US\$ 31.85 MILLION
- (9) Period for Foreign Capital to be brought in WITHIN (2) YEARS FROM THE DATE OF ISSUANCE OF MIC PERMIT
- (10) Total Amount of Capital (Kyat) EQUIVALENT IN KYAT OF US\$ 65.00 MILLION (INCLUDING US\$ 31.85 MILLION)
- (11) Construction period 2 YEARS
- (12) Validity of Investment Permit 50 YEARS
- (13) Form of Investment JOINT VENTURE
- (14) Name of Company Incorporated in Myanmar EMERALD BREWERY MYANMAR LIMITED

Chairman

The Myanmar Investment Commission

8

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်
ခွင့်ပြုမိန့်



ခွင့်ပြုမိန့်အမှတ် ၀၇၁/၂၀၁၈ ၂၀၁၈ ခုနှစ် မတ်လ ၂၇ ရက်

မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်သည် မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေပုဒ်မ ၂၅၊ ပုဒ်မခွဲ (ဂ) အရ ဤခွင့်ပြုမိန့်ကို ထုတ်ပေးလိုက်သည်-

- (၁) ရင်းနှီးမြှုပ်နှံသူအမည် ဒေါ်မြင့်မြင့်ဝင်း
- (၂) နိုင်ငံသား မြန်မာ
- (၃) နေရပ်လိပ်စာ အမှတ်- (အိုင်-၂)၊ စပယ်လမ်း၊ စမ်းချောင်းမြို့နယ်၊ ရန်ကုန်မြို့
- (၄) ပင်မအဖွဲ့အစည်းအမည်နှင့်လိပ်စာ သံလွင်ဧရာစက်မှု၊ ထုတ်လုပ်မှုနှင့်ဆောက်လုပ်ရေး ကုမ္ပဏီလီမိတက်၊ အမှတ်-၂၆၉/၂၇၁၊ ရာဇဓိရာဇ်အိမ်ရာ၊ အောက်ပုစွန်တောင်လမ်း၊ ဗိုလ်တထောင်မြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
- (၅) ဖွဲ့စည်းရာအရပ် မြန်မာ
- (၆) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား တီယာထုတ်လုပ်ရောင်းချခြင်းလုပ်ငန်း
- (၇) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) ဦးပိုင်အမှတ်-၂/၁+၂/၂+၂/၄+N-၂၊ ကွင်းအမှတ် (၄၉၈) ကွင်းတလဘောင်အရှေ့ကွင်း၊ ရေတလဘောင် ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
- (၈) နိုင်ငံခြားမတည်ငွေရင်းပမာဏ အမေရိကန်ဒေါ်လာ ၃၁.၈၅ သန်း
- (၉) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ ကော်မရှင်ခွင့်ပြုမိန့်ရရှိသည့်နေ့မှ ၂ နှစ် အတွင်း
- (၁၀) စုစုပေါင်းမတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၆၅.၀၀ သန်းနှင့် ညီမျှသော မြန်မာကျပ်ငွေ (အမေရိကန်ဒေါ်လာ ၃၁.၈၅ သန်း အပါအဝင်)
- (၁၁) တည်ဆောက်မှုကာလ/ ပြင်ဆင်မှုကာလ ၂ နှစ်
- (၁၂) ရင်းနှီးမြှုပ်နှံမှုခွင့်ပြုသည့် သက်တမ်း ၅၀ နှစ်
- (၁၃) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ဖက်စပ်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု
- (၁၄) မြန်မာနိုင်ငံတွင်ဖွဲ့စည်းမည့်ကုမ္ပဏီအမည် EMERALD BREWERY MYANMAR LIMITED

Handwritten signature
၂၀၁၈
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်
၂၇/၃/၁၈



ပုံစံ(၂)
ပူးတွဲ-၁


ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်

၂၀၁၈ ခုနှစ် မတ်လ ၂၇ ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် ၀၇၁ /၂၀၁၈ တွင် ပြင်ဆင်ချက်


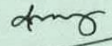
၂၀၁၈ ခုနှစ် သြဂုတ်လ ၂၅ ရက်နေ့တွင် ကျင်းပခဲ့သော မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု
ကော်မရှင်၏ ၁၃/၂၀၁၈ ကြိမ်မြောက် အစည်းအဝေး ဆုံးဖြတ်ချက်အရ Emerald Brewery
Myanmar Limited ၏ နိုင်ငံခြားမတည်ငွေရင်းပမာဏ အမေရိကန်ဒေါ်လာ ၃၁.၈၅ သန်း မှ
အမေရိကန်ဒေါ်လာ ၄၉.၄၈ သန်းသို့ တိုးမြှင့်၍ စုစုပေါင်းမတည်ငွေရင်းပမာဏ အမေရိကန်
ဒေါ်လာ ၆၅.၀၀ သန်း မှ အမေရိကန်ဒေါ်လာ ၆၁.၈၅ သန်း သို့ လျော့ချ ပြင်ဆင်လိုက်သည်။

(၈) နိုင်ငံခြားမတည်ငွေရင်းပမာဏ _____ အမေရိကန်ဒေါ်လာ ၄၉.၄၈ သန်း

(၁၀) စုစုပေါင်းမတည်ငွေရင်းပမာဏ(ကျပ်) _____ အမေရိကန်ဒေါ်လာ ၆၁.၈၅ သန်း နှင့်
ညီမျှသော မြန်မာကျပ်ငွေ (အမေရိကန်ဒေါ်လာ ၄၉.၄၈ သန်း အပါအဝင်)


ဥက္ကဋ္ဌ(ကိုယ်စား)
(အောင်နိုင်ဦး၊ အတွင်းရေးမှူး)

ရက်စွဲ၊ ၂၀၁၈ ခုနှစ် စက်တင်ဘာလ ၁၅ ရက်
နေရာ၊ ရန်ကုန်မြို့

	Confidential
	REPUBLIC OF THE UNION OF MYANMAR MYANMAR INVESTMENT COMMISSION No. 1, Thitsar Road, Yankin Township, Yangon
Tel: 95-1-658127 Fax: 95-1-658136	Our ref: MIC-2/P-012/2018(435) Date : 15 September 2018
Subject: Decision of the Myanmar Investment Commission for amendment of the amount of foreign capital and the total amount of capital of Emerald Brewery Myanmar Limited	
Reference: Emerald Brewery Myanmar Limited dated 11-9-2018	
1. The Myanmar Investment Commission, at its meeting 13/2018 held on 25 th August 2018, approved the amount of foreign capital of Emerald Brewery Myanmar Limited be increased from US\$ 31.85 million (United States Dollar thirty-one million, eight hundred and fifty thousand) to US\$ 49.48 million (United States Dollar forty-nine million, four hundred and eighty thousand) and the total amount of capital be decreased from US\$ 65.00 million (United States Dollar sixty-five million) to US\$ 61.85 million (United States Dollar sixty-one million, eight hundred and fifty thousand).	
2. Hence, the share ratio of F&N Investments Pte.Ltd. (Singapore) be amended to 80% and Than Lwin Aye Yar Industrial Production & Construction Company Limited (Myanmar) to 20%, the amount of foreign capital and the total amount of capital are hereby amended to US\$ 49.48 million (United States Dollar forty-nine million, four hundred and eighty thousand) and US\$ 61.85 million (United States Dollar sixty-one million, eight hundred and fifty thousand) on the Permit No. 071/2018 dated 27-3-2018.	
3. It is notified that Emerald Brewery Myanmar Limited shall have to abide by all terms and conditions stated in the Commission's letters No.MIC-2/P-012/2018(170-A) dated 27-3-2018.	
	 for Chairman (Aung Naing Oo, Secretary)
Emerald Brewery Myanmar Limited	↓ 8
cc: 1. Ministry of Home Affairs 2. Ministry of Office of the Union Government	
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3. Ministry of Natural Resources and Environmental Conservation
4. Ministry of Labour, Immigration and Population
5. Ministry of Industry
6. Ministry of Commerce
7. Ministry of Health and Sports
8. Ministry of Planning and Finance
9. Yangon Region Investment Committee
10. Office of the Yangon Region Government
11. Director General, Environmental Conservation Department
12. Director General, Directorate of Labour
13. Director General, Department of Immigration
14. Director General, Directorate of Industrial Supervision and Inspection
15. Director General, Department of Trade
16. Director General, Food and Drugs Administration(FDA)
17. Director General, Customs Department
18. Director General, Internal Revenue Department
19. Director General, Directorate of Investment and Company Administration
20. Director General, National Archives Department
21. Yangon Region Office, Directorate of Investment and Company Administration

Confidential



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ပြည်ထဲရေးဝန်ကြီးဌာန
မီးသတ်ဦးစီးဌာန




မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက်

အမှတ်စဉ်(၃၂၇)

ရက် စွဲ၊ ၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ ၆ ရက်

၁။ ရန်ကင်း တိုင်းဒေသကြီး/ပြည်နယ်၊ လှည်းကူး မြို့နယ်၊ ဦးပိုင်အမှတ်(၂/၁၊ ၂/၂၊ ၂/၆) ရေတလဘောင်ကျေးရွာအုပ်စု

ကွင်းတလဘောင်အရှေ့ကွင်း၊ ရပ်ကွက်/ ကျေးရွာ၊ (-) လမ်း အမှတ် (၄၉၈)

မူ ပိုင်ရှင် ဦး/ဒေါ် Emerald Brewery Myanmar Limited ၏

RCC + Steel Structure (၂)ထပ် (ဘိယာချက်စက်ရုံ) (Building-1,2,4,6-20, 25, 25-A,26-30) (၂၅)လုံး

အဆောက်အဦအတွက် ဤဌာနမှသတ်မှတ်ပေးထားသည့် မီးဘေးလုံခြုံရေးဆိုင်ရာပြဌာန်းချက်များအား (၂၅-၃-၂၀၂၃)ရက်နေ့တွင်စစ်ဆေးသည့်အခါ ပြည့်စုံစွာဆောင်ရွက်ထားကြောင်း စစ်ဆေးတွေ့ရှိရသည်။

၂။ ဤထောက်ခံချက်သည် စစ်ဆေးသည့်နေ့မှစ၍ (၃)နှစ်အထိသာ အကျုံးဝင်သည်။

၃။ ထို့ပြင် မီးသတ်ဦးစီးဌာနမှ အခါအားလျော်စွာ ထပ်မံစစ်ဆေးချိန်တွင် မီးဘေးလုံခြုံရေးဆိုင်ရာ ပြဌာန်းချက်များကို လိုက်နာဆောင်ရွက်ခြင်းမရှိပါက ဤထောက်ခံချက်ကို ပြန်လည်ရုတ်သိမ်းသွားမည်ဖြစ်ပြီး အဆောက်အဦအား အသုံးပြုသူ(သို့မဟုတ်)ပိုင်ရှင်သည် မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေအရအရေးယူခြင်းခံရမည်။

မှတ်ချက်။ ဤထောက်ခံချက်အား လွှဲပြောင်းသုံးစွဲခြင်းမပြုရ။ အဆောက်အဦအား မူလရည်ရွယ်ချက်မှ ပြောင်းလဲအသုံးပြုပါက ထောက်ခံချက်အသစ် ထပ်မံလျှောက်ထားရမည်။

RENEWAL

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)
(သိန်းထွန်းဦး၊ ညွှန်ကြားရေးမှူး)
[Signature]

FSC(Way Lin)



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
ပြည်ထဲရေးဝန်ကြီးဌာန
မီးသတ်ဦးစီးဌာန

စာအမှတ်၊ ၄၄၈ / ၁၀၀ / ၅၅ / ဦး ၁
ရက်စွဲ၊ ၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ ၆ ရက်

သို့

Emerald Brewery Myanmar Limited

ဦးပိုင်အမှတ်(၂/၁၊ ၂/၂၊ ၂/၆)၊ (၄၉၈)ကွင်းတလဘောင်အရှေ့ကွင်း

ရေတလဘောင်ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်

အကြောင်းအရာ။ ဆောက်လုပ်ပြီးသောဆောက်အိမ်အတွက်မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက်
(Fire Safety Certificate)ထုတ်ပေးခြင်း

ရည် ညွှန်းချက်။ သက်ဆိုင်သူ၏ (၁၅-၃-၂၀၂၃) ရက်စွဲပါလျှောက်လွှာ

ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ ဦးပိုင်အမှတ် (၁/၂၊၂/၂/၆)၊ ရေတလဘောင်
ကျေးရွာအုပ်စု၊ ဦးပိုင်အမှတ် (၁/၂၊၂/၂/၆)၊ (၄၉၈) ကွင်းတလဘောင်အရှေ့ကွင်းတွင် Emerald Brewery
Myanmar Limited အမည်ဖြင့် RCC+Steel Structure(၂)ထပ် (ဘီယာချက်စက်ရုံ) (Building- 1, 2, 4,
6-20, 25, 25-A, 26-30) စုစုပေါင်း(၂၅)လုံး အဆောက်အအုံ မီးဘေးလုံခြုံရေးဆောင်ရွက်ထားရှိမှုနှင့်
စပ်လျဉ်း၍ ဤဌာန၏ မီးဘေးလုံခြုံရေးဆိုင်ရာပြဋ္ဌာန်းချက်များကို လိုက်နာဆောင်ရွက်မှုရှိကြောင်း
စစ်ဆေးတွေ့ရှိသည့်အတွက် မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက် (Fire Safety Certificate)ကို
ထုတ်ပေးလိုက်ပါသည်။

Handwritten signature and date: ၆.၇.၂၀၂၃

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)
(သိန်းထွန်းဦး၊ ညွှန်ကြားရေးမှူး)

မိတ္တူကို

ရန်ကုန်တိုင်းဒေသကြီးမီးသတ်ဦးစီးမှူးရုံး၊
မြောက်ပိုင်းခရိုင်မီးသတ်ဦးစီးမှူးရုံး၊ လှိုင်သာယာမြို့နယ်၊
မြို့နယ်မီးသတ်ဦးစီးမှူးရုံး၊ လှည်းကူးမြို့နယ်၊
မျှောစာတွဲ၊ လက်ခံစာတွဲ။

သို့

Emerald Brewery Myanmar Limited

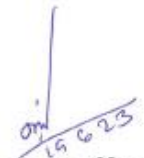
ဦးပိုင်အမှတ်(၂/၁၂/၂၂/၆)၊ (၄၉၈) ကွင်းတလဘောင်အရှေ့ကွင်း
ရေတလဘောင်ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်

ရက်စွဲ၊ ၂၀၂၃ ခုနှစ်၊ ဇွန်လ ၁၅ ရက်

အကြောင်းအရာ။ အဆောက်အဦ မီးဘေးလုံခြုံရေး ကွင်းဆင်းစစ်ဆေးချက် မှတ်တမ်းပေးပို့ခြင်း

၁။ ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ ရေတလဘောင်ကျေးရွာအုပ်စု၊ (၄၉၈) ကွင်းတလဘောင်အရှေ့ကွင်း၊ ဦးပိုင်အမှတ်(၂/၁၂/၂၂/၆) ရှိ Emerald Brewery Myanmar Limited အမည်ဖြင့် ဆောက်လုပ်ထားသည့် Building-9, 10, 11 to 13, 19, 20, 25-A, 26, 27, 28, 29, 30 (တီယာချက်စက်ရုံ) အဆောက်အဦ၏ မီးဘေးလုံခြုံရေး စစ်ဆေးထောက်ခံချက် သက်တမ်းတိုးခြင်းအတွက် မြေပြင်ကွင်းဆင်း စစ်ဆေးပေးပါရန် တင်ပြလာခြင်းအပေါ် မီးသတ်ဦးစီးဌာနမှ ဒုတိယညွှန်ကြားရေးမှူး ဦးအေးကျော် ဦးဆောင်သောအဖွဲ့ဖြင့် (၂၅-၃-၂၀၂၃) ရက်နေ့တွင် သက်တမ်းတိုး ကွင်းဆင်းစစ်ဆေးခဲ့ရာ Diesel Tank များတွင် Cooling System အတွက် Sprinkler System တပ်ဆင်ဆောင်ရွက်သွားရန်နှင့် မီးငြိမ်းသတ်ရေး အတွက် အတည်ပြု Asbuilt Drawing ပါ Fixed Foam System တပ်ဆင်ဆောင်ရွက်သွားရန် ကျန်ရှိနေကြောင်း စစ်ဆေးတွေ့ရှိရပါသည်။

၂။ အထက်ဖော်ပြပါ အကြံပြုချက်များအား ခံဝန်ပါကာလ(၃)လအတွင်း လိုက်နာဆောင်ရွက် သွားရန်နှင့် လိုက်နာဆောင်ရွက်ပြီးစီးချိန်တွင် ကွင်းဆင်းစစ်ဆေးရေးအဖွဲ့သို့ ပြန်လည်အကြောင်း ကြားသွားရန် လိုအပ်ကြောင်း အကြောင်းကြားပါသည်။




စစ်ဆေးရေးအဖွဲ့ခေါင်းဆောင်
(မ-၀၅၁၄)အေးကျော်
ဒုတိယညွှန်ကြားရေးမှူး

မိတ္တူ

လက်ခံစာတွဲ။

လှည်းကူးမြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

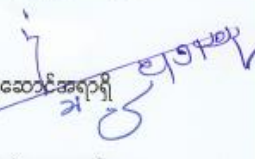
မှတ်ပုံတင်စာရင်းအမှတ်၊ ၃ / (၁.၄.၂၀၂၃ မှ ၃၁.၃.၂၀၂၄)
 လိုင်စင်အမှတ် ၂၀ / (၁.၄.၂၀၂၃ မှ ၃၁.၃.၂၀၂၄)
 ရန်ကုန်တိုင်းဒေသကြီးစည်ပင်သာယာရေးဥပဒေ (၅/၂၀၁၃) ပုဒ်မ ၁၄ (၄) အရ
 ထုတ်ပေးသောလိုင်စင်
 မှန်ဖို့များ၊ စားသောက်ဆိုင်များ

အန္တရာယ်ရှိစေနိုင်သောလုပ်ငန်းနှင့် အခြားလုပ်ငန်းများ

၁။	လိုင်စင်ရရှိသူအမည်	ဦးအောင်ချမ်းသာ
၂။	နိုင်ငံသားစိစစ်ရေးကတ်ပြားအမှတ်	၁၂/ အစန (နိုင်) ၀၁၁၁၆၆
၃။	နေရပ်လိပ်စာ	အမှတ်(၂၇) မြောင်းကြီးလမ်း၊ ပေါက်တောရပ်ကွက်၊ အင်းစိန်မြို့နယ်
၄။	လုပ်ကိုင်ခွင့်ပြုသည့် လုပ်ငန်းအမျိုးအစား	ဘီယာထုတ်လုပ်ရောင်ချခြင်းလုပ်ငန်း (Chang)
၅။	လုပ်ငန်းလုပ်ကိုင်သည့် နေရာအကျယ်အဝန်း ဥပစာပိုင်နက်အဆောက်အအုံတည်နေရာ (အဆောက်အအုံပိုင်နက်၊ ဥပစာအကြောင်းအရာ ဖော်ပြချက်အခန်းနံပါတ်)	ကွင်းအမှတ်(၄၉၈) ကွင်းတလဘောင်အရှေ့ကွင်း၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့
၆။	ခွင့်ပြုသည့် အချိန်ကာလအပိုင်းအခြား	၁.၄.၂၀၂၃ မှ ၃၁.၃.၂၀၂၄
၇။	ပေးသွင်းငွေ၊ ချယ်အမှတ်၊ ခွင့်ပြုရက်စွဲ	၂၀၀၀၀၀၀ / ၁၃ / ၉.၅.၂၀၂၃
၈။	လိုင်စင်ထုတ်ပေးသည့်ရက်စွဲ	၉.၅.၂၀၂၃

ဘီယာထုတ်လုပ်ရောင်ချခြင်း (Chang) လုပ်ငန်းလိုင်စင်အတွက် အဖွဲ့မှ ထုတ်ပြန်ထားသော စည်းကမ်း၊ ဥပဒေများ၊ ညွှန်ကြားချက်များ၊ အခါအားလျော်စွာ ထုတ်ပြန်သည့်စည်းကမ်းချက်များနှင့် ကြေငြာချက်များကိုလည်း လိုက်နာရမည်။ စည်းကမ်းများ လိုက်နာမှု ရှိ / မရှိ အဖွဲ့မှ စစ်ဆေးခြင်းကို ခံယူရမည်။ လိုက်နာခြင်းမရှိဘဲ၊ ပျက်ကွက်ခဲ့သော် လိုင်စင် ရုပ်သိမ်းခြင်း ခံရမည့်အပြင် ဥပဒေအရ၊ ထိရောက်စွာ အရေးယူခြင်းခံရမည်။

အမှုဆောင်အရာရှိ 

စည်းကမ်းချက်များ

၁။	ဤလိုင်စင်အား လူ အများမြင်တွေ့နိုင်သော နေရာတွင် မှန်ဘောင်သွင်းချိတ်ဆွဲထားရမည်။
၂။	လုပ်ငန်းဆက်လက် လုပ်ကိုင်ခြင်းမရှိတော့ပါက လုပ်ငန်းစည်းကြပ်စာရင်းမှ ပယ်ဖျက်နိုင်ရေးအတွက် ပြန်လည်တင်ပြလျှောက်ထားရမည်။
၃။	လုပ်ငန်းဆက်လက်လုပ်ကိုင်ပါက လိုင်စင်သက်တမ်းမကုန်ဆုံးမီ(၁)လ ကြိုတင် လျှောက်ထားရမည်။
၄။	မိမိ ဥပစာ ပိုင်နက်အတွင်း၌သာ လုပ်ငန်းဆောင်ရွက်ရမည်။ လမ်းမြေနှင့် အများပိုင် ရေမြောင်းများ ပေါ်သို့ ကျူးကျော်၍ လုပ်ငန်းဆောင်ရွက်ခြင်းမပြုရ။
၅။	ဤလုပ်ငန်းလိုင်စင်ချထားပေးခြင်းသည် အဆောက်အဦး ဆောက်လုပ်ခွင့်ပြုခြင်း၊ မြေပိုင်ဆိုင်ခွင့်နှင့် အခြား ပိုင်ဆိုင်ခွင့်များအတွက်သက်သေခံခြင်း မဟုတ်ပါ။ ရန်ကုန်တိုင်းဒေသကြီးစည်ပင်သာယာရေး ဥပဒေပုဒ်မ ၁၄(ည)/၁၄(ဋ) တို့အရလုပ်ငန်းဆောင်ရွက်ခြင်းအပေါ် အခွန်ငွေကောက်ခံရန်အတွက်သာ ဖြစ်ပါသည်။



စက်မှုဝန်ကြီးဌာန
ရန်ကုန်တိုင်းဒေသကြီး စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန

အမှတ် - ၁၉၂၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့


စာအမှတ် ၁၅၁၅(၇)ရက-လဆရ/၂၂/၂၀၂၃(၄၄၉၃)
ရက်စွဲ ၂၀၂၃ ခုနှစ်၊ ဇွန်လ ၂၁ ရက်

အကြောင်းအရာ။ ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ ကွင်းတလဘောင်အရှေ့ကွင်း၊
ကွင်းအမှတ်(၄၉၈)၊ အမှတ်(၂/၁+၂၊ ၂/၄ + ၂/၆ + N2) ရှိ Emerald Brewery
Myanmar Limited ၏ ဘီယာထုတ်လုပ်ငန်း အတွက် တပ်ဆင်ပြီးဖြစ်သော ၄၀၀
ဗို့၊ ၁၅၀၀ ကေစီအေ စုစုပေါင်း ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက်(နှစ်)လုံးဖြင့်
လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်
ထုတ်ပေးခြင်း

ရည်ညွှန်းချက်။ Emerald Brewery Myanmar Limited ၏ လျှောက်ထားချက်အရ
အထက်အကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍ ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊
ကွင်းတလဘောင်အရှေ့ကွင်း၊ ကွင်းအမှတ်(၄၉၈)၊ အမှတ်(၂/၁+၂၊ ၂/၄ + ၂/၆ + N2) ရှိ Emerald
Brewery Myanmar Limited ၏ ဘီယာထုတ်လုပ်ငန်း အတွက် တပ်ဆင်ပြီးဖြစ်သော ၄၀၀ ဗို့၊ ၁၅၀၀
ကေစီအေ စုစုပေါင်း ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက်(နှစ်)လုံးဖြင့် လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်းနှင့်
အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်ကို ၂၀၂၃ ခုနှစ် ဇွန်လ (၁၃) ရက်နေ့မှ စတင်၍ ထုတ်ပေး
လိုက်သည်။

(Handwritten signature)
တိုင်းဒေသကြီးဦးစီးဌာနမှူး (*(Handwritten signature)*)
ခိုင်မြင့် - ဒုတိယညွှန်ကြားရေးမှူး
ရန်ကုန်တိုင်းဒေသကြီး လျှပ်စစ်စစ်ဆေးရေးမှူး
(Handwritten signature)

Mr Koh Tai Hong
အမှတ်(၂/၁+၂၊ ၂/၄+၂/၆+N2)၊ ကွင်းအမှတ်(၄၉၈)၊
ကွင်းတလဘောင်အရှေ့ကွင်း၊ လှည်းကူးမြို့နယ်။
မိတ္တူ -
- ရုံးလက်ခံ၊
- မျှောစာတွဲ။



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

စက်မှုဝန်ကြီးဌာန

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

လျှပ်စစ်စစ်ဆေးရေးဌာန

လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်

ခွင့်ပြုမိန့် အမှတ်စဉ် - YD-G (N) ၂၄၄ / ၆-၂၀၂၃

၁။ ၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေပုဒ်မ ၃၂ (c) နှင့် တည်ဆဲလျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံး လုပ်နည်းများအရ Emerald Brewery Myanmar Limited ၏ ဘီယာထုတ်လုပ်ငန်း အတွက် တပ်ဆင်ပြီး ဖြစ်သော ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက်အား အောက်ဖော်ပြပါ နယ်မြေဒေသအတွင်း မှတ်ပုံတင်လက်မှတ်တွင် ပါရှိသော စည်းကမ်းချက် များနှင့်အညီ ၂၀၂၃ ခုနှစ် ဇွန် လ (၁၃) ရက်နေ့မှ စတင်၍ လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

- (က) ခွင့်ပြုသည့်နယ်မြေဒေသ - အမှတ်(၂/၁+၂၊၂/၄+၂/၆+N2)၊ ကွင်းအမှတ်(၄၉၈)၊ ကွင်းတလဘောင်အရှေ့ကွင်း၊
- မြို့နယ် - လှည်းကူးမြို့နယ်၊
- တိုင်း - ရန်ကုန်တိုင်းဒေသကြီး။
- (ခ) အများဆုံးထုတ်လုပ်သည့် ဓာတ်အားပမာဏ - 1500 kVA
- (ဂ) သတ်မှတ်ဗို့အား - 400 V
- (ဃ) လျှပ်ထုတ်စက်အမျိုးအစား - SR5 (CATERPILLAR)
- (င) လျှပ်ထုတ်စက်နံပါတ် - Y1R00292
- (စ) အင်ဂျင်အမျိုးအစား - 3512B (CATERPILLAR)
- (ဆ) အင်ဂျင်မြင်းကောင်ရေ - 1310 kW
- (ဇ) အင်ဂျင်နံပါတ် - DB800274

၂။ ဓာတ်အားထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းတို့အတွက် အသုံးပြုသော လျှပ်စစ်ပစ္စည်း ကိရိယာ တည်ဆောက်မှုဆိုင်ရာ နည်းစနစ်များသည် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများပါ ပြဋ္ဌာန်းချက်များ အရဖြစ်ရမည့်အပြင် စစ်ဆေးရေးမှူး ၏ စစ်ဆေးစမ်းသပ်ခြင်းကို ခံယူရပါမည်။

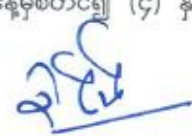
၃။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ ပြဋ္ဌာန်းချက်များကို တိကျစွာ လိုက်နာ ဆောင်ရွက်ရမည်။


၄။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် ဤလက်မှတ်တွင်ပါရှိသော အကြောင်းအရာများ ကို လိုက်နာခြင်း မရှိပါက ထုတ်ပေးထားသော လက်မှတ်ကို ပြန်လည် ရုတ်သိမ်းမည်။

၅။ ဤမှတ်ပုံတင်လက်မှတ် သက်တမ်းသည် ခွင့်ပြုသည့်နေ့မှစတင်၍ (၄) နှစ် အချိန်ကာလ အတွင်းသာ အကျိုးသက်ရောက် စေရမည်။

စတင်ခွင့်ပြုသည့်နေ့ - ၁၃ . ၆ . ၂၀၂၃


ကုန်ဆုံးသည့်နေ့ - ၁၂ . ၆ . ၂၀၂၇



လျှပ်စစ်စစ်ဆေးရေးမှူးချုပ် ()

ရန်ကုန်တိုင်းဒေသကြီး လျှပ်စစ်စစ်ဆေးရေးမှူး

-K



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန

လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်
ခွင့်ပြုမိန့် အမှတ်စဉ် - YD-G (N) ၂၄၅/ ၇-၂၀၂၃

၁။ ၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေပုဒ်မ ၃၂ (c) နှင့် တည်ဆဲလျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံး လုပ်နည်းများအရ Emerald Brewery Myanmar Limited ၏ ဘိယာထုတ်လုပ်ငန်း အတွက် တပ်ဆင်ပြီးဖြစ်သော ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက်အား အောက်ဖော်ပြပါ နယ်မြေဒေသအတွင်း မှတ်ပုံတင်လက်မှတ်တွင် ပါရှိသော စည်းကမ်းချက် များနှင့်အညီ ၂၀၂၃ ခုနှစ် ဇွန် လ (၁၃) ရက်နေ့မှ စတင်၍ လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

(က) ခွင့်ပြုသည့်နယ်မြေဒေသ	- အမှတ်(၂/၁+၂၂/၄+၂/၆+N2)၊ ကွင်းအမှတ်(၄၉၈)၊ ကွင်းတလဘောင်အရှေ့ကွင်း၊
မြို့နယ်	- လှည်းကူးမြို့နယ်၊
တိုင်း	- ရန်ကုန်တိုင်းဒေသကြီး။
(ခ) အများဆုံးထုတ်လုပ်သည့် ဓာတ်အားပမာဏ	- 1500 kVA
(ဂ) သတ်မှတ်ဗို့အား	- 400 V
(ဃ) လျှပ်ထုတ်စက်အမျိုးအစား	- SR5 (CATERPILLAR)
(င) လျှပ်ထုတ်စက်နံပါတ်	- Y1R00291
(စ) အင်ဂျင်အမျိုးအစား	- 3512B (CATERPILLAR)
(ဆ) အင်ဂျင်မြင်းကောင်ရေ	- 1310 kW
(ဇ) အင်ဂျင်နံပါတ်	- DB800273



၂။ ဓာတ်အားထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းတို့အတွက် အသုံးပြုသော လျှပ်စစ်ပစ္စည်း ကိရိယာ တည်ဆောက်မှုဆိုင်ရာ နည်းစနစ်များသည် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများပါ ပြဋ္ဌာန်းချက်များ အရဖြစ်ရမည့်အပြင် စစ်ဆေးရေးမှူး ၏ စစ်ဆေးစမ်းသပ်ခြင်းကို ခံယူရပါမည်။

၃။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ ပြဋ္ဌာန်းချက်များကို တိကျစွာ လိုက်နာဆောင်ရွက်ရမည်။

၄။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် ဤလက်မှတ်တွင်ပါရှိသော အကြောင်းအရာများ ကို လိုက်နာခြင်း မရှိပါက ထုတ်ပေးထားသော လက်မှတ်ကို ပြန်လည် ရုတ်သိမ်းမည်။

၅။ ဤမှတ်ပုံတင်လက်မှတ် သက်တမ်းသည် ခွင့်ပြုသည့်နေ့မှစတင်၍ (၄) နှစ် အချိန်ကာလအတွင်းသာ အကျိုးသက်ရောက် စေရမည်။

စတင်ခွင့်ပြုသည့်နေ့	- ၁၃ . ၆ . ၂၀၂၃
ကုန်ဆုံးသည့်နေ့	- ၁၂ . ၆ . ၂၀၂၇

လျှပ်စစ်စစ်ဆေးရေးမှူးချုပ် ()
 ရန်ကုန်တိုင်းဒေသကြီး လျှပ်စစ်စစ်ဆေးရေးမှူး ()

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန
လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်
ခွင့်ပြုမိန့် အမှတ်စဉ် - YD-G (N) ၂၄၁ /၆-၂၀၂၃

၁။ ၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေပုဒ်မ ၃၂ (c) နှင့် တည်ဆဲလျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံး လုပ်နည်းများအရ Emerald Brewery Myanmar Limited ၏ ဘီယာထုတ်လုပ်ခြင်းလုပ်ငန်း အတွက် တပ်ဆင်ပြီးဖြစ်သော ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက် အား အောက်ဖော်ပြပါ နယ်မြေဒေသ အတွင်း မှတ်ပုံတင် လက်မှတ်တွင်ပါရှိသော စည်းကမ်းချက်များနှင့်အညီ ၂၀၂၃ ခုနှစ် ဇွန် လ (၁၃) ရက်နေ့မှ စတင်၍ လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

- (က) ခွင့်ပြုသည့်နယ်မြေဒေသ - အမှတ်(၂/၁+၂/၂+၂/၄+၂/၆+N-2)၊ ကွင်းအမှတ်(၄၉၈)၊ မြို့နယ် - ကွင်းတလဘောင်အရှေ့ကွင်း၊ လှည်းကူးမြို့နယ်၊ တိုင်း - ရန်ကုန်တိုင်းဒေသကြီး
- (ခ) အများဆုံးထုတ်လုပ်သည့် ဓာတ်အားပမာဏ - 1500 kVA
- (ဂ) သတ်မှတ်ဗို့အား - 400 V
- (ဃ) လျှပ်ထုတ်စက်အမျိုးအစား - SR5(Caterpillar)
- (င) လျှပ်ထုတ်စက်နံပါတ် - Y1R00293
- (စ) အင်ဂျင်အမျိုးအစား - 3512B(Caterpillar)
- (ဆ) အင်ဂျင်မြင်းကောင်ရေ - 1310 kW
- (ဇ) အင်ဂျင်နံပါတ် - DB800275


၂။ ဓာတ်အားထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းတို့အတွက် အသုံးပြုသော လျှပ်စစ်ပစ္စည်း ကိရိယာ တည်ဆောက်မှုဆိုင်ရာ နည်းစနစ်များသည် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများပါ ပြဋ္ဌာန်းချက်များ အရဖြစ်ရမည့်အပြင် စစ်ဆေးရေးမှူး ၏ စစ်ဆေးစမ်းသပ်ခြင်းကို ခံယူရပါမည်။

၃။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ ပြဋ္ဌာန်းချက်များကို တိကျစွာ လိုက်နာ ဆောင်ရွက်ရမည်။

၄။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် ဤလက်မှတ်တွင်ပါရှိသော အကြောင်းအရာများကို လိုက်နာခြင်း မရှိပါက ထုတ်ပေးထားသော လက်မှတ်ကို ပြန်လည် ရုတ်သိမ်းမည်။

၅။ ဤမှတ်ပုံတင်လက်မှတ် သက်တမ်းသည် ခွင့်ပြုသည့်နေ့မှစတင်၍ (၄) နှစ် အချိန်ကာလ အတွင်းသာ အကျိုးသက်ရောက် စေရမည်။

စတင်ခွင့်ပြုသည့်နေ့ - ၁၃ . ၆ . ၂၀၂၃
 ကုန်ဆုံးသည့်နေ့ - ၁၂ . ၆ . ၂၀၂၇

လျှပ်စစ်စစ်ဆေးရေးမှူးချုပ် ()
 စက်မှုဝန်ကြီးဌာနကြီး၊ လျှပ်စစ်စစ်ဆေးရေးဌာန



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
စက်မှုဝန်ကြီးဌာန
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန
လျှပ်စစ်ဓာတ်အား ထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်
ခွင့်ပြုမိန့် အမှတ်စဉ် - YD-G (N) ၂၄၂ /၆-၂၀၂၃

၁။ ၂၀၁၄ ခုနှစ် လျှပ်စစ်ဥပဒေပုဒ်မ ၃၂ (c) နှင့် တည်ဆဲလျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံး လုပ်နည်းများအရ Emerald Brewery Myanmar Limited ၏ ဘီယာထုတ်လုပ်ခြင်းလုပ်ငန်း အတွက် တပ်ဆင်ပြီးဖြစ်သော ဒီဇယ်အင်ဂျင် လျှပ်ထုတ်စက် အား အောက်ဖော်ပြပါ နယ်မြေဒေသ အတွင်း မှတ်ပုံတင် လက်မှတ်တွင်ပါရှိသော စည်းကမ်းချက်များနှင့်အညီ ၂၀၂၃ ခုနှစ် ဇွန် လ (၁၃) ရက်နေ့မှ စတင်၍ လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာ မှတ်ပုံတင်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

(က) ခွင့်ပြုသည့်နယ်မြေဒေသ - အမှတ်(၂/၁+၂/၂+၂/၄+၂/၆+N-2)၊ ကွင်းအမှတ်(၄၉၈)၊ မြို့နယ် - ကွင်းတလဘောင်အရှေ့ကွင်း၊ လှည်းကူးမြို့နယ်၊ တိုင်း - ရန်ကုန်တိုင်းဒေသကြီး

(ခ) အများဆုံးထုတ်လုပ်သည့် ဓာတ်အားပမာဏ - 1500 kVA

(ဂ) သတ်မှတ်ဖို့အား - 400 V

(ဃ) လျှပ်ထုတ်စက်အမျိုးအစား - SR5(Caterpillar)

(င) လျှပ်ထုတ်စက်နံပါတ် - Y1R00294

(စ) အင်ဂျင်အမျိုးအစား - 3512B(Caterpillar)

(ဆ) အင်ဂျင်မြင်းကောင်ရေ - 1310 kW

(ဇ) အင်ဂျင်နံပါတ် - DB800276



၂။ ဓာတ်အားထုတ်လုပ်ခြင်း နှင့် အသုံးပြုခြင်းတို့အတွက် အသုံးပြုသော လျှပ်စစ်ပစ္စည်း ကိရိယာ တည်ဆောက်မှုဆိုင်ရာ နည်းစနစ်များသည် လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများပါ ပြဌာန်းချက်များ အရဖြစ်ရမည့်အပြင် စစ်ဆေးရေးမှူး ၏ စစ်ဆေးစမ်းသပ်ခြင်းကို ခံယူရပါမည်။

၃။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းပါ ပြဌာန်းချက်များကို တိကျစွာ လိုက်နာ ဆောင်ရွက်ရမည်။

၄။ လျှပ်စစ်ဥပဒေဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများနှင့် ဤလက်မှတ်တွင်ပါရှိသော အကြောင်းအရာများကို လိုက်နာခြင်း မရှိပါက ထုတ်ပေးထားသော လက်မှတ်ကို ပြန်လည် ရုတ်သိမ်းမည်။

၅။ ဤမှတ်ပုံတင်လက်မှတ် သက်တမ်းသည် ခွင့်ပြုသည့်နေ့မှစတင်၍ (၄) နှစ် အချိန်ကာလ အတွင်းသာ အကျိုးသက်ရောက် စေရမည်။

စတင်ခွင့်ပြုသည့်နေ့ - ၁၃ . ၆ . ၂၀၂၃
ကုန်ဆုံးသည့်နေ့ - ၁၂ . ၆ . ၂၀၂၇


လျှပ်စစ်စစ်ဆေးရေးမှူးချုပ် ()
စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
စက်မှုဝန်ကြီးဌာန
ရန်ကုန်တိုင်းဒေသကြီး စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန
လျှပ်စစ်စစ်ဆေးရေးဌာန
အမှတ် - ၁၉၂၊ ကမ္ဘာအေးဘုရားလမ်း၊ ဗဟန်းမြို့နယ်၊ ရန်ကုန်မြို့

ရက်စွဲ၊ ၂၀၂၃ ခုနှစ် ဇွန် လ ၁၃ ရက်

အကြောင်းအရာ။ လျှပ်စစ်သွယ်တန်းတပ်ဆင်မှု စစ်ဆေးခ တောင်းခံခြင်း

၁။ အထက်ကြောင်းအရာပါကိစ္စနှင့်ပတ်သက်၍လူကြီးမင်း၏ ဘီယာထုတ်လုပ်ခြင်းလုပ်ငန်း + လျှပ်ထုတ်စက် (၄) လုံးကို ဤဌာနမှ စမ်းသပ်စစ်ဆေးပြီးဖြစ်ပါ၍ စမ်းသပ် စစ်ဆေးခ အခွန်ငွေ ၁၈၂၀၀၀၀/- (ကျပ် တစ်သိန်း ဝှစ်သောင်း နှစ်ထောင် တိတိ) ကို မြန်မာစီးပွားရေးဘဏ် (အင်းစိန်ဘဏ်ခွဲ) ၊ ရန်ကုန်မြို့တွင် ငွေစာရင်း ခေါင်းစဉ်အမှတ် (MD-012926) ဖြင့် ဤစာရရှိသည့် နေ့မှစ၍ (၇) ရက် အတွင်း ငွေပေးသွင်းပြီး မူရင်းချလန်တစ်စောင်ကို ဆောလျှင်စွာ ဤဌာနသို့ ပေးပို့ပါရန် အကြောင်းကြားပါသည်။

၂။ ချလန်တိုင်းတွင် အောက်ဖော်ပြပါ ငွေစာရင်းခေါင်းစဉ် အမြဲရေးသွင်းရမည် ဖြစ်ပါသည်။
ငွေစာရင်းခေါင်းစဉ်


၀၃။ စက်မှု
တစ် - သာမန်ရငွေ

၂။ စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

၁။ ပစ္စည်းများရောင်းချရငွေ နှင့် ဆောင်ရွက်ခအတွက် ရငွေများ

၀၅။ လျှပ်စစ်နှင့်ဘျိုင်လာစစ်ဆေးကြည့်ရှုခငွေများ

မှတ်ချက်- ဘဏ်ငွေသွင်းချလန်များကို ဤရုံးငွေစာရင်းဌာနတွင် ဦးစွာ မှတ်တမ်းရေးသွင်းရန် နှင့် မှတ်တမ်း ရေးသွင်းခြင်းမရှိပါက ပေးသွင်းသူ ၏ တာဝန်သာ ဖြစ်ပါသည်။


ဒုတိယညွှန်ကြားရေးမှူး (ကုမ္ပဏီ)
ခင်ဇော် (ဌာနခွဲမှူး)
လျှပ်စစ်စစ်ဆေးရေးဌာန

Mr Koh Tai Hong
အမှတ်(၂/၁+၂/၂+၂/၄+၂/၆+N-2)ကွင်းအမှတ်(၄၉၈)၊
ကွင်းတလဘောင်အရှေ့ကွင်းလှည်းကူးမြို့နယ်။
မိတ္ထူ -
- ရုံးလက်ခံ၊




ဘွိုင်လာယာယီအသုံးပြုခွင့်လက်မှတ်
{ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆ အပိုဒ်ခွဲ (ဆ) }

စာအမှတ်... ၇၀၀/၂၅၇၃၄/မ.လ./... ပ.အ.၇၀၂

.....
.....
.....

.....အား.....
..... ကုမ္ပဏီ..... နိုင်ငံမှ
ထုတ်လုပ်သည့်ဘွိုင်လာအမှတ်.....ပါသော
သို့မဟုတ်ဘွိုင်လာမှတ်ပုံတင်အမှတ် မ.စ..၅၇၈၄.....ဖြစ်သော မက်ရှင်ကွပ်ဘွိုင်လာကို
ခွင့်ပြုဖိအား..... ၀.၅၈MPa.....ဖြင့်လက်မှတ်ထုတ်ပေးသည့်နေ့မှ (၆)လ အသုံးပြုခွင့်ရှိသည်။
ယင်းကာလအပိုင်းအခြားကျော်လွန်သည့်အခါ ထုတ်ပေးထားသည့် ဤယာယီအသုံးပြုခွင့်လက်မှတ်
ပျက်ပြယ်စေရမည်။


ဒုတိယညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး


(ခေါင်းစဉ်)
ဘွိုင်လာစစ်ဆေးရေးမှူး
လက်ထောက်ညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး

ရက်စွဲ။ ၉.၁.၂၀၂၄

မှတ်ချက်။ ။ ဘွိုင်လာဥပဒေပုဒ်မ ၁၅ပါ ပြဋ္ဌာန်းထားသည့် သက်ဆိုင်ရာအစိုးရဌာနအဖွဲ့အစည်းက
လိုအပ်၍ တောင်းဆိုသည့်အခါ ဤလက်မှတ်ကို တင်ပြရမည်။






ဘွိုင်လာယာယီအသုံးပြုခွင့်လက်မှတ်
{ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆ အပိုဒ်ခွဲ (ဆ) }

စာအမှတ်.....^{၅၈}
၂၀၂၃-၂၄ / အက.၃. / ပ.၂၂၁-၄၀...

...M.B., Emerald Brewery Myanmar Ltd. ဘီယာထုတ်လုပ်ဖြန့်ဖြူးရောင်းချရန်...
...အမှတ် (၄၉၈)၊ ကွင်းတင်တောင်အရှေ့ဘက်၊ ရေကန်တောင်အရှေ့ဘက်...
...လှိုင်၊ ကျေးရွာ၊ ရန်ကင်းမြို့နယ်၊ ရန်ကင်းမြို့နယ်...
.....အား.....
.....ကုမ္ပဏီ..... နိုင်ငံမှ
ထုတ်လုပ်သည့်ဘွိုင်လာအမှတ်.....ပါသော
သို့မဟုတ်ဘွိုင်လာမှတ်ပုံတင်အမှတ် မ.စ.၆.၂၈၅.....ဖြစ်သော မက်ရှင်ကျက်.....ဘွိုင်လာကို
ခွင့်ပြုအား.....၀.၄၈. MPA.....ဖြင့်လက်မှတ်ထုတ်ပေးသည့်နေ့မှ (၆)လ အသုံးပြုခွင့်ရှိသည်။
ယင်းကာလအပိုင်းအခြားကျော်လွန်သည့်အခါ ထုတ်ပေးထားသည့် ဤယာယီအသုံးပြုခွင့်လက်မှတ်
ပျက်ပြယ်စေရမည်။


ဒုတိယညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး


(ဧကန်စစ်ဆေးရေး)
ဘွိုင်လာစစ်ဆေးရေးမှူး
လက်ထောက်ညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး

ရက်စွဲ။၉.၁.၆. ၂၀၂၃.....

မှတ်ချက်။ ။ ဘွိုင်လာဥပဒေပုဒ်မ ၁၅ပါ ပြဋ္ဌာန်းထားသည့် သက်ဆိုင်ရာအစိုးရဌာနအဖွဲ့အစည်းက
လိုအပ်၍ တောင်းဆိုသည့်အခါ ဤလက်မှတ်ကို တင်ပြရမည်။






ဘွိုင်လာယာယီအသုံးပြုခွင့်လက်မှတ်

{ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆ အပိုဒ်ခွဲ (ဆ) }

စာအမှတ်. ၈၇၁/၂၀၂၃/၂၄ / ၈၈၁. / ၂၀၂၃

MO, Emerald Brewery Myanmar Ltd, ဘွိုင်လာယာယီအသုံးပြုခွင့်
ရရှိရန် (၂၀၂၃) လွှတ်ပြန်ရန်အတွက် အောက်ဖော်ပြပါအချက်များကို
လွှတ်ပြန်ရန်အတွက် ရန်ကုန်တိုင်းဒေသကြီး
.....အား.....

.....ကုမ္ပဏီ..... နိုင်ငံမှ
ထုတ်လုပ်သည့်ဘွိုင်လာအမှတ်.....ပါသော
သို့မဟုတ်ဘွိုင်လာမှတ်ပုံတင်အမှတ် မ.စ. ၆၈၆၂.....ဖြစ်သော.....ဘွိုင်လာကို
ခွင့်ပြုအား..... ၈၀၅၈၆၂.....ဖြင့်လက်မှတ်ထုတ်ပေးသည့်နေ့မှ (၆)လ အသုံးပြုခွင့်ရှိသည်။
ယင်းကာလအပိုင်းအခြားကျော်လွန်သည့်အခါ ထုတ်ပေးထားသည့် ဤယာယီအသုံးပြုခွင့်လက်မှတ်
ပျက်ပြယ်စေရမည်။


ရက်စွဲ။ ၈၇၁/၂၀၂၃/၂၄.....
စုတိယညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး


(တော်ဝင်)
ဘွိုင်လာစစ်ဆေးရေးမှူး
လက်ထောက်ညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး

ရက်စွဲ။ ၈၇၁/၂၀၂၃/၂၄.....
မှတ်ချက်။ ။ ဘွိုင်လာဥပဒေပုဒ်မ ၁၅ပါ ပြဋ္ဌာန်းထားသည့် သက်ဆိုင်ရာအစိုးရဌာနအဖွဲ့အစည်းက
လိုအပ်၍ တောင်းဆိုသည့်အခါ ဤလက်မှတ်ကို တင်ပြရမည်။




ဘွိုင်လာယာယီအသုံးပြုခွင့်လက်မှတ်
{ လုပ်ထုံးလုပ်နည်း အပိုဒ် ၆ အပိုဒ်ခွဲ (ဆ) }

စာအမှတ်: ၇၈၈/၂၅၇၂၄/၂၀၁၀/..ယ.က.ရ.စ

MO, Emerald Brewery Myanmar Ltd., ဟိုတယ်
လုပ်ငန်း (၇၉၁) လွှဲပြောင်းရောင်းချမှုနှင့်
ကုန်ထုတ်လုပ်မှု လုပ်ငန်းများ ပြုလုပ်ရန်အတွက်
အား.....

..... နိုင်ငံမှ ထုတ်လုပ်သည့်ဘွိုင်လာအမှတ်.....ပါသော သို့မဟုတ်ဘွိုင်လာမှတ်ပုံတင်အမှတ် မ.စ. ၈၅၆၂.....ဖြစ်သော.....ဘွိုင်လာကို ခွင့်ပြုအား..... ဖြင့်လက်မှတ်ထုတ်ပေးသည့်နေ့မှ (၆)လ အသုံးပြုခွင့်ရှိသည်။ ယင်းကာလအပိုင်းအခြားကျော်လွန်သည့်အခါ ထုတ်ပေးထားသည့် ဤယာယီအသုံးပြုခွင့်လက်မှတ် ပျက်ပြယ်စေရမည်။


ဗဟိုယဉ်ကျေးရေးနှင့်
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး


(ခေါင်းစဉ်)
ဘွိုင်လာစစ်ဆေးရေးမှူး
လက်ထောက်ညွှန်ကြားရေးမှူး
(ဘွိုင်လာစစ်ဆေးရေး)
ရန်ကုန်တိုင်းဒေသကြီး

ရက်စွဲ။ ၉.၁၂.၂၀၁၇.....

မှတ်ချက်။ ။ ဘွိုင်လာဥပဒေပုဒ်မ ၁၅ပါ ပြဋ္ဌာန်းထားသည့် သက်ဆိုင်ရာအစိုးရဌာနအဖွဲ့အစည်းက လိုအပ်၍ တောင်းဆိုသည့်အခါ ဤလက်မှတ်ကို တင်ပြရမည်။

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

၂၀၀၈ ခုနှစ်၊ ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော် ဖွဲ့စည်းပုံအခြေခံဥပဒေပုဒ်မ ၃၈၉ အရ နိုင်ငံသားတိုင်းသည် ဥပဒေအရ ပေးဆောင်ရမည့် အခွန်အကောက်များကို ပေးဆောင်ရန် တာဝန်ရှိသည်။



ပြည်တွင်းအခွန်များဦးစီးဌာန
အခွန်ထမ်းကြီးများဆိုင်ရာအခွန်ရုံး (၁)
ကျောက်တံတားမြို့နယ်
ရန်ကုန်တိုင်းဒေသကြီး



အထူးကုန်စည်ခွန်ဥပဒေပုဒ်မ ၁၅၊ ပုဒ်မခွဲ(ဂ)၊ အထူးကုန်စည်ခွန်နည်းဥပဒေ ၉၊ နည်းဥပဒေခွဲ(က)၊ နည်းဥပဒေ ၁၀ နှင့် နည်းဥပဒေ ၁၁ တို့အရ အထူးကုန်စည်ကို တင်သွင်းသူ သို့မဟုတ် ထုတ်လုပ်သူ သို့မဟုတ် တင်ပို့သူ အား ထုတ်ပေးသည့် လုပ်ငန်းမှတ်ပုံတင်လက်မှတ်

မှတ်ပုံတင်လက်မှတ်အမှတ်စဉ် အထခ/၀၀၈/(B) ရက်စွဲ ၂၀-၄-၂၀၂၃

အခွန်ထမ်းအမည် Emerald Brewery Myanmar Limited

အခွန်ထမ်းမှတ်ပုံတင်အမှတ် 104783007

နိုင်ငံသားစိစစ်ရေးကတ်ပြားအမှတ်/ကုမ္ပဏီမှတ်ပုံတင်အမှတ် 104783007(15-12-2017)

လိပ်စာ Plot No.498,Yay Ta La Baund Village Tract,Hlegu,Yangon Region

၁။ အောက်ဖော်ပြပါ အထူးကုန်စည်(များ)ကို တင်သွင်း/ထုတ်လုပ်/တင်ပို့သူ Emerald Brewery Myanmar Limitedသို့ အထူးကုန်စည်ခွန်ဥပဒေပုဒ်မ ၁၅၊ပုဒ်မခွဲ(ဂ)အရ မှတ်ပုံတင်လက်မှတ်ကို ထုတ်ပေးလိုက်သည်-

တင်သွင်း/ထုတ်လုပ်/တင်ပို့သည့် ကုန်စည် (များ) Manufacturing and distribution of beer
ကုန်စည်(များ) ထုပ်ပိုးမှုပုံစံ can,bot,kegs

၂။ ဤလက်မှတ်သည် အောက်ဖော်ပြပါနေရာ၌ လုပ်ကိုင်ဆောင်ရွက်သော လုပ်ငန်းအတွက်ဖြစ်သည်။
လုပ်ငန်းအဓိကတည်ရှိရာနေရာ Plot No.498,Yay Ta La Baund Village Tract,Hlegu,Yangon Region

ကုန်စည်(များ)ကို အလွှာတစ်ခုစီအလိုက် ခွင့်ပြုသည့် လုပ်ငန်းဥပစာ-----
-- Plot No.498,Yay Ta La Baund Village Tract,Hlegu,Yangon Region

လုပ်ငန်း(၂)ခုထက်ပိုသော လုပ်ငန်းခွဲများအား နောက်ဆက်တွဲဖြင့် ဖော်ပြထားပါသည်။
(၁) အကွက်အမှတ်(၅၁၄/၉)၊မဟာဘုဇေယျာဘိုရပ်ကွက်၊အောင်မြေသာစံမြို့နယ်၊မန္တလေးမြို့။
(၂) -----

လုပ်ငန်းဥပစာအတွက် တာဝန်ရှိပုဂ္ဂိုလ်နှင့်ကြီးကြပ်ကွပ်ကဲခွင့်ပြုသည့် ပုဂ္ဂိုလ်အမည်များ Mr.Koh Tai Hong

၃။ ဤလက်မှတ်သည် ၂၀၂၄ ခုနှစ်၊ မတ် ၃၁ ရက်နေ့တွင် ကုန်ဆုံးသောနှစ်အထိသာ အတည်ဖြစ်သည်။



တာဝန်ခံအရာရှိ
ပြည်တွင်းအခွန်များဦးစီးဌာန
အခွန်ထမ်းကြီးများဆိုင်ရာအခွန်ရုံး(၁)

ရက်စွဲ ၂၀-၄-၂၀၂၃

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

သတ္တုတွင်းဦးစီးဌာန
ရုံးအမှတ်(၁၉)၊ နေပြည်တော်
E-mail;dom@e-monrec.gov.mm

စာအမှတ်၊ ၅၃၅၈ /စဆရ/၂၂၁/ လိုင်စင်/၂၀၂၃
ရက်စွဲ၊ ၂၀၂၃ ခုနှစ်၊ ၀၆ လ ၃၁ ရက်

သို့

မန်နေဂျင်းဒါရိုက်တာ

Emerald Brewery Myanmar Ltd

အကြောင်းအရာ။ စက်သုံးဆီသိုလှောင်ခွင့်လိုင်စင်အသစ်ထုတ်ပေးခြင်း

ရည်ညွှန်းချက်။ (၁) ဤဦးစီးဌာန၏ (၆.၂.၂၀၂၃)ရက်စွဲပါ အတည်ပြုအမှတ်၊၃၁၀၇/ ၂၂၁/
အတည်ပြု/ ၂၀၂၃

(၂) Emerald Brewery Myanmar Ltd ၏ (၂၀.၁၀.၂၀၂၂)ရက်စွဲပါ
လျှောက်လွှာ

၁။ Emerald Brewery Myanmar Ltdသို့ ဤဦးစီးဌာနမှ ရည်ညွှန်း(၁)ဖြင့်ထုတ်ပေးခဲ့သည့်
အတည်ပြုပုံစံနှင့်အညီ တည်ဆောက်ခဲ့သော ဂါလန်(၃၀၀၀၀)ဆုံ ဒီဇယ်ဆီမြေပေါ်သိုလှောင်ကန်
(၁)ကန်အတွက် ရည်ညွှန်း(၂)ဖြင့် လျှောက်ထားမှုအရ အောက်ဖော်ပြပါ သိုလှောင်ခွင့်လိုင်စင်ကို
၂၀၂၃ခုနှစ်မှစ၍ အသစ်ထုတ်ပေးလိုက်သည်-

လိုင်စင်အမှတ်
၂၂၁/ ၁ / ၁၁၇၃
(တိုးချဲ့)

အမျိုးအစား
အယ်လ်

တည်နေရာ
တံခွန်တိုင်(အင်းစိန်)ကျေးရွာအုပ်စု၊
လှည်းကူးမြို့နယ်၊
ရန်ကုန်တိုင်းဒေသကြီး

၂။ သိုလှောင်ခွင့်လိုင်စင်ကိုလက်ခံရရှိကြောင်းပြန်ကြားပေးပါရန်နှင့် နှစ်စဉ်ဒီဇင်ဘာလ(၃၁)ရက်နေ့
မတိုင်မီ နောင်လာမည့်နှစ်အတွက် သက်တမ်းတိုးမြှင့်ရေးကို မပျက်မကွက်ဆောင်ရွက်သွားပါရန်
အကြောင်းကြားပါသည်။

ခင်လတ်ကြီး

ညွှန်ကြားရေးမှူးချုပ်

:\m2t(licence issue)\2023\dec-14(12.5.2023)\letter head\11+1.doc

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

PETROLEUM 12

Fee Ks 130,000/-



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

Fax & Phone .067409376

"L" - Licence



(ARTICLE 5 OF SCHEDULE 1)

License to import dangerous petroleum and to store Petroleum in Installations

Licence No. 221/1/1173 L

Dated 31th, May, 2023

Licence is hereby to Emerald Brewery Myanmar Ltd valid only for the importation of 30000 gallons of petroleum in the place described below and shown on the plan attached here to subject to the provisions to the Petroleum Act, 1934 and the rules made there under and to the further condition to the attached of this licence.

This licence shall be renewable for one year in the absence of contravention of the provision of the Petroleum Act, 1934, or of the rules framed there under or of any condition of this licence.

Sr.	Description	Capacity in Gallons
1.	Dangerous petroleum in bulk (MS)	-
2.	Non- Dangerous petroleum in bulk(HSD)	(30000 x 1)
	Total	30000

This licence shall remain in force till the 31st day of December 2023.

Khin Latt Gyi

Director General

Chief Inspector of Explosives

Plan No. 3107/221/Approval/2023, dated 6.2.2023

DESCRIPTION OF THE PLACE REFERRED TO ABOVE

The Licensed premises are situated at Hlegu Township, Yangon Region and consist of a gas-tight tank (tanks) of a capacity of 30000 gallons above ground.





သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန

သတ္တုတွင်းဦးစီးဌာန

နေပြည်တော်

မူရင်း

စာအုပ်အမှတ် ၇

No. 64959

ငွေရပြေစာ

ရက်စွဲ ၂၅ MAY 2023

Emerald Brewery Myanmar Ltd မှ လွှဲပြောင်း

၂၂ / ၁ / ၂၀၂၃ L အစီအစဉ်အရ

SEC (14 / 2023)

MEB (MPT) ရှုခင်း (၃)

အတွက်၊ ငွေသား/ချက်လက်မှတ်အမှတ် ၂၃၀၀၀၀၀ /

နေ့စွဲ ၂၀၂၃.၅.၂၅

ဖြင့် ငွေပေါင်း (ကျပ်) အစီအစဉ်အရ အစီအစဉ်အရ တိတိ) ကို လက်ခံရရှိကြောင်း။

စာရင်းခေါင်းစဉ်

အစီအစဉ်အရ

စာရင်းအမှတ်

ငွေရလွှာအမှတ်

နင်းယုစိုး

ဦးစီးအရာရှိ

လက်ထောက်ဥက္ကဋ္ဌကြီးရေးရာ
သတ္တုတွင်းဦးစီးဌာန



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

PETROLEUM 12

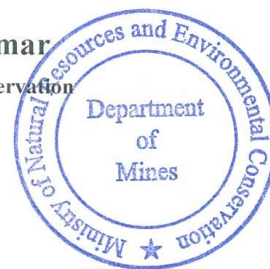
Fee Ks 130,000/-



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

Fax & Phone .067409376

"L" - Licence



(ARTICLE 5 OF SCHEDULE 1)

License to import dangerous petroleum and to store Petroleum in Installations

Licence No. 221/1/1174 L

Dated 31th, May, 2023

License is hereby to Emerald Brewery Myanmar Ltd valid only for the importation of 30000 gallons of petroleum in the place described below and shown on the plan attached here to subject to the provisions to the Petroleum Act, 1934 and the rules made there under and to the further condition to the attached of this license.

This licence shall be renewable for one year in the absence of contravention of the provision of the Petroleum Act, 1934, or of the rules framed there under or of any condition of this licence.

Sr.	Description	Capacity in Gallons
1.	Dangerous petroleum in bulk (MS)	-
2.	Non- Dangerous petroleum in bulk(HSD)	(15000 x 2)
	Total	30000

This license shall remain in force till the 31st day of December 2023.

Khin Latt Gyi
30/5/2023

Director General

Chief Inspector of Explosives

Plan No. 3014/221/Approval/2022, dated 9.9.2022

DESCRIPTION OF THE PLACE REFERRED TO ABOVE

The Licensed premises are situated at Hlegu Township, Yangon Region and consist of a gas-tight tank (tanks) of a capacity of 30000 gallons above ground.



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန
သတ္တုတွင်းဦးစီးဌာန
နေပြည်တော်

မူရင်း

စာအုပ်အမှတ် **၆၃**

No. 64958

ငွေရပြေစာ

ရက်စွဲ ၂၅ MAY 2023

Emerald Brewery Myanmar Ltd ထံမှ လွှဲပြောင်း

၂၂၁/၁၂၁၇၄ L လိုင်စင်စာအုပ်

DEC (14/2023)

MEB (MPL) ချက် (၃)

အတွက်၊ ငွေသား/ချက်လက်မှတ်အမှတ် ၂၃၀၀၀၀၀/ နေ့စွဲ ၂၀၂၃.၅.၂၅

ဖြင့် ငွေပေါင်း (ကျပ်) တစ်သိန်းသုံးရာတစ်ထောင် (တိတိ) ကို

လက်ခံရရှိကြောင်း၊

စာရင်းခေါင်းစဉ် လိုင်စင်စာအုပ်

စာရင်းအမှတ်

ငွေရလွှာအမှတ်



နင်းယုစိုး

ဦးစီးအရာရှိ လက်ထောက်ဥက္ကဋ္ဌကြီးရေးရာ
သတ္တုတွင်းဦးစီးဌာန





မြို့ နယ် စည် ပင် သာ ယာ ရေး အ ဖွဲ့
လှည်းကူးမြို့
စာအမှတ်၊ ၁၅၂၄ /ဆ - ၇/လက-၂ (၀၀၂)
ရက် စွဲ၊ ၂၀၂၃ ခုနှစ် ဩဂုတ်လ ၁၄ ရက်

သို့

ဒေါ်ဖြူဖြူမြိုင်

အမှတ်(၃)လမ်း၊ ရေတလဘောင်ကျေးရွာ၊

လှည်းကူးမြို့

အကြောင်းအရာ။ အဆောက်အဦး ဆောက်လုပ်ပြီးစီးကြောင်း သက်သေခံလက်မှတ် ထုတ်ပေးခြင်း

လှည်းကူးမြို့ ၊ ရေတလဘောင်ကျေးရွာ၊ အမှတ်(၃)လမ်းရှိ၊ ကွင်းအမှတ် (၄၉၈) ၊ ဒေါ်ဖြူဖြူမြိုင်(၁၀/ရမန(နိုင်)၁၂၀၃၅၈)သည် ကွန်ကရစ်ပိုင်+ သံကူကွန်ကရစ် (၁၀၂၅၃၂.၅ စ/ပေ) (Emerald Brewery Myanmar Ltd) အဆောက်အဦး(၁၁)လုံး ဆောက်လုပ်ခြင်းအား ဤဌာန၏ (၂၇. ၂ .၂၀၂၃)ရက်စွဲပါ စာအမှတ်၊ ၃၅၄/ဂ-၈/လက-၂ (၀၀၂) ခွင့်ပြုမိန့်ထုတ်ပေးခဲ့ပြီး ယခုအခါ အဆောက်အအုံအား မြေပြင်ကွင်းဆင်း စစ်ဆေးချက်အရ ပူးတွဲပါအဆောက်အဦးအား ဆောက်လုပ်ပြီးဖြစ်သဖြင့် အဆောက်အအုံ ပြီးစီးကြောင်း သက်သေခံ လက်မှတ်ထုတ်ပေးလိုက်သည်။


အမှုဆောင်အရာရှိ
(ဇော်မင်းထွန်းလက်ထောက်ညွှန်ကြားရေးမှူး)

မိတ္တူကို

ရုံးလက်ခံ၊

မျှောစာတွဲ။



ကွန်ကရစ်ပိုင် + သံကူကွန်ကရစ်အဆောက်အဦး (၁၁)လုံး ဆောက်လုပ်ပြီးစီးသည့်စာရင်း

(၁)	B 10A	(၂ထပ်)	= ၂*(၈၂'x၃၃')	= ၅၄၁၂ စ/ပေ
(၂)	B 10B	(၁ထပ်)	= (၇၃'x၁၀၆')	= ၇၇၃၈ စ/ပေ
(၃)	B 11	(၂ထပ်)	= ၂*(၁၃၁'x၄၁')	= ၁၀၇၄၂ စ/ပေ
(၄)	B 13	(၂ထပ်)	= ၂*[(၄၁'x၁၁၅')+(၁၆.၅'x၁၀.၂၅')]	= ၉၇၆၈.၂၅စ/ပေ
(၅)	B 14A	(၁ထပ်)	= ၆၉'x၂၀၀'	= ၁၃၈၀၀ စ/ပေ
(၆)	B 18A	(၁ထပ်)	= ၁၆.၅'x၁၆.၅'	= ၂၇၂.၂၅ စ/ပေ
(၇)	B 17A	(၂ထပ်)	= ၂*(၆၄'x၂၅')	= ၃၂၀၀ စ/ပေ
(၈)	B 19	(၂ထပ်)	= ၂*(၆၆'x၂၄၆')	= ၃၂၄၇၂ စ/ပေ
(၉)	B 19A	(၁ထပ်)	= (၃၇'x၁၉')	= ၇၀၃ စ/ပေ
(၁၀)	B 25A	(၂ထပ်)	= ၂*(၈၆'x၁၀၀')	= ၁၇၂၀၀ စ/ပေ
(၁၁)	B 26	(၁ထပ်)	= (၃၅'x၃၅')	= ၁၂၂၅ စ/ပေ
			စုစုပေါင်း စတုရန်းပေ	= ၁၀၂၅၃၂.၅ စ/ပေ



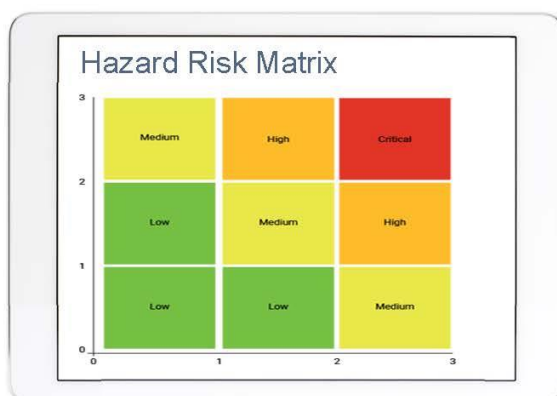
APPENDIX (11) Risk Matrix Calculation – Sever, Probability, and Risk Assessment Guide

Risk Matrix Calculations – Severity, Probability, and Risk Assessment Guide

How to assess the risk of safety hazards in the workplace



Introduction



Safety Professionals use a risk matrix to assess the various risks of hazards (and incidents) and other safety events.

Understanding the components of a risk matrix will allow you and your organization to manage risk effectively. Learn about the three components of the risk matrix that we utilize in the IndustrySafe software:

1. Severity
2. Probability
3. Risk Assessment

Severity - Amount of damage or harm a hazard could create

Catastrophic 4. Operating conditions are such that human error, environment, design deficiencies, element, subsystem or component failure, or procedural deficiencies may commonly cause death or major system loss, thereby requiring immediate cessation of the unsafe activity or operation.

Critical 3. Operating conditions are such that human error, environment, design deficiencies, element, subsystem or component failure or procedural deficiencies may commonly cause severe injury or illness or major system damage thereby requiring immediate corrective action.

Marginal 2. Operating conditions may commonly cause minor injury or illness or minor systems damage such that human error, environment, design deficiencies, subsystem or component failure or procedural deficiencies can be counteracted or controlled without severe injury, illness or major system damage.

Negligible 1. Operating conditions are such that personnel error, environment, design deficiencies, subsystem or component failure or procedural deficiencies will result in no, or less than minor illness, injury or system damage.

Probability -the likelihood of the hazard occurring

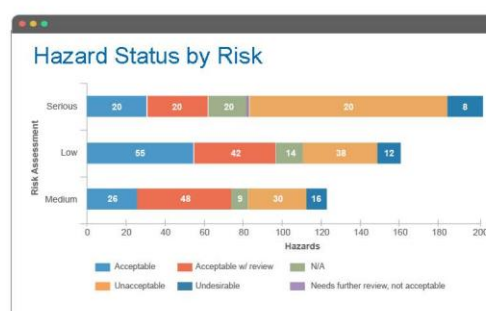
Frequency 5. Likely to occur often in the life of an item.

Probable 4. Will occur several times in the life of an item.

Occasional 3. Likely to occur some time in the life of an item.

Remote 2. Unlikely but possible to occur in the life of an item.

Improbable 1. So unlikely, it can be assumed occurrence may not be experienced.



Risk Assessment

Multiply the scores of probability and severity together

Probability	Severity			
	Catastrophic- 4	Critical - 3	Marginal - 2	Negligible- 1
Frequent - 5	High - 20	High - 15	High - 10	Medium- 5
Probable - 4	High - 16	High - 12	Serious- 8	Medium- 4
Occasional - 3	High - 12	Serious- 9	Medium- 6	Low- 3
Remote -2	Serious- 8	Medium- 6	Medium- 4	Low- 2
Improbable- 1	Medium- 4	Low- 3	Low- 2	Low- 1

About IndustrySafe

IndustrySafe is a cost-effective, web-based (SaaS) safety management software developed so that organizations can track, manage, and comply with environmental, health, and safety regulations.

IndustrySafe Safety Software, a Vector Solutions brand, enables our clients, leaders in construction, manufacturing, government, energy, and transportation to report and analyze risk for incidents, inspections, observations, and more.

Our mission is to provide the most user friendly and cost effective environmental, health, and safety software for our clients.

Contact Us

IndustrySafe Safety Management Software
 sales@industrysafes.com
 215-546-9110



APPENDIX (12) 2nd Public Consultation Meeting; Photos of Meeting, Attendant List and Meeting Minutes (Myanmar-English)

Documented photos of 2nd Public Consultation Meeting on 25th February 2023



Presentation and discussion by U Kyaw Soe Win (GMES)



Panel discussion and answer the queries of audience by GMES

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



Presentation and discussion of U Thein Soe (GMES)

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.



Presentation and discussion of U Soe Than



Presentation and discussion of U Aung Chan Tha
(Emerald Brewery)



Registration of attendees

Emerald Brewery Myanmar Limited ၏ ဘိယာထုတ်လုပ်ဖြန့်ဖြူးခြင်းစက်ရုံလုပ်ငန်းစီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အစီရင်ခံစာရေးဆွဲနေမှုနှင့် ပတ်သက်ပြီး

အများပြည်သူနှင့် ဒုတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲ၊ အစည်းအဝေးမှတ်တမ်း

နေ့ရက် - ၂၀၂၃ ခုနှစ်၊ ဖော်ဖော်ဝါရီလ (၂၅) ရက်

အချိန် - နံနက် (၉) နာရီမှ (၁၁) နာရီအထိ

နေရာ - စက်ရုံပင်မအဆောင်

၁။ တွေ့ဆုံဆွေးနွေးပွဲအား ကိုဗစ်-၁၉ စည်းကမ်းများနှင့်အညီအတတ်နိုင်ဆုံး စီစဉ်ကျင်းပခဲ့ပါသည်။ ပါးစပ်နှင့်နှာခေါင်းအကာအကွယ် (mask) များနှင့် လက်ဆေးရည်များကို အဝင်ဝတွင်ပံ့ပိုးပေးဝေခဲ့ပါသည်။



၂။ တွေ့ဆုံဆွေးနွေးပွဲသို့ စုစုပေါင်း (၇၁) ဦးတက်ရောက်ပါဝင်ခဲ့ကြပြီး၊ ၎င်းတို့အနက် (၁၅) ရာခိုင်နှုန်းသည် အမျိုးသမီးများဖြစ်ကြသည်။ တတိယအဖွဲ့အစည်းမှနေ၍ စီမံကိန်းနှင့် သက်ဆိုင်မှုရှိသည့် အဝန်းအဝိုင်းကို ရွာ (၄) ရွာဖြင့် သတ်မှတ်ခဲ့ရာ၊ တံခွန်တိုင်(အင်းစိန်) ကျေးရွာမှ (၉) ဦး၊ ရေတလပေါင်ကျေးရွာမှ (၁၂) ဦးနှင့် ကုန်းတလပေါင်ကျေးရွာမှ (၉) ဦး တက်ရောက်ခဲ့ကြောင်းကို ဧည့်သည်မှတ်တမ်းအရ သိရှိရပါသည်။ အချို့သော တက်ရောက်သူများသည် မည်သည့်ရပ်ရွာမှဖြစ်ကြောင်း ဖြည့်သွင်းထားခြင်း မရှိသည်ကိုတွေ့ရှိရသည်။

(တက်ရောက်သူများစာရင်းအား ၎င်းတို့၏တက်ရောက်ကြောင်း လက်မှတ်ထိုးထားသည့် မှတ်တမ်းမိတ္တူဖြင့် သီးခြားဖော်ပြထားပါသည်။)



၃။ ပထမအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်ခဲ့သူများထဲမှ၊ ယခုတွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်လာသူ (၁၀) ဦးခန့်ရှိပြီး၊ အများစုမှာ တံခွန်တိုင်(အင်းစိန်) ကျေးရွာမှ ဖြစ်ကြသည်။

၄။ တက်ရောက်လာကြသူများအနက် အရေးပါသူများဟု သတ်မှတ်နိုင်သူအချို့ကို အောက်ပါအတိုင်း စာရင်းပြုစု ပေးထားပါသည်။

စဉ်	အမည်	မြို့/ကျေးရွာ	အဖွဲ့အစည်း	တာဝန်ယူထားမှု	ဖုန်းနံပါတ်
၁	ဦးကျော်စိုး	ရွှေပြည်သာမြို့	ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန (မြောက်ပိုင်းခရိုင်)	ခရိုင်မှူး	
၂	ဦးခင်မျိုးဇော်	တံခွန်တိုင်(အင်းစိန်)	အုပ်ချုပ်ရေး	အုပ်ချုပ်ရေးမှူး	၀၉၄၅၀၆၃၈၁၆၃
၃	ဦးစံမြင့်	ကုန်းတလပေါင်	မေတ္တာလွှမ်းခြုံ	ဥက္ကဋ္ဌ	၀၉၇၇၇၇၇၇၀၁၇
၄	ဦးဥတ္တမ	ကုန်းတလပေါင်	အမရဝတီထိုင်းကျောင်း	တာဝန်ခံ	
၅	ဦးသန်းအောင်	ရေတလပေါင်	အုပ်ချုပ်ရေး	ဆယ်အိမ်မှူး	
၆	ဦးချစ်ဖူး	ရေတလပေါင်	အုပ်ချုပ်ရေး	ဆယ်အိမ်မှူး	

၅။ အခမ်းအနားအား အောက်ပါအတိုင်း အပိုင်း (၂) ပိုင်းခွဲ၍ ကျင်းပခဲ့သည်။

(က) စက်ရုံနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု လေ့လာဆန်းစစ်သည့်အဖွဲ့များမှ တာဝန်ရှိသူများက ရှင်းလင်းပြောကြားမှု၊

(ခ) တက်ရောက်လာသူများကိုယ်တိုင် ပါဝင်ဆွေးနွေးကြသည့် စကားပိုင်း၊

(အခမ်းအနားအစီအစဉ်အား နောက်ဆက်တွဲ (က) တွင်ပူးတွဲဖော်ပြထားပါသည်။)

၆။ ပထမဦးဆုံး စက်ရုံ၏ တာဝန်ခံအင်ဂျင်နီယာ ဦးအောင်ချမ်းသာမှနေ၍ ပထမအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲတွင် တက်ရောက်ခဲ့သူများ၏ တင်ပြဆွေးနွေးခဲ့ကြသည့် အောက်ပါအကြောင်းအရာများအပေါ် လုပ်ဆောင်ခဲ့မှုများနှင့် ပတ်သက်၍ ရှင်းလင်းတင်ပြခဲ့ပါသည်။

(က) အလုပ်အကိုင်အခွင့်အလမ်း၊

(ခ) ဘေးထွက်စွန့်ပစ်ပစ္စည်းများကြောင့် ပတ်ဝန်းကျင်ညစ်ညမ်းမှု မရှိအောင် ဆောင်ရွက်ထားမှု၊

(ဂ) ဘားလားချောင်းရေနှင့် စက်ရုံ၏ ရေဆိုးသန့်စင်စနစ်၊

(ဃ) ဘျိုင်လာမီးခိုးခေါင်းတိုင်ကိစ္စ၊

(င) ပတ်ဝန်းကျင်မီးဘေးအန္တရာယ်၊

(စ) တည်ဆောက်ရေးအတွက် မြေတူးသောကြောင့် လယ်များ၏ ရေပေးမြောင်းများ ပြောင်းလဲမှု၊

(ဆ) စက်ရုံ၏မော်တော်ယာဉ်အဝင်အထွက်များကြောင့် ယာဉ်ကြောကျပ်တည်းမှု၊

(၎င်း၏ တင်ပြဆွေးနွေးမှု အပြည့်အစုံကို နောက်ဆက်တွဲ (ခ) တွင် လေ့လာနိုင်ပါသည်။)

၇။ ဆက်လက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်သည့်အဖွဲ့မှ အဖွဲ့ခေါင်းဆောင်ဖြစ်သူ Engr.ကျော်စိုးဝင်း မှ ၎င်းတို့၏ တတိယအဖွဲ့အစည်းအနေဖြင့် ယခုစီမံကိန်းနှင့်ပတ်သက်ပြီး ဆောင်ရွက်ခဲ့မှုများနှင့် ဆက်လက်ဆောင်ရွက်သွားမည့်အကြောင်းများကို အောက်ပါခေါင်းစဉ်များပါအတိုင်း အကျယ်တဝင့် ရှင်းလင်းတင်ပြခဲ့ပါသည်။



(က) စီမံကိန်းနှင့်ပတ်သက်၍ လေ့လာဆန်းစစ်ရမည့်အချက်များ

(ခ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်သော တတိယအဖွဲ့အစည်း

(ဂ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်

(ဃ) စီမံကိန်းဆိုင်ရာ အချက်အလက်များအပေါ် ဆန်းစစ်ခြင်း

(င) နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းနှင့်ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များ၊ ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်၊

ယာဉ်လမ်းကြောင်းအခြေအနေ၊ ဇီဝမျိုးစုံမျိုးကွဲ၊ ရေအသုံးချမှုနှင့် စီးဆင်းရေဆိုင်ရာလေ့လာခြင်း နှင့် လူမှုစီးပွားအခြေအနေ စစ်တမ်းကောက်ယူခြင်း

(စ) သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြခဲ့သောနယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာအစီရင်ခံစာနှင့် သဘောထား မှတ်ချက်ပြန်ကြားစာ

(ဆ) စီမံကိန်းမှ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ

(ဇ) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် နှင့် လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ

(ဈ) လူမှုစီးပွားတာဝန်သိမှု နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့်အစီအစဉ်

(ည) စီမံကိန်းအပေါ်သုံးသပ်ချက်နှင့် နိဂုံး

(၎င်း၏ တင်ပြဆွေးနွေးမှု အပြည့်အစုံကို နောက်ဆက်တွဲ (ဂ) တွင် လေ့လာနိုင်ပါသည်။)

၈။ ထိုနောက် လူမှုစီးပွားဆန်းစစ်မှုကျွမ်းကျင်သူ ဦးသိန်းစိုးမှ ပထမအဆင့်အဖြစ် လေ့လာမှုနယ်ပယ်အား သတ်မှတ်လေ့လာပြီးနောက် တွေ့ရှိခဲ့သည့် အချက်များအားအခြေခံပြီး ဆက်လက်ဆောင်ရွက်သွားမည်များကို တင်ပြပြီး တက်ရောက်လာသူများ၏ သဘောထားမှတ်ချက်များကို တောင်းခံခဲ့သည်။ ထို့အတူ စက်ရုံနှင့် ဒေသနေ ပြည်သူများအကြား နားလည်မှုလွှဲမှားမှုများ ပေါ်ပေါက်လာပါက ညှိနှိုင်းဖြေရှင်းနိုင်ရန် အတွက် အဖွဲ့တစ်ဖွဲ့ကို အောက်ပါပုဂ္ဂိုလ်များဖြင့် ဖွဲ့စည်းသင့်ကြောင်းကိုပါ အကြံပြုတင်ပြပေးခဲ့ပါသည်။

- မြို့နယ်အဆင့် တာဝန်ရှိသူများ
- ကျေးရွာအုပ်စုအဆင့် တာဝန်ရှိသူများ
- ကျေးရွာများမှ ရပ်မိရပ်ဖများ



- ကျေးရွာများရှိ လူထုအခြေပြုအသင်းအဖွဲ့များမှ ကိုယ်စားလှယ်များ
- စက်ရုံစီမံခန့်ခွဲမှုတာဝန်ရှိသူများ
- အခြားပါဝင်သင့်ပါဝင်ထိုက်သူများ

(၎င်း၏ တင်ပြဆွေးနွေးမှု အပြည့်အစုံကို နောက်ဆက်တွဲ (ဃ) တွင် လေ့လာနိုင်ပါသည်။)

၉။ တွေ့ဆုံဆွေးနွေးပွဲ ပထမပိုင်း၏ နောက်ဆုံးအဖြစ် ရေအသုံးချမှုပညာရှင် ဦးစိုင်းစိုးသန့်မှနေ၍ အောက်ပါ အကြောင်းအရာ (၂) ခုကို ရှင်းလင်းဆွေးနွေးခဲ့ပါသည်။



(က) ဇီဝမျိုးစုံမျိုးကွဲကျွမ်းကျင်ပညာရှင်၏ ကနဦးလေ့လာ တွေ့ရှိမှုအပေါ် အခြေခံထားသည့် သဘောထားမှတ်ချက် များ၊

(ခ) ဘားလားချောင်း၏ လက်ရှိအနေအထားအပေါ် လေ့ လာတွေ့ရှိထားမှုများ။

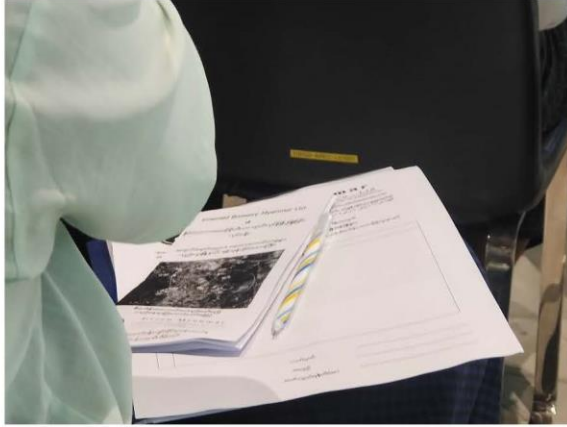
(၎င်း၏ တင်ပြဆွေးနွေးမှု အပြည့်အစုံကို နောက်ဆက်တွဲ (င) တွင် လေ့လာနိုင်ပါသည်။)

၁၀။ ဆက်လက်၍ အခမ်းအနား ဒုတိယပိုင်းအဖြစ် စီမံ ကိန်းအပေါ် အများသဘောထားအမြင်များအား စကား ပိုင်းပုံစံဖြင့် ဆွေးနွေးခြင်းအား ဆက်လက်ကျင်းပခဲ့ပါ သည်။ အဆိုပါစကားပိုင်းတွင် ထိုင်းကျောင်းတာဝန်ခံ ဥူးပဇွင်း၊ ရေတလပေါင် နှင့် တံခွန်တိုင်ကျေးရွာများမှ ရပ်မိရပ်ဖတစ်ဦးစီ၊ ဒေသခံစက်ရုံဝန်ထမ်းတစ်ဦး၊ စက်ရုံ နှင့် လုပ်ငန်းသဘောဆက်စပ်နေသူနှစ်ဦးနှင့်အတူ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန(မြောက်ပိုင်းခရိုင်) ခရိုင်မှူးကပါဝင်ဆွေးနွေးပေးခဲ့ကြပါသည်။ ထို့အပြင်ရေတလပေါင်မှတက်ရောက်လာသူတစ်ဦး၊ ရှေ့ဟောင်းအ မွေအနစ်ဆိုင်ရာ ပညာရှင်တစ်ဦးဖြစ်သူ ပါမောက္ခဒေါက်တာပြည့်ဖြိုးကျော်၊ ဦးကျော်စိုးဝင်းနှင့် ဦးအောင်ချမ်းသာ တို့မှလည်း အသီးအသီးဝင်ရောက် ဆွေးနွေးခဲ့ကြပါသည်။



(စကားပိုင်းပြောဆိုဆွေးနွေးမှုများကို နောက်ဆက်တွဲ (စ) တွင် ဖော်ပြပေးထားပါသည်။)

၁၁။ အခမ်းအနားပြီးဆုံးချိန်တွင် တက်ရောက်လာသူများထံမှ စီမံကိန်းနှင့်ပတ်သက်သည့် အကြံပြုချက်များကို ကောက်ခံခဲ့ပါသည်။



(ထိုအကြံပြုချက်များကို မှတ်တမ်းမိတ္တူဖြင့် သီးခြားဖော်ပြထားပါသည်။)

နောက်ဆက်တွဲ (က)

နံနက် (၈:၃၀) - ဧည့်သည်တော်များရောက်ရှိနေရာယူခြင်း

နံနက် (၉:၀၀) - အခမ်းအနားစတင်ခြင်းနှင့် အရေးပေါ်လမ်းညွှန်၊ ထွက်ပေါက်များအကြောင်း ရှင်းပြခြင်း

နံနက် (၉:၀၅) - ဦးအောင်ချမ်းသာမှ စက်ရုံအကြောင်းနှင့် 1st PCM meeting မှ မှတ်ချက်များ၊ ဆောင်ရွက်ထားသည်များကို ရှင်းလင်းတင်ပြခြင်း

နံနက် (၉:၂၀) - ဦးကျော်စိုးဝင်းမှ EIA/EMP report နှင့် ဆောင်ရွက်ထားသည်များ/ ဆက်လက်ဆောင်ရွက်သွားမည့် အစီအစဉ်များအား ရှင်းလင်းတင်ပြခြင်း

နံနက် (၉:၄၀) - ဦးသိန်းစိုးမှ လူမှုစီးပွားဆိုင်ရာလေ့လာခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ ဆောင်ရွက်ထားသည်များ/ ဆက်လက်ဆောင်ရွက်သွားမည့် အစီအစဉ်များအား ရှင်းလင်းတင်ပြခြင်း

နံနက် (၉:၅၅) - ဦးစိုင်းစိုးသန့်မှ ရေအသုံးချမှုဆန်းစစ်ခြင်းလုပ်ငန်းနှင့် ပတ်သက်၍ ဆောင်ရွက်ထားသည်များ/ ဆက်လက်ဆောင်ရွက်သွားမည့် အစီအစဉ်များအား ရှင်းလင်းတင်ပြခြင်း

နံနက် (၁၀:၁၀) - EMBL project အပေါ် အများသဘောထားအမြင်များအား စကားဝိုင်းပုံစံဖြင့် ဆွေးနွေးခြင်း

နံနက် (၁၀:၅၀) - အခမ်းအနားအစီအစဉ်များ ပြီးဆုံးကြောင်း ကြေညာခြင်း

နောက်ဆက်တွဲ (ခ)

- ပထမအကြိမ် အစည်းအဝေးမှ လူထုသဘောထားမှတ်ချက်ကို အကောင်အထည်ဖော်ထားမှုများကို ရှင်းလင်း တင်ပြသွားမှာဖြစ်ပါတယ်

- ၂၀၁၈ ခုနှစ်မှ စီမံကိန်းကိုစတင်အကောင်အထည်ဖော်ခဲ့ပါတယ်။ Green Myanmar company မှ နယ်ပယ်တိုင်း တာ သက်မှတ်ခြင်းအစီရင်ခံစာကို (၃) ကြိမ်ခန့်တင်လိုက်ရကြောင်း၊ ကိုဗစ်ကာလနဲ့ တစ်ခြားအကြောင်းများ ကြောင့် အချိန် (၄) နှစ်ခန့်ကြာသွားပါတယ်။ (၂၄.၁၁.၂၂) ခုနှစ်မှာ နယ်ပယ်တိုင်းတာ သက်မှတ်ခြင်းအစီရင်ခံစာကို သဘောထားမှတ်ချက် (၁၈) ခုနှင့် အတည်ပြုပေးခဲ့ပါတယ်။ နောက်တဆင့်ဆက်လုပ်ရန် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနက ညွှန်ကြားခဲ့ပါတယ်။ ဒီကနေ့ပြုလုပ်ရတဲ့ အစည်းအဝေးကတော့ ညွှန်ကြားချက်များနှင့် ပတ်သက်ပြီး မည်သို့ဆောင်ရွက်ထားသည်များကို တင်ပြသွားမှာ ဖြစ်ပါတယ်။

- အများလေ့လာနိုင်ရန် စာရွက်စာတမ်းများကိုလည်း အကုန်ပြထားပါတယ်ခင်ဗျ။

- ကျွန်တော်တို့စက်ရုံက ရေတလပေါင်ကျေးရွာ၊ အမှတ် (၃) လမ်းမကြီးဘေး၊ မြေကွက်အမှတ် (၄၉၈) အပေါ်မှာ ရှိပါတယ်။ (၃၂.၈၄) ဧက အပေါ်မှာတည်ရှိပါတယ်။ MIC ခွင့်ပြုချက်နဲ့ အလုပ်လုပ်တဲ့ စက်ရုံဖြစ်ပါတယ်။ ၂၀၁၉ ခုနှစ် အောက်တိုဘာလ (၁) ရက်နေ့မှာ လုပ်ငန်းစတင်လည်ပတ်ပါတယ်။ ဒီနေရာကို အဓိကရွေးချယ်ရတဲ့ အကြောင်းကတော့ ရေကအဓိကပါခင်ဗျ။ ကျွန်တော်တို့ဘီယာချက်ဖို့အတွက် ရေကအဓိကပါ။ ဒီနေရာကလည်း ရေကကောင်းလို့ပါခင်ဗျ။

- ဘီယာချက်လုပ်တဲ့နေရာမှာ ပါဝင်တဲ့ မုယောစပါး၊ ဆန်၊ ဗြစ်ပွင့်၊ တဆေး အားလုံးကိုလည်း နမူနာ ပြသထားပါတယ်ခင်ဗျ

- ဘီယာချက်လုပ်ခြင်းမှာအဓိက အဆင့် (၄) ဆင့်ရှိပါတယ်။ ဆန်နဲ့ မုယောစပါးကို ကြိတ်မယ်၊ ပြီးရင် ရေနဲ့ပြုတ်မယ်၊ ရေနဲ့ ပြုတ်ဖတ်နဲ့ ခွဲခြားမယ်၊ ဗြစ်ပွင့်ထည့်ပြီးတော့ ပွက်တဲ့အထိကျိုမယ်၊ အအေးခဲမယ်၊ တဆေးထည့်မယ်၊ ကစော်ဖောက်မယ်၊ (တက်ရောက်လာသော ဆရာတော်အား တောင်းပန်) ၊ မြန်မာပြည်မှာ ဘီယာစက်ရုံ (၆) ရုံရှိပါတယ်။

- တခြားစက်ရုံတွေနဲ့ မတူဘဲ ကျွန်တော်တို့ ဆောင်ရွက်ထားရှိမှုတွေကို တင်ပြသွားမှာဖြစ်ပါတယ်။ ပထမအကြိမ် လူထုတွေ့ဆုံပွဲကို ၂၀၁၈ ခုနှစ် ဒီဇင်ဘာလ (၂၉) ရက်နေ့က ပြုလုပ်ခဲ့ပြီး၊ ပထမအကြိမ်တုန်းကလည်း တက်ရောက်ခဲ့သူများရှိလားလို့မေး၊ (ရှိသည်) (၁၀) ဦးခန့်ရှိပြီး တံခွန်တိုင်ကျေးရွာမှ အများစုဖြစ်သည်။

- ပထမအကြိမ်ဆွေးနွေးပွဲတုန်းက တက်ရောက်လာသူတွေမှ တင်ပြထားတာတွေက

၁. အလုပ်အကိုင်အခွင့်အလမ်း

- ၂. ဘေးထွက်စွန့်ပစ်ပစ္စည်းများကြောင့် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုမရှိအောင်ဘယ်လိုစီစဉ်မလဲ အထူးသဖြင့် ဘားလားချောင်းရေ နဲ့ စက်ရုံက ရေဆိုးသန့်စင်စနစ်ဘယ်လိုများလုပ်ထားလဲသိချင်ကြတယ်
- ၃. စက်ရုံက ဘွိုင်လာမီးခိုးခေါင်းတိုင်က မီးပွားတွေထွက်မလား၊ ပတ်ဝန်းကျင်က မီးဘေးအန္တရာယ်ကို စိုးရိမ်ရလား
- ၄. စက်ရုံတည်ဆောက်လို့ မြေတူးလို့ လယ်တွေရဲ့ရေပေးမြောင်းတွေ ဘယ်လိုများဖြစ်သွားမလဲ
- ၅. စက်ရုံကြောင့် ယာဉ်အဝင်အထွက်တွေများလာပြီး ယာဉ်လမ်းကြောင်းကျပ်တည်းမှုတွေရှိလာမလား ဆိုပြီး မေးထားကြပါတယ်
- ဒါတွေက သဘောထားမှတ်ချက်တွေကနေ ကျွန်တော်ပြန်စုပြီး အကျဉ်းချုပ်ပြောထားတာဖြစ်ပါတယ်ခင်ဗျာ
- ကျွန်တော်တို့ဆောင်ရွက်ထားရှိမှုများကို ရှင်းပြချင်ပါတယ်
- ၁. ကျွန်တော်တို့ company က စက်ရုံတည်တဲ့အတွက် လူ (၁၀၀၀) ကျော်ကို အလုပ်အကိုင် အခွင့်အလမ်းတွေ ဖန်တီးပေးနိုင်ခဲ့ပါတယ် ၊ တိုက်ရိုက်ခန့်ထားတဲ့ ဝန်ထမ်းက (၂၁၂) ယောက်ရှိပါတယ်၊ ဆက်စပ်နေတဲ့ ဝန်ထမ်းက (၈၀၀) ကျော်ရှိပါတယ်၊ အခုချိန်မှာဆိုရင် စက်ရုံမှာ ဆောက်လုပ်ရေးလုပ်ငန်းခွင်ရှိလို့ လူ(၃၀၀) ကျော် အလုပ်လုပ်နေပါတယ်။
- ၂. ကျွန်တော်တို့ရဲ့ ဖွဲ့စည်းပုံအရ ဝန်ထမ်း (၂၈၀) ကျော်ရှိပြီး နိုင်ငံခြားသား (၄) ယောက်နဲ့ မြန်မာနိုင်ငံသား (၂၇၆) ယောက်ဖြစ်ပါတယ်၊ ပတ်ဝန်းကျင်ရပ်ကွက်ကျေးရွာမှ ဝန်ထမ်းခန့်ထားမှုနဲ့ ပတ်သက်ပြီး ကျွန်တော်တို့ ကောက်ယူထားတဲ့ စာရင်းတွေရှိပါတယ် ၊ စိတ်ဝင်စားရင်ကြည့်လို့ရပါတယ်၊ ကျွန်တော်ဒီမှာတော့ မပြောတော့ပါဘူး။
- ဘေးထွက်ပစ္စည်းတွေကို ဘယ်လိုစီမံဆောင်ရွက်ထားလဲဆိုတာကို ပြောချင်ပါတယ်၊ စက်ရုံကနေထွက်တဲ့ ဘေးထွက်ပစ္စည်းတွေကတော့
- ၁. မုယောစပါးပြုတ်ဖတ်ထွက်တယ်
- ၂. Packaging ကနေပြီးတော့ ပုလင်းဖုံး၊ ပုလင်းကွဲ၊ သံဗူးခွဲတွေထွက်တယ်
- ၃. စက္ကူဂျပ်ပုံးတွေထွက်မယ်
- ၄. သစ်သား
- ၅. ပလပ်စတစ်
- ၆. ကာဗွန်ဒိုင်အောက်ဆိုက်ဓာတ်ငွေ့ထွက်တယ်
- ၇. မီသိန်းဓာတ်ငွေ့ထွက်တယ် (wastewater treatment ကနေထွက်တဲ့ ဘေးထွက်ပစ္စည်းပါ)

၈. ရေဆိုး (စက်ရုံကထွက်တဲ့ ရေပါ)

၉. ရေဆိုးကနေထွက်တဲ့ sludge (သဘာဝမြေဩဇာလို့ခေါ်ပါတယ်)

ဒီစက်ရုံကထွက်တဲ့ရေ၊ ဘာလားချောင်းထဲက ရေ နမူနာအားလုံးကို ကျွန်တော် ပြထားပါတယ်ခင်ဗျ၊ ကျွန်တော် ဘယ်နေရာကနေ ဘယ်ရေ ယူထားတယ်ဆိုတာကိုလည်း ကြည့်လို့ရပါတယ်။

- ဘေးထွက်ပစ္စည်းတွေကို ကျွန်တော်တို့ ဘယ်လိုစီမံခန့်ခွဲလည်း ကြည့်ရအောင်

၁. မုယောစပါးပြုတ်ဖတ်(ဘာလီပြုတ်ဖတ်) ဒါကတော့ ပဲဖတ်တို့ နှမ်းဖတ်တို့လိုပဲ ငါး၊ ဝက်၊ နွားစာအဖြစ် သုံးကြပါတယ်။ အဓိကကတော့ ငါးကိုကျွေးကြပါတယ်။ ရောင်းလို့မလောက်ပါဘူးခင်ဗျ။

၂. ကာဗွန်ဒိုင်အောက်ဆိုက်ကတော့ ထွက်လာတဲ့ ကာဗွန်ဒိုင်အောက်ဆိုက်ကို ကျွန်တော်တို့က လေထုထဲ ထုတ်လို့ မရပါဘူး။ ကျွန်တော်တို့က ပြန်အသုံးပြုပါတယ်။ ဘီယာသောက်တဲ့ အချိန်မှာရတဲ့ ရှုတတအရသာက ကာဗွန်ဒိုင် အောက်ဆိုက်ပါ။ ပြီးတော့ စည်ဘီယာမှာ စည်ထဲက ဘီယာကို ဖန်ခွက်ထဲရောက်လာအောင်လို့ ကာဗွန်ဒိုင် အောက်ဆိုက်နဲ့ ဖိပြီးတော့ ထုတ်ရပါတယ်။ စည်ဘီယာဆိုင်တွေအတွက် CO₂ cylinder တွေကို ဖြည့်ပေးပြီး ပေးရပါတယ်။ ထွက်လာတဲ့ ကာဗွန်အားလုံးကို အငွေ့ကနေ အရည်အဖြစ်ပြောင်းပြီးတော့ ပြန်သုံးတာပါ။ အပြင်ကိုမရောင်းပါဘူး။

၃. ပုလင်းကွဲ၊ စက္ကူပုံးတွေ၊ သစ်သားတွေ၊ ပလပ်စတစ်တွေ ဒါတွေအားလုံးကိုတော့ စက်ရုံအနောက်မှာ စွန့်ပစ်ပစ္စည်းထားဖို့ သက်မှတ်ထားတဲ့ နေရာရှိပါတယ်။ အကန့်တွေခွဲထားပြီး တစ်ပတ်တစ်ကြိမ်လောက်မှာ recycle လုပ်တဲ့သူတွေကို ပြန်ရောင်းပါတယ်။

၄. ရေဆိုးသန့်စင်စနစ်နဲ့ ပတ်သက်ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးက သက်မှတ်ထားတဲ့ လမ်းညွှန်ချက်ရှိပါတယ်။ ရေဆိုးရဲ့ အရည်အသွေးက ဘယ်လောက်ရှိရမယ်ဆိုတာကို သက်မှတ်ထားပါတယ်။ ဘီယာနဲ့ အရက်ချက် လုပ်ငန်းတွေကထွက်တဲ့ ရေဆိုးကတော့ ဘယ်လောက်ရှိရမယ်ဆိုတဲ့ကိစ္စကို သက်မှတ်ထားတာရှိပါတယ်။ ကျွန်တော် တို့ဆီမှာရှိတဲ့ ရေဆိုးသန့်စင်စနစ်ကတော့ စက်ရုံကထွက်တဲ့ ရေဆိုးကို aerobic system လို့ခေါ်တဲ့ လေကိုအသုံး ပြုပြီး သန့်စင်တဲ့စနစ်ပါ။ အဲဒီကထွက်လာတဲ့ရေကို ဘားလားချောင်းထဲကို စွန့်ပစ်ပါတယ်။ ဒီအတိုင်းစွန့်ပစ်တာ မဟုတ်ပါဘူး။ သန့်စင်ပြီးမှ စွန့်ပစ်တာပါ။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနကနေ လမ်းညွှန်မှုနဲ့ online monitoring system ကို ၂၀၁၉ ခုနှစ်ကတည်းက တပ်ဆင်ထားပါတယ်။ မြန်မာပြည်မှာရှိတဲ့ ဘီယာစက်ရုံ (၆) ရုံထဲမှာကျွန်တော်တို့ ပထမဆုံး တပ်ဆင်တာပါ။ ကျွန်တော်တို့ စွန့်ပစ်တဲ့ရေဟာ parameter တစ်ခုခုလွဲတာနဲ့ ဟိုဘက်ကတန်းသိပါတယ်။ သူတို့ဆီကို တိုက်ရိုက်ဆက်သွယ်ထားတာပါ။ ရေဆိုးသန့်စင်စနစ်ဆိုတာ ကျွန်တော် တို့ခန္ဓာကိုယ်ရဲ့ အစာခြေတဲ့စနစ်နဲ့ တူပါတယ်။ အိမ်တွေမှာဆိုရင်တော့ မိလ္လာစနစ်နဲ့ တူပါတယ်။ ကျွန်တော်တို့ တစ်ခြားစက်ရုံနဲ့ မတူပဲလုပ်ထားတာက ရေဆိုးကို ပြန်သုံးတာပါ။ မီးသတ်ရေကန်ကို ထည့်ထားပြီး အဲဒီကနေ လျှံတဲ့ ရေကိုတော့ ဘားလားချောင်းထဲကို စွန့်တာပါ။ ထွက်လာတဲ့ သဘာဝမြေဩဇာကိုတော့ စက်ရုံမှာ အော်ဂဲနစ် စိုက်ပျိုးရေး လုပ်ထားပြီး တစ်ပတ်တစ်ကြိမ်လောက် ဝန်ထမ်းတွေကို အသီးအရွက်တွေ အခမဲ့ ဖြန့်ဝေပါတယ်။

၅. နောက်တစ်ဆင့်အနေနဲ့ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဌာနက အခြားနည်းလမ်းဖြင့် ဆောင်ရွက်ရန် ဆိုတာပါတဲ့ အတွက် ရေဆိုးသန့်စင်စနစ်ကို anaerobic system နဲ့လည်း ထပ်ပြီးသန့်စင်ပါတယ်။ အဲဒီစနစ်ကတော့ closed system ဖြစ်တဲ့ အတွက် methane gas ထွက်ပါတယ်။ အဲထွက်လာတဲ့ဓာတ်ငွေ့ကို ကျွန်တော်တို့က သဘာဝ ဓာတ်ငွေ့သုံးဘွိုင်လာကို လည်ပတ်ဖို့ စီမံကိန်းကိုအခုလုပ်နေပါပြီ သင်္ကြန်ပြီးချိန်လောက် စတင်တော့မှာပါ။

- ဘွိုင်လာမီးခိုးခေါင်းတိုင်နဲ့ မီးဘေးကာကွယ်ရေးစနစ်ပါ။ ပထမအကြိမ်အစည်းအဝေးမှာ လူတွေက မီးပွားများ လွှင့်မလားဆိုပြီး စိုးရိမ်ကြတာရှိပါတယ်။ ကျွန်တော်တို့သုံးတဲ့ ဘွိုင်လာစနစ်က သမားရိုးကျ ဘွိုင်လာစနစ်မဟုတ် ပါဘူး။ (ဘွိုင်လာမှာမည် မသိလိုက်ပါ) ၊ ၂ တန် ဘွိုင်လာ (၅) လုံး တပ်ထားပါတယ်။ ကျွန်တော်တို့ စက်ရုံစတင် လည်ပတ်ချိန်ကတည်းက အခုထိ ဘွိုင်လာကနေ မီးခိုးအမဲထွက်တာ မတွေ့ဘူးပါဘူး။ ဒီနားပတ်ဝန်းကျင်က လူတွေရော တွေ့ဖူးပါသလား (မတွေ့ဖူးပါဘူး)

- နောက်တစ်ခုက ရေကိုဘယ်လိုထိန်းသိမ်းလည်းဆိုတာကို ပြောပါမယ် ၊ အဲနေရာမှာ (၂) ပိုင်း ရှိပါတယ်။ သဘာဝရေကို ထိန်းသိမ်းတာနဲ့ စွန့်ပစ်ရေကို စီမံတာပါ ၊ ကားပါကင်ကို ကွန်ဂရစ်အပြည့် မခင်းထားပါဘူး။ မိုးရေတွေကို မြေကြီးထဲ စိမ့်ဝင်အောင်လို့ စီမံထားပါတယ်။ မလိုအပ်တဲ့နေရာတွေကို ကွန်ကရစ်ခင်းမထားပါဘူး။ သစ်ပင်တွေ စိုက်ထားပါတယ်။ သဘာဝရေကို ရသလောက်စုဆောင်းထားပါတယ်။ ဒါကတော့ မီးသတ်ရေကန်ပါ စက်ရုံကထွက်တဲ့ ရေဆိုးကို သန့်စင်ထားတာပါ။ အဲဒီကန်ထဲမှာ ငှက်တွေလည်းလာပါတယ်။ ကြာပင်လည်း ပေါက်ပါတယ်။ စက်ရုံတစ်ခုလုံးကို မီးသတ်စနစ်ထားရှိပြီး ရေလည်း အလုံအလောက်ရှိပါတယ်။ ဒီနေ့ကတော့ မီးသတ်ဌာနကို ဖိတ်ထားပေမဲ့ မလာနိုင်ပါဘူး။ မီးသတ်ကလာစစ်တိုင်း ထပ်မံညွှန်ကြားချက်တွေကို ပိုကောင်း အောင် ဆောင်ရွက်နေရပါတယ်။ အရင်တစ်ခေါက် လူထု တွေ့ဆုံပွဲတုန်းက ဦးအုန်းမြင့်တောင်းဆိုထားတဲ့ မီးသတ်ကား ကိစ္စကတော့ ကျွန်တော်တို့ ပိုက်ဆံစုနေပါတယ်။ ဘာလို့လဲဆိုတော့ မီးသတ်ဦးစီးကလာတိုင်း ညွှန်ကြားချက်အသစ်တွေကို ဆောင်ရွက်နေရလို့ပါ။

- လျှပ်စစ်စွမ်းအင်ချွေတာဖို့အတွက် ဆောင်ရွက်ထားတာကတော့ ကျွန်တော်တို့စက်ရုံက မီးထွန်းပဲလင်းပါတယ် ခင်ဗျ။ ခေါင်မိုးတွေမှာ အလင်းဖောက်ပြားတွေ သုံးထားပါတယ်။ နေခင်းဘက်တွေဆိုရင် မီးထွန်းစရာမလိုပါဘူး။ နောက်ပြီး LED မီးလုံးတွေကိုသုံးထားပါတယ်။ လျှပ်စစ်စွမ်းအင်ကို ၈၇% ချွေတာတဲ့ ပစ္စည်းသုံးပါတယ် ၊ Philip company ကထုတ်တဲ့ မီးလုံးတွေကိုသုံးထားပါတယ်။ လမ်းမီးတိုင်တွေကိုလည်း ဆိုလာမီးတိုင်တွေကိုပဲ သုံး ထားပါတယ်။

- စက်ရုံရဲ့ ပင်မရုံးခန်းအဆောက်အဦးရဲ့အပေါ်မှာ ဆိုလာတွေ တပ်ထားပါတယ်။ ဒီအဆောက်အဦးက သုံးသမျှ လျှပ်စစ်စွမ်းအင်ကို ဆိုလာနဲ့သုံးထားပါတယ်။ (ဒီနေ့ကတော့ ပရိုဂျက်တာသုံးထားတော့ မီးပျက်မှာစိုးလို့ မီးစက် နှိုးထားပါတယ်) ဒီဇင်ဘာလ ၂၀၂၂ တုန်းက စက်ရုံက မီတာက သိန်း (၁၁၃၀) လောက်ကျခဲ့ပြီး အခု ၂၀၂၃ ခုနှစ် ဇန်နဝါရီလမှာ သိန်း (၂၄၀) လောက်ပဲ ကုန်ကျပါတော့တယ်ခင်ဗျ။ ဆိုလာစွမ်းအင်သုံးလို့ ၇၅% လောက် သက်သာ လာပါတယ်။ အခုဆောက်နေတဲ့ warehouse အသစ်မှာ ဆိုလာတပ်မှာပါ။ စက်ရုံက လက်ရှိသုံးနေတာက (၄) မီဂါ

ဝပ်လောက်ရှိပါတယ်။ အခုအသစ်တပ်ဆင်မဲ့ ဆိုလာက (၂၂) မီဂါဝပ်လောက် ထုတ်လုပ်ပေးမှာပါ။ မေလ ကျန်လောက်ဆိုရင် ပြီးစီးပါတော့မယ်။

ပထမအကြိမ် လူထုတွေဆုံပွဲတုန်းက လူထုရဲ့သဘောထားအမြင်ကို တတ်နိုင်သလောက် ရှင်းလင်းတင်ပြပြီးပါပြီ။ ကျွန်တော်တို့က ဒီနေရာကိုသဘောကျလို့ အလုပ်လာလုပ်နေတဲ့အတွက် သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှုမရှိ အောင် ဆောင်ရွက်သွားပါမယ်လို့ ပြောကြားရင်း နိဂုံးချုပ်ပါတယ်ခင်ဗျာ။

နောက်ဆက်တွဲ (ဂ)

- Green Myanmar Company ၏ လုပ်ငန်းဆောင်ရွက်မှုများကိုရှင်းလင်းပြောကြားခြင်း
- Emerald Brewery Myanmar Limited နှင့် ပတ်သက်ပြီးဆောင်ရွက်ထားရှိမှုများကို ရှင်းလင်းတင်ပြရာတွင် စီမံကိန်းနှင့်ပတ်သက်၍တင်ပြမည့်အကြောင်းအရာများမှာ

- ၁. စီမံကိန်းနှင့်ပတ်သက်၍လေ့လာဆန်းစစ်ရမည့်အချက်များ
- ၂. ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်သော တတိယအဖွဲ့အစည်း
- ၃. ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်
- ၄. စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း
- ၅. နယ်ပယ်တိုင်းတာသက်မှတ်ခြင်း နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များ၊ ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်၊ ယာဉ်လမ်းကြောင်းအခြေအနေ၊ ဇီဝမျိုးစုံမျိုးကွဲ၊ ရေအသုံးချမှု နှင့် စီးဆင်းရေဆိုင်ရာလေ့လာခြင်း၊ နှင့် လူမှုစီးပွားအခြေအနေစစ်တမ်းကောက်ယူခြင်း
- ၆. သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့တင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့်သဘောထား မှတ်ချက်ပြန်ကြားစာ
- ၇. စက်ရုံစီမံကိန်းမှ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ
- ၈. ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ
- ၉. လူမှုစီးပွားတာဝန်သိမှု နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့်အစီအစဉ်
- ၁၀. စီမံကိန်းအပေါ်သုံးသပ်ချက်နှင့်နိဂုံး

(၁) စီမံကိန်းနှင့်ပတ်သက်၍ လေ့လာဆန်းစစ်ရမည့်အချက်များမှာ

- ၁. ဥပဒေ နှင့် မူဝါဒရေးရာလေ့လာဆန်းစစ်ခြင်း
- ၂. ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်ဆိုင်ရာထိခိုက်နိုင်မှုလေ့လာဆန်းစစ်ခြင်း



၃. ဇီဝမျိုးစုံမျိုးကွဲဆိုင်ရာ ထိခိုက်နိုင်မှုလေ့လာဆန်းစစ်ခြင်း

၄. စီးဆင်းရေ နှင့် ရေအသုံးချမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

၅. ဘူမိသွင်ပြင်နှင့်မြေဆီလွှာအနေအထားလေ့လာဆန်းစစ်ခြင်း

၆. ယာဉ်လမ်းကြောင်းအသုံးပြုမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

၇. လူမှုစီးပွားဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

၈. ကျန်းမာရေးဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း

၉. စက်ရုံကုန်ထုတ်လုပ်ငန်းစဉ်မှ ပတ်ဝန်းကျင်ဆိုင်ရာလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းများတွင် အထက်ပါ အချက်များကို လေ့လာဆန်းစစ်ခဲ့ပါသည်။

(၂) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်သော တတ်ယအဖွဲ့အစည်း

- Green Myanmar Company ၏ လုပ်ငန်းဆောင်ရွက်မှုဆိုင်ရာအချက်အလက်များ၊ ပါဝင်သောပညာရှင်များ နှင့် လုပ်ငန်းလိုင်စင်များ၊ ဆောင်ရွက်ထားရှိခဲ့သော လုပ်ငန်းအတွေ့အကြုံများကို ရှင်းလင်းတင်ပြခဲ့ပါသည်။

(၃) ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်တွင်

၁. စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း

၂. နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်း

၃. ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များကောက်ယူခြင်း

၄. သဘာဝပတ်ဝန်းကျင်နှင့် ဇီဝမျိုးစုံမျိုးကွဲစနစ်များ၊ လူမှုအဖွဲ့အစည်းဆိုင်ရာတို့အပေါ် သက်ရောက်နိုင်မှုများကို ဖော်ထုတ်ခြင်း

၅. စီမံကိန်း၏သက်ရောက်နိုင်မှုများကို စီမံကိန်းဖော်ဆောင်မည့်ဒေသတွင်း အာဏာပိုင်အဖွဲ့အစည်းများ၊ လူမှုရေးအဖွဲ့အစည်းများ နှင့် ပြည်သူလူထုအား အသိပေးခြင်းနှင့် သဘောထားရယူခြင်း

၆. သက်ရောက်မှုများလျော့နည်းစေရန် ဆောင်ရွက်ရမည့်အချက်များ အစီအမံများချမှတ်ခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်များသတ်မှတ်ခြင်း

၇. အစီရင်ခံစာပြုစုတင်ပြခြင်း

(၄) စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း

- ၂၀၁၈ ခုနှစ်တွင် စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်များကို ဆောင်ရွက်ခဲ့ပါသည် (မှတ်တမ်းဓာတ်ပုံများ)



(၅) နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များကို ကောက်ယူခြင်း

- ၂၀၁၈ ခုနှစ်အတွင်းဆောင်ရွက်ခဲ့ပါသည် (မှတ်တမ်းဓာတ်ပုံများ)၊ (၂၀၂၃) ခုနှစ်တွင်လည်း ဆောင်ရွက်မှုများ ရှိခဲ့ခြင်း
- ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်ဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းဆောင်ရွက်မှုများ နှင့် မှတ်တမ်းဓာတ်ပုံများ
- ယာဉ်လမ်းကြောင်းအသုံးပြုမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်းများ မြေပုံများ
- ဇီဝမျိုးစုံမျိုးကွဲများလေ့လာဆန်းစစ်ခြင်း နှင့် မှတ်တမ်းဓာတ်ပုံများ (၂၀၁၈) ခုနှစ်
- ဇီဝမျိုးစုံမျိုးကွဲများလေ့လာဆန်းစစ်ခြင်း နှင့် မှတ်တမ်းဓာတ်ပုံများ (၂၀၂၂-၂၀၂၃) ခုနှစ်
- ရေအသုံးချမှု နှင့် စီးဆင်းရေဆိုင်ရာလေ့လာဆန်းစစ်ခြင်းနှင့် မြေပုံများ
- လူမှုပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များကောက်ယူခြင်း (တံခွန်တိုင်၊ နွယ်ခွေ၊ ကုန်းတလပေါင်၊ ရေတလပေါင်) ကျေးရွာများတွင်ဆောင်ရွက်ခဲ့သော မှတ်တမ်းဓာတ်ပုံများ
- လူထုတွေ့ဆုံဆွေးနွေးပွဲများကျင်းပခြင်း ၊ နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ ပထမအကြိမ်လူထုတွေ့ဆုံပွဲကို ၂၀၁၈ ခုနှစ် ဒီဇင်ဘာလ (၂၃) ရက်နေ့တွင်ကျင်းပခဲ့သော မှတ်တမ်းဓာတ်ပုံများ၊

(၆)သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့တင်ပြခဲ့သောနယ်မြေအတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့် သဘောထားမှတ်ချက် ပြန်ကြားစာ

- (၂၄.၁၁.၂၀၂၂) နေ့ရက်တွင် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနမှ ပြန်ကြားလာသော အချက်အလက်များကို တင်ပြခြင်း

(၇) စီမံကိန်းမှ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ

- စက်ရုံစီမံကိန်းမှ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများ
- ၁။ စက်ရုံစီမံကိန်း တည်ဆောက်ရန် ပြင်ဆင်ခြင်းကာလ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ
- ၂။ စက်ရုံစီမံကိန်း တည်ဆောက်ခြင်းကာလ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ
- ၃။ စက်ရုံစီမံကိန်း လည်ပတ်ခြင်းကာလ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ
- ၄။ စက်ရုံစီမံကိန်း ပိတ်သိမ်းခြင်းကာလ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ



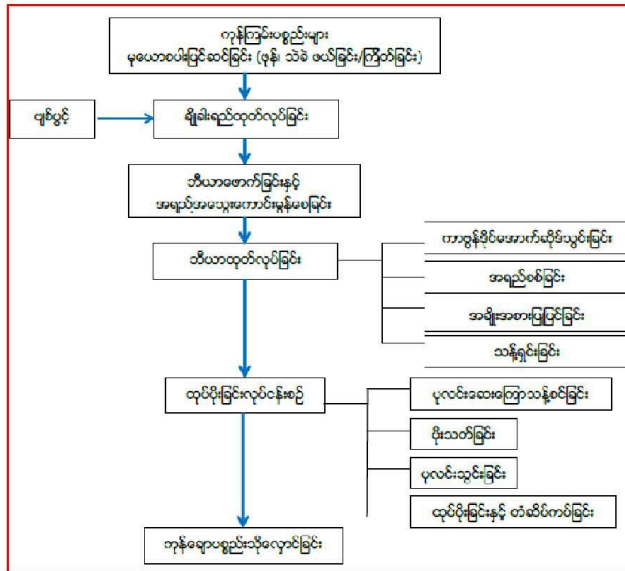
၎င်းကာလများတွင် ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများအား လျော့နည်းပပျောက်စေသည့်နည်းလမ်းများ အစီအမံများချမှတ်ခြင်းနှင့် လေ့လာစောင့်ကြည့်ခြင်းအစီအစဉ်များကို ချမှတ်လုပ်ဆောင်သွားရမည် ဖြစ်ပါသည်။

စက်ရုံစီမံကိန်း လည်ပတ်ခြင်းကာလ ဖြစ်ပေါ်နိုင်သော ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများ

- ၁။ လေထုအတွင်းသို့ထုတ်လွှင့်မှုများ
- ၂။ ရေထုအတွင်းသို့ ထုတ်လွှင့်မှုများ
- ၃။ မြေထုအတွင်းသို့ ထုတ်လွှင့်မှုများ
- ၄။ ဆူညံသံနှင့် တုန်ခါမှုများ

စက်ရုံစီမံကိန်း ကုန်ထုတ်လုပ်မှုနည်းစဉ်

ဘီယာထုတ်လုပ်ခြင်း လုပ်ငန်းအဆင့်ဆင့်



- ကာဗွန်ဒိုင်အောက်ဆိုဒ် ဓာတ်ငွေ့ရည် ထုတ်လုပ်ရေးဌာန (regeneration) ပြုလုပ်ရာမှ အခိုးအငွေ့ အနံ့အသက်များ

- ဝန်ထမ်းစားသောက်ဆောင်မှ ချက်ပြုတ်ကြော်လှော်သည့် အခိုးအငွေ့အနံ့အသက်များ

- ရေထုအတွင်းသို့ထုတ်လွှတ်မှုများ

Emerald Brewery Myanmar Limited လုပ်ငန်းစက်ရုံ၏ ရေထုအတွင်းသို့ထုတ်လွှတ်မှုများမှာ-

- ဝန်ထမ်းများနေ့စဉ်သုံးစွဲရာမှ ထွက်ရှိသောရေဆိုးများ

- စက်ပစ္စည်းများ၊ တိုင်ကီများ ဆေးကြောရာမှ ထွက်ရှိသောရေဆိုးများ

- ဘျိုင်လာဘလိုးဒေါင်း ရေထွက်ရှိမှုများနှင့် ဖိတ်စင်မှုများ

- ထရန်စဖော်မာဆီ၊ စက်ဆီချောဆီ ဘီယာများ မတော်တဆဖိတ်စင်သည့် အရည်များ

- ပုလင်းခွံ၊ စည်ခွံဆေးကြောရေများ

- C.I.P (Clean in Place) စနစ်မှ ဖိတ်စင်မှုများ

- ပုလင်း၊ စည်၊ သံဘူး၊ ဘီယာ ထုတ်လုပ်ရာမှ ယိုဖိတ်ကွဲပျက်ဖိတ်စင်မှုများ

- ရေသန့်စင်ဌာန (ဘျိုင်လာသွင်းရေ) တို့မှ ဆားရည်၊ ဆေးကြောရေ၊ Reject ရေ

- စွန့်ပစ်ရည် သန့်စင်စနစ်မှ ထွက်ရှိလာသော သန့်စင်ပြီး စွန့်ပစ်ရေများ

- ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ရည်ထုတ်လုပ်ရေးဌာန ချွေးရည်များ၊ ဖျန်းချရေများ

- ဝန်ထမ်းစားသောက်ဆောင်မှထွက်ရှိသည့် စွန့်ပစ်ရည်များ

- မြေထုအတွင်းသို့ထုတ်လွှတ်မှုများ

Emerald Brewery Myanmar Limited လုပ်ငန်းစက်ရုံ၏ မြေထုအတွင်းသို့ထုတ်လွှတ်မှုများမှာ-

- လုပ်သားဝန်ထမ်းများ၏ စွန့်ပစ်ပစ္စည်းများ

- ရုံးလုပ်ငန်းသုံးပစ္စည်းအပျက်အစီးများ

- မော့/ဆန် များတွင်ပါဝင်လာသော အမှုန်အမွှားများ

- မော့/ဆန်/ဟော့ တို့မှ ချိုချေးရည်ပြုလုပ်ပြီး ကျန်ရစ်သည့် အစိုင်အခဲအဖတ်များ (တိရိစ္ဆာန်အစာဖတ်)

- ကုန်ကြမ်းပစ္စည်းထုပ်ပိုးပစ္စည်းများ

- ပုလင်း၊ စည်၊ သံဘူးဘီယာကုန်ချောများ ထုတ်လုပ်စဉ်ထွက်ရှိသော အစိုင်အခဲပစ္စည်းများ



- ရေသန့်စင်ဌာနနှင့် ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ရည် ထုတ်လုပ်ဌာနမှစွန့်ပစ်ပစ္စည်းများ
- စားသောက်ဆောင်မှ အစိုင်အခဲ စွန့်ပစ်ပစ္စည်းများ

- ဆူညံသံနှင့်တုန်ခါမှုများ

Emerald Brewery Myanmar Limited လုပ်ငန်းစက်ရုံ၏ ဆူညံသံများ နှင့် တုန်ခါမှုများမှာ-

- သယ်ယူပို့ဆောင်ရေးယာဉ်များ မောင်းနှင်မှုကြောင့်ဆူညံသံများ
- အရန်လျှပ်စစ်ထုတ်စက်များ မောင်းနှင်မှုကြောင့်ဆူညံသံများ
- ဘီယာချက်လုပ်သည့်စက်ကိရိယာများနှင့် အထောက်အကူပြုစက်ပစ္စည်းကိရိယာများ မောင်းနှင်မှုကြောင့် ဆူညံသံ၊ တုန်ခါမှုများ
- စွန့်ပစ်ရည်သန့်စင်စနစ် စက်ကိရိယာများ မောင်းနှင်မှုကြောင့် ဆူညံသံ နှင့် တုန်ခါမှုများ

(စ) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် နှင့် လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ

- ပတ်ဝန်းကျင်အပေါ်ဆိုးကျိုးသက်ရောက်စေသော အခိုးအငွေ့ ၊ အနံ့အသက်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း

- သယ်ယူပို့ဆောင်ရေးမော်တော်ယာဉ်များမှ ထွက်ရှိသော ဓာတ်ငွေ့များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- အရန်လျှပ်စစ်ဓာတ်အားပေးစက် မောင်းနှင်ရာမှ ထွက်ရှိသော ဓာတ်ငွေ့များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဓာတ်ငွေ့ယိုစိမ့်မှုကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- မော့/ဆန်တို့မှ ပါဝင်လာသော အမှုန်အမွှားများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- မော့/ဆန် သန့်စင်ချိန်တွယ်ရာမှ အမှုန်အမွှားများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဆန်အမှုန်ကြိတ်ရာမှ အမှုန်အမွှားများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- မော့/ဆန်/အင်ဇိုင်း/ရေတို့ ကျိုချက်ရာမှ (Mashing) ထွက်ရှိသော အခိုးအငွေ့များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဟော့ဖြင့် ချိုခါးရည်ကျိုချက်ရာမှ (wort kettle) ထွက်ရှိသော အခိုးအငွေ့အနံ့အသက်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဘီယာဖောက်ရာမှ ထွက်ရှိလာသော အခိုးအငွေ့အနံ့အသက်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း



- ဘီယာအတွင်း ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ထည့်သွင်းရာမှ အခိုးအငွေ့အနံ့အသက်များကို ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ပုလင်းခွံဆေးစက်တွင်ပါဝင်သော အလူမီနီယမ် Foil နှင့် ဆေးစက်အတွင်းရှိ ကော့စတစ်ဆိုဒါတို့ ဓာတ်ပြုရာမှ ထွက်ရှိသော ဓာတ်ငွေ့များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- C.I.P (Clean in Place) စနစ်အတွင်း ကော့စတစ်ဖျော်စပ်ရာမှ ကော့စတစ်အနံ့အသက် အခိုးအငွေ့များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- စွန့်ပစ်ရေသန့်စင်စနစ်မှ ထွက်ရှိလာသော မီသိန်းဓာတ်ငွေ့လောင်ကျွမ်းဓာတ်ငွေ့များကြောင့် ထိခိုက်မှု များကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- စွန့်ပစ်ရေသန့်စင်စနစ်မှ လေလိုဘက်တီးရီးယားကန်များမှ အခိုးအငွေ့အနံ့အသက်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဘိုလ်လာမှ လောင်ကျွမ်းဓာတ်ငွေ့များကြောင့် ထိခိုက်မှုများကိုလျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ထုတ်လုပ်ဌာနမှ regeneration ပြုလုပ်ရာမှ အခိုးအငွေ့အနံ့အသက် များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဝန်ထမ်းစားသောက်ဆောင်မှ ချက်ပြုတ်ကြော်လှော်သည့် အခိုးအငွေ့အနံ့အသက်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- **စက်ရုံမှ ထုတ်လွှတ်နိုင်သည့် စွန့်ပစ်ရည်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန်ဆောင်ရွက်ခြင်း**
- ဝန်ထမ်းများနေ့စဉ်သုံးစွဲရာမှ ထွက်ရှိလာသော ရေဆိုးများကြောင့်ထိခိုက်မှုများကိုလျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- စက်ပစ္စည်းများ၊ တိုင်ကီများဆေးကြောရာမှ ထွက်ရှိလာသောရေဆိုးများကြောင့်ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဘိုလ်လာဘလိုးဒေါင်းရေထွက်ရှိမှုများနှင့် ဖိတ်စင်မှုများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ထရန်စဖော်မာဆီ၊ စက်ဆီချောဆီ၊ ဘီယာများ မတော်တဆ ဖိတ်စင်သည့်အရည်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ပုလင်းခွံ၊ စည်ခွံဆေးကြောရေများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- C.I.P (Clean in Place) စနစ်မှ ဖိတ်စင်မှုများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း

- ပုလင်း၊ စည်၊ သံဗူး၊ ဘီယာများထုတ်လုပ်ရာမှ ယိုဖိတ်ကွဲပျက်ဖိတ်စင်မှုများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ရေသန့်စင်ဌာန (ဘိုလ်လာသွင်းရေ) တို့မှ ဆားရည်၊ ဆေးကြောရေ၊ reject ရေများကြောင့် ထိခိုက်မှု များကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- စွန့်ပစ်ရည်သန့်စင်စနစ်မှ ထွက်ရှိသော သန့်စင်ပြီး စွန့်ပစ်ရည်များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ရည် ထုတ်လုပ်ဌာန ချွေးရည်များ၊ ဖျန်းချရေများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- စက်ပြင်အလုပ်ရုံ၊ မော်တော်ယာဉ်အလုပ်ရုံများမှ ထွက်ရှိသည့် စွန့်ပစ်ရေများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဝန်ထမ်းစားသောက်ဆောင်မှ ထွက်ရှိသည့်စွန့်ပစ်ရေများကြောင့် ထိခိုက်မှုများကိုလျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- **စက်ရုံမှထုတ်လွှတ်နိုင်သည့် စွန့်ပစ်အစိုင်အခဲများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန်ဆောင်ရွက်ခြင်း**
- အထွေထွေစွန့်ပစ်ပစ္စည်းများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဘီယာထုတ်လုပ်ရေး ထုပ်ပိုးပစ္စည်းများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ပုလင်း၊ စည်၊ သံဘူးဘီယာနှင့် သွယ်ပိုက်ကုန်ကြမ်း ထုပ်ပိုးပစ္စည်းများကြောင့် ထိခိုက်မှုများကိုလျော့နည်း စေရန် ဆောင်ရွက်ခြင်း
- ထုတ်လုပ်မှုနည်းစဉ်တစ်လျှောက်ထွက်ရှိသော အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများကြောင့်ထိခိုက်မှုများကိုလျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- သက်တမ်းကုန်သွားသည့် ရယ်ဆင်၊ ဓာတ်ကြွကာဗွန်နှင့် Desiccant များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- ဝန်ထမ်းစားသောက်ဆောင်မှ ထွက်ရှိသော စွန့်ပစ်အစိုင်အခဲများကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
- **ဆူညံသံများကြောင့် ပတ်ဝန်းကျင်အပေါ်ထိခိုက်မှုများကို လျော့နည်းစေရန်ဆောင်ရွက်ခြင်း**
- သယ်ယူပို့ဆောင်ရေးယာဉ်များ၏ ဆူညံသံတုန်ခါမှုများကြောင့် ပတ်ဝန်းကျင်အပေါ်ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း

- စက်ရုံအတွင်း စက်ပစ္စည်းကိရိယာများလည်ပတ်မှုများကြောင့် ဆူညံသံတုန်ခါမှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်း
 - ဝန်ထမ်းများအတွက် အကာအကွယ်ပစ္စည်းများတပ်ဆင်ခြင်းနှင့် နေရာရွှေ့ပြောင်းတာဝန်ချထားခြင်းဖြင့် ဆူညံသံတုန်ခါမှုများကို လျော့နည်းစေရန်ဆောင်ရွက်ခြင်း
- ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်ကြည့်ရှုမှုအစီအစဉ်**

စဉ်	ဆောင်ရွက်မှု	ဆောင်ရွက်ရန်
(က) လေထုညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	စက်ရုံအဝန်းအဝိုင်းအတွင်းရှိ ပတ်ဝန်းကျင်လေထုအား အခါအားလျော်စွာ အောက်ပါတို့ပါဝင်မှု စစ်ဆေးရန် NO ₂ , PM ₁₀ , PM _{2.5} , SO ₂ , O ₃	တစ်နှစ်(၂)ကြိမ်
၂	မီးခိုးခေါင်းတိုင်မှ ထုတ်လွှတ်သည့် Flue gasအား အခါအားလျော်စွာ တိုင်းရန် O ₂ , CO ₂ , CO, NO ₂ , SO ₂	တစ်နှစ်(၂)ကြိမ်
၃	လုပ်ငန်းခွင်အတွင်း အလွယ်တကူ အငွေ့ပျံလွယ်သော ကာဗွန်ပါဝင်သည့် အော်ဂဲနစ်ဒြပ်ပေါင်းများ (Volatile Organic Compound – VOC) အား စစ်ဆေးရန်	တစ်နှစ်(၂)ကြိမ်
(ခ) ရေထုညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	စွန့်ပစ်ရေအား စောင့်ကြည့်စစ်ဆေးရန် pH, COD, BOD, Oil and Grease, Temperature Increase, Total Coliform Bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solids ယင်းစွန့်ပစ်ရေစစ်ဆေးစမ်းသပ်မှုများအတွက် စက်ရုံအတွင်း ဓါတ်ခွဲခန်း ထူထောင် ထားရန်	လစဉ် (၁)ကြိမ်

<p>၂</p>	<p>စက်ရုံအတွင်းနှင့် အနီးဝန်းကျင်ရှိ မြေပေါ်ရေထုအား အောက်ပါအတိုင်း စောင့်ကြပ်စစ်ဆေးရန် (ဘားလား ချောင်းရေ(စက်ရုံအထက်)၊ ဘားလားချောင်းရေ(စက်ရုံအနီး)၊ ဘားလားချောင်းရေ(စက်ရုံအောက်ဘက်)) BOD, NH₃, Arsenic, Cadmium, COD, CL₂, Cr, Cu, Cyanide, Fluoride, Heavy metal (total), Iron (Fe), Pb, Hg, Nickel, Oil and Grease, pH, Phenols, Selenium, Silver, Sulfide, Temperature Increase, Total Coliform Bacteria, Total Phosphorus, Total Suspended Solids, Zn</p>	<p>တစ်နှစ်(၂)ကြိမ်</p>
<p>(ဂ) မြေထဲညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး</p>		
<p>၁</p>	<p>အခြေခံအချက်အလက် (Base line) အဖြစ်ယူထားသော မြေကြီးနမူနာနေရာမှ မြေထဲအရည်အသွေးတိုင်းတာစစ်ဆေးရန် Aluminum, Arsenic, Chloride, Cu, Cyanide, Extractable Acidity, Mn, pH, P-Alkalinity, Total Iron (Fe)</p>	<p>တစ်နှစ်(၂)ကြိမ်</p>
<p>(ဃ) ရေညစ်ညမ်းမှု တွန်းခါမှု စောင့်ကြည့်စစ်ဆေးရေး</p>		
<p>၁</p>	<p>စက်ရုံအတွင်းနှင့် စက်ရုံပြင်ပ၊ စက်ရုံလုပ်ငန်းခွင်အတွင်း စီမံကိန်းလုပ်ငန်းဆောင်ရွက်စဉ် အခြေခံအချက်အလက်(Base line) ကောက်ယူတိုင်းတာခဲ့သော နေရာများအား ပြန်လည်တိုင်းတာစစ်ဆေးရန်</p>	<p>တစ်နှစ်(၂)ကြိမ်</p>

- လူမှုစီးပွားတာဝန်သိမှု နှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့် အစီအစဉ်
- စီမံကိန်းအနေဖြင့် နှစ်စဉ်အသားတင်အမြတ်၏ ရာခိုင်နှုန်းတစ်ခုကို လူမှုစီးပွားရေးတာဝန်သိ အစီအစဉ်အတွက် အသုံးပြုရန်ဖြစ်ပါသည်။ လူမှုပတ်ဝန်းကျင်သက်ရောက်မှု ဆန်းစစ်ချက်အရ စီမံကိန်း၏ အနီးပတ်ဝန်းကျင် ဒေသရေယာများတွင် (Corporate Social Responsible - CSR) အစီအစဉ်များကို အကောင်အထည်ဖော် ဆောင်ရွက်ရမည် ဖြစ်ပါသည်။
- စီမံကိန်းအနေဖြင့် လူမှုတာဝန်သိအစီအစဉ်အပြင် ရှေ့တွင်ဖော်ပြခဲ့သော ပတ်ဝန်းကျင်ကို ထိခိုက်မှု လျော့နည်းစေရန်အတွက် နှစ်စဉ်စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်အတွက် ကုန်ကျစရိတ်များကိုပါ တွက်ချက် ဖော်ပြပေးရပါမည်။
- ဆက်လက်၍လည်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ရံပုံငွေတစ်ခုသတ်မှတ်ကာ ဇီဝမျိုးစုံမျိုးကွဲများ ထိန်းသိမ်း စောင့်ရှောက်ခြင်း၊ ဒေသမျိုးရင်းသစ်ပင်များ ပြန်လည်စိုက်ပျိုးပြုစုခြင်းလုပ်ငန်း၊ စီမံကိန်း နှင့် အနီးဆုံး ဖြစ်သည့် ရေအရင်းအမြစ် (မြစ်၊ချောင်း၊မြောင်း)များ ပြုပြင်ထိန်းသိမ်းခြင်း၊ ရေနုတ်မြောင်းအသစ်တူးဖော်ခြင်း များ စသည့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး လုပ်ငန်းများအတွက် ဆောင်ရွက် သွားရမည်ဖြစ်ပါသည်။

(၉) စီမံကိန်းအပေါ်သုံးသပ်ချက်နှင့်နိဂုံး



- ယေဘုယျအားဖြင့် နိုင်ငံတကာအဆင့်မီဘီယာထုတ်လုပ်ဖြန့်ဖြူးခြင်း စက်ရုံစီမံကိန်းသည် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများရှိသော လုပ်ငန်းအမျိုးအစားဖြစ်ပါသည်။

- စွန့်ပစ်ရည်ထွက်ရှိမှုမှာ အဓိကဖြစ်သော်လည်း ၎င်းကို သန့်စင်မှုပြုလုပ်ကာ စွန့်ပစ်မှုစနစ်စဉ်ထားရှိသော ကြောင့် ရေဆိုးထွက်ရှိမှုကို ထိန်းချုပ်နိုင်မည်ဖြစ်သဖြင့် စွန့်ပစ်ရည်ကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှု များကို လျော့နည်းစေမည်ဖြစ်ပါသည်။

- အစိုင်အခဲနှင့်အခိုးအငွေ့ အတန်အသင့်ထွက်ရှိသော်လည်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အတိုင်း နိုင်ငံတော်၏ လမ်းညွှန်ချက်စံချိန်စံညွှန်းနှင့် ကိုက်ညီရန်ဆောင်ရွက်သွားပါက ထိခိုက်မှုလျော့နည်းစေမည်ဖြစ် သည်။

- ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များ တိုင်းတာတွေ့ရှိချက်များအပေါ် ဆန်းစစ်ပြီးပါက ပတ်ဝန်း ကျင်စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် စောင့်ကြပ်ကြည့်ရှုမှု အစီအစဉ်များ ရေးဆွဲလိုက်နာဆောင်ရွက်ခြင်းဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့နည်းစေ ရေး စီမံဆောင်ရွက်သွားနိုင်မည်ဟု ယုံကြည်ပါသည်။

ပတ်ဝန်းကျင်၊ လူမှုစီးပွားရေးထိခိုက်မှုအနည်းဆုံးနှင့် ဖွံ့ဖြိုးရေးလုပ်ငန်းများထွက်ပေါ်လာစေရန် ပူး ပေါင်းဆောင်ရွက်ကြခြင်းဖြစ်၍ နှစ်ဦးနှစ်ဖက်အကျိုးအတွက်လာရောက်ဆွေးနွေးကြသော ဌာနဆိုင်ရာအသီးသီး တို့နှင့်တကွ ဒေသခံရပ်မိရပ်ဖများ၊ ကုမ္ပဏီတာဝန်ရှိသူများအားလုံးကို အသိအမှတ်ပြု ကျေးဇူးတင်ပါသည်။

နောက်ဆက်တွဲ (ဃ)

- ပထမဦးစွာ ဒီနေ့ပွဲကအောင်မြင်ပါတယ်။ ဘာလို့လည်းဆိုတော့ ထိုင်းကျောင်းဆရာတော်မှ ကိုယ်စားလှယ် ဦးဇော်တစ်ပါး တက်ရောက်တာကော၊ ရပ်ရွာအခြေပြုအဖွဲ့တွေက တက်ရောက်လာတာကော ၊ နောက်ပိုင်းမှာ စက်ရုံရဲ့ လုပ်ငန်းစဉ်တွေမှာ ကြီးကြပ်ဆောင်ရွက်ရမဲ့ အစိုးရအရာရှိရယ်၊ ဒီဒေသရဲ့ အုပ်ချုပ်ရေးပိုင်းတွေ၊ အကုန်ပါဝင်ပါတယ်။ လူ (၇၀) လောက်တက်တဲ့ အချိန်မှာ အမျိုးသမီး ၁၅ % လောက် တက်ရောက်လာတာလဲ ဒီနေ့ပွဲရဲ့ ထူးခြားချက်ပါ။

- ဒီစီမံကိန်းနဲ့ ပတ်သက်ပြီး လူမှုစီးပွားပတ်ဝန်းကျင်ကို ဘယ်လိုထိခိုက်မှုတွေရှိမလဲ ဘယ်လိုဆက်လေ့လာသွား မယ်ဆိုတာကို ပြောပြသွားမှာပါ။

- ၁.၅ ကီလိုမီတာ အဝန်းအဝိုင်းမှာပါတဲ့ ကျေးရွာတွေကို လေ့လာသွားပါတယ်။ ဘာလားချောင်းနဲ့ လူမှုစီးပွားရေး အသက်မွေးဝမ်းကြောင်းလုပ်ငန်းတွေမှာ သုံးနေတဲ့အတွက် ထည့်သွင်းစဉ်းစားခဲ့ပါတယ်။ ဒါတွေကတော့ ကျေး ရွာတွေက ဘာတွေ စိုးရိမ်ကြတယ်ဆိုတာကို ဖော်ထုတ်ခဲ့ပါတယ်။ တစ်ခါ ဘာတွေဖြစ်ချင်ကြတယ် ဆိုတာကို ဒီ နေရာမှာ ကျွန်တော်က ကြားလူတစ်ယောက်အနေနဲ့ လေ့လာခဲ့ပါတယ်။ သက်ဆိုင်ရာ company က လူမှုဖွံ့ဖြိုး ရေးလုပ်ငန်းတွေကို ဆောင်ရွက်တဲ့နေရာမှာ ဒေသခံတွေက ကိုယ့်ဆန္ဒ ကိုယ့်လိုအပ်ချက်နဲ့ ဘာတွေကို လုပ်ပေး

စေချင်တယ် ဆိုတာကို တင်ပြကြတာရှိပါတယ်။ ကာယကံရှင်စက်ရုံအနေနဲ့လည်း သူတို့ရဲ့ မူဝါဒတွေ၊ စိတ်ဝင်စားမှုတွေရှိပါတယ်။ နိုင်ငံတကာအဖွဲ့အစည်းဖြစ်တဲ့အတွက်ကြောင့်မို့လို့ သက်ဆိုင်ရာကို အဆင့်ဆင့်တင်ပြရပါတယ်။ သူတို့အနေနဲ့ လုပ်ပေးနိုင်တာ၊ မလုပ်ပေးနိုင်တာ၊ လုပ်ပေးချင်တဲ့ သူတို့ရဲ့ဆန္ဒ စတာတွေရှိပါတယ်။ နားလည်ပေးစေချင်ပါတယ်။ ကျွန်တော်တို့အနေနဲ့လည်း ဘာလေးတွေကတော့ဖြင့် ဦးစားပေးလုပ်ပေးသင့်တယ် ဆိုတာတွေကို အကြံပြုပေးရတာတွေရှိပါတယ်။ အဲ့လိုဆိုရင် win-win-win လို့ခေါ်တဲ့ စီမံကိန်း၊ ဒေသနဲ့ နိုင်ငံတော်လည်း အကျိုးရှိတဲ့ လုပ်ငန်းတွေဖြစ်လာမှာပါ။

- ရေရှည်မှာ ဒီလိုလုပ်ငန်းတွေကို ဆောင်ရွက်ဖို့အတွက် ညှိနှိုင်းဆောင်ရွက်တဲ့ အဖွဲ့တစ်ဖွဲ့ ရှိဖို့လိုပါတယ်။ အစီရင်ခံစာရေးသားနေတဲ့ ကာလမှာပဲ ဒီအဖွဲ့လေးကို ဖွဲ့စည်းပေးဖို့ စက်ရုံကို အကြံပြုပါတယ်။ ဘယ်လိုလူတွေပါဝင်သင့်သလဲ ဆိုတာကိုတော့ အားလုံးက ဝိုင်းဝန်းရွေးချယ်ပေးစေချင်ပါတယ်။ တည်ဆောက်ရေးကာလမှာ အခက်အခဲတစ်ခုခု တွေ့ရှိခဲ့ရင်လည်း ပြောပြပေးလို့ရပါတယ်။ စက်ရုံလည်ပတ်တဲ့ ကာလမှာတော့ အရင်တုန်းက စိုးရိမ်ထားခဲ့တဲ့ဟာတွေ လျော့နည်းသွားမယ်လို့ မှန်းဆထားပါတယ်။ ကျွန်တော်ရဲ့သုံးသပ်ချက်ပါ။ ထောက်ပြစရာရှိတာတွေကိုလည်း ထောက်ပြပေးစေချင်ပါတယ်။ ၁.၅ ကီလိုမီတာထဲကမှ ကျွန်တော်တို့ အသေးစိတ် လေ့လာဖို့ သက်မှတ်လိုက်တဲ့ မြေပုံလေးပါ။ ဒီနေရာမှာ တကယ်နေထိုင်နေတဲ့သူတွေ ဒီထဲမှာပါလာပါတယ်။ ရေတလပေါင် လူတွေလည်းပါပါတယ်။ အခုကျွန်တော်သက်မှတ်ထားတဲ့ နေရာလေးကို လုံလောက်မှုရှိမရှိကို အကြံပေးစေချင်ပါတယ်။ ဘာကြောင့်လို့အပ်တယ်ဆိုတဲ့ အကြောင်းပြချက်လေးတွေနဲ့ပါ ထည့်သွင်း ပြောကြားပေးစေချင်ပါတယ်။

နောက်ဆက်တွဲ (c)

- ဒီစီမံကိန်းကြောင့် ဒီဒေသရဲ့ဇီဝပတ်ဝန်းကျင်ကို ထိခိုက်မှုမရှိနိုင်ဘူးလို့တင်ပြထားပါတယ်
- ဒီဒေသရဲ့ မျိုးရင်းသစ်ပင်သစ်တောတွေကို ထူထောင်ပေးဖို့ အကြံပြုထားပါတယ်
- ဘာလားချောင်းရဲ့ ရေဝင်ရေလွှဲနေရာတွေကတော့ မင်္ဂလာဒုံမြို့နယ်ဘက်အခြမ်းရယ်၊ မှော်ဘီဘက်အခြမ်းရယ် က အဓိကတွေ့ရမှာပါ။ သဘာဝချောင်းဖြစ်ပြီး မှော်ဘီဘက်ကနေ အဓိကစီးဆင်းလာတာပါ။ ချောင်းတစ်လျှောက်မှာ နှစ်အလိုက် မြေယာအသုံးချမှုတွေကို လေ့လာရပါတယ်။ ဒါမှပြောင်းလဲသွားမှုတွေကို သိရမှာပါ။
- ၁၉၉၅ ကနေ ၂၀၂၀ အတွင်း ချောင်းတစ်လျှောက်မှာ လူဦးရေတိုးတက်လာပါတယ်။ အဆောက်အအုံတွေ လမ်းခင်းတာတွေ တိုးတက်လာပါတယ်။ စီးပွားရေးလုပ်ငန်း အမျိုးမျိုးကနေ သက်ဆိုင်တဲ့ စွန့်ပစ်ရေတွေ ဘားလားချောင်းထဲကို ဝင်လာတာကို တွေ့ရပါတယ်။
- ဘာလားချောင်းထဲကို ပတ်ဝန်းကျင်ရှိကျေးရွာများမှ ရေဆိုးတွေအားလုံးစီးဝင်ခဲ့တာကို နှစ်ပေါင်းများစွာ အော်ခံခဲ့ရပါတယ်



- ချောင်းအရှည်နဲ့ ရေစီးအားကိုလေ့လာလိုက်တဲ့ အခါမှာ ဒီချောင်းက ရေကြီးရေလျှံဖြစ်နိုင်တာကိုတွေ့ရပါတယ်။
- လူမှုစီးပွားအဖွဲ့က လေ့လာလိုက်တဲ့အခါမှာ ချောင်းရေကြောင့် ယားနာတွေဖြစ်နိုင်တယ်ဆိုတာကို တွေ့ရတဲ့ အတွက် ဆက်လက်လေ့လာလိုက်တဲ့အခါမှာ ဘားလားချောင်းထဲကို ရေဆိုးတွေများစွာစီးဝင်ပါတယ်။ ဗေဒပင်တွေ အများအပြားပေါက်နေပါတယ်။ အပူပိုက်များ ချောင်းအတွင်းစွန့်ပစ်မှုတွေကိုလည်း တွေ့ရပါတယ်။ ဒီနှစ်အပိုင်းအခြားမှာ ချောင်းရေ အများကြီးပြောင်းလဲသွားတာကတော့ ဘေးပတ်ဝန်းကျင်မှာ လူနေထူထပ်လာပြီး ချောင်းထဲကိုဝင်တဲ့ ရေအရင်းအမြစ်တွေ များလာပါတယ် ၊ အဲ့ဒီမှာ ဓာတုပစ္စည်းတွေ အများကြီးပါလာပါတယ်။ ဒါတွေကြောင့် ချောင်းရဲ့ ရေအရည်အသွေးဆိုးလာပြီး ရေနဲ့ပတ်သက်တဲ့ ကိစ္စတွေ များလာတာလို့ သုံးသပ်ပါတယ်။ ငါးကန်တွေ ကြက်ခြံတွေက စွန့်ထုတ်တဲ့ ရေကလည်း ချောင်းထဲကိုပါ။ အမှတ် (၃) လမ်းမကြီးရဲ့ အပေါ်ဘက်မှာ တည်ဆောက်နေတဲ့ အောင်တံခွန်ရေပေးဝေရေးစီမံကိန်းကြောင့်လည်း ချောင်းကို ပိတ်ထားတဲ့အတွက် ဒီကာလမှာ ရေစီးဆင်းမှုမရှိပဲ ဖြစ်နေပါတယ်။



နောက်ဆက်တွဲ (စ)

ဆရာတော်

- ဒီနေ့စကားလေးတစ်ခုနဲ့ကြားရပါတယ်။ ဒီနေရာကိုတည်ဆောက် ပြီးတော့မှလေ့လာဆန်းစစ်မှုတွေ ပြန်လုပ်ပေးရတယ်ပေါ့နော်။ ဒါကတော့ ခေတ်ကာလအခြေအနေအရ နားလည်ပေးရမယ့်အပိုင်း လိုမြင်ပါတယ်။ နောက်ပြီးတော့ ပတ်ဝန်းကျင်ကို အလေးထားတဲ့အနေနဲ့ အခုလို့လေ့လာပြီးတော့ စည်းမျဉ်းစည်းကမ်းနဲ့အညီ ဆောင်ရွက်တဲ့အတွက် အပြစ်ပြောစရာမရှိပါဘူး။ နောက်ပြီးတော့ ယဉ်ကျေးမှုနဲ့အညီ (၄-၅) ရက်လောက်လာပြီး တိုင်းတာရေးတွေ ဆောင်ရွက်သွားတဲ့ အတွက်ကြောင့်လည်း ဥူးဇင်းတို့ကျောင်းထဲမှာရှိတဲ့ ရှေးဟောင်းစေတီတော်ကြီးနဲ့ ပတ်သက်ပြီးတော့လည်း ယုံကြည်စိတ်ချရမယ်လို့ထင်ပါတယ်။



- ဥူးဇင်း ဘာကြောင့်ဒီပွဲကို တက်ရောက်ရလဲဆိုတော့ အရမ်းနီးကပ်တဲ့နေရာဖြစ်ပြီး ဘိယာစက်ရုံဖြစ်ပေမယ့် အခမ်းအနား အစည်းအဝေးကို တက်ရောက်ရတာပါ။ ဥူးဇင်းနဲ့ ဘာဆိုင်လို့လဲလို့ ထင်မှာစိုးလို့ပါ။ လူမှုပတ်ဝန်းကျင်မှာ အကျိုးစီးပွားအတွက် ဆောင်ရွက်တာချင်း အတူတူ အခုလို ကိုယ်ဘက်သူဘက်ကြည့်ပြီး ဆောက်ရွက်တာ မွန်မြတ်တယ်လို့ပဲ ပြောကြားလိုပါတယ်။

ရေတလပေါင် ရပ်မိရပ်ဖ

- ကျွန်တော်တို့ မှာ ရေအခက်အခဲဖြစ်နေပါတယ်။ တံတားလည်း အခက်အခဲ ဖြစ်နေပါတယ်။ အဲ့ဒါလေးပဲ တင်ပြချင်ပါတယ်။



ဦးအောင်ချမ်းသာ

- ဆက်လက်တင်ပြပြီးတော့ ဆောင်ရွက်ပေးသွားပါမယ်ခင်ဗျ

ဒေါက်တာပြည့်ဖြိုးကျော် (ရှေးဟောင်းသုတေသနပညာရှင်)



- (ဆရာတော်ရဲ့ စိုးရိမ်မှုအပေါ်) တပည့်တော်တို့ ရွာ(၄) ရွာမှ စုစု ပေါင်းနေရာ (၁၃) နေရာကို မှတ်တမ်းတင်ပြီး လေ့လာလိုက်တဲ့အခါ မှာ ယဉ်ကျေးမှုသမိုင်းအရကော အစဉ်အလာကော စာပေအရေးအသားကော စသည်ဖြင့် တွေ့ရှိတာက ကုမ္ပဏီပုဏ္ဏဲစေတီတော်ကြီးပါ (၁၀) ဆူရှိတယ်ဆိုတဲ့ ရာဇဝင်မှာ (၂) ဆူ ကျန်သေးတယ်ဆိုတော့ ၊ ရွာသူရွာသားတွေ ဖူးမျှော်ဖို့တည်ထားတဲ့တစ်ဆူနဲ့ ဘုန်းဘုန်းတို့ကျောင်း

ထဲကတစ်ခုပါ။ ဘုန်းဘုန်းတို့ ပြုပြင်ထိန်းသိမ်းထားတာကိုတွေ့ရတော့ တပည့်တော်တော်လေး စိတ်ကျေနပ်ပါတယ်။ တော်တော်များများကို ယဉ်ကျေးမှုအမွေအနှစ်စံနှုန်းအတိုင်း ဆောင်ရွက်ထားတာကို တွေ့ရပါတယ်။ တပည့်တော်ရဲ့ မှတ်တမ်းထဲမှာလည်း သေချာရေးသားထားပြီး စာသင်ကြားတဲ့အခါမှာလည်း ထည့်သွင်းသင်ကြားတာတွေ လုပ်နေပါတယ်။ အခုလို သေချာတိုင်းတာထားတဲ့အတွက် ထိခိုက်နိုင်မှုကလည်း အလွန်တရာမှ နည်းတာကို တွေ့ရပါတယ်။

တံခွန်တိုင် (ရပ်ဖိရပ်ဖ) ဦးတင်မြင့်

- စက်ရုံစတင်ဆောင်ရွက်ရေးလုပ်ငန်းတွေမှာ တိုင်းတာရေးလုပ်ငန်းတွေလုပ်ကတည်းက ပါဝင်ခဲ့ပါတယ်။ အခုချိန်အထိလည်း မြေ၊ လေ၊ ရေ ညစ်ညမ်းမှုတွေမတွေ့ရပါဘူး။ ဆက်လက်ပြီး ကောင်းမွန်အောင် ဆောင်ရွက်ပေးစေချင်ပါတယ်။

Transportation (ဇွေးဦးပိုင် Company) ဒေါ်ညွန့်ညွန့်စိန်

- စက်ရုံစတင်လည်ပတ်ကတည်းက သယ်ယူပို့ဆောင်ရေးကို တာဝန်ယူဆောင်ရွက်ခဲ့တာပါ (ပြည်လမ်း ၊ မကွေးလမ်းကြောင်း) စက်ရုံနဲ့ အလုပ်လုပ်ရတာ အရမ်းစိတ်ချမ်းသာပါတယ်။ အေးချမ်းတယ်။ တစ်နှစ်ထက် တစ်နှစ်တစ်လထက်တစ်လ လှပလာတဲ့ စက်ရုံကြီးပါ။ ဆက်ဆံရေးကလည်း အရာရှိ/အရာခံ အကုန်လုံးက နွေးထွေးတဲ့အတွက်စိတ်ချမ်းသာပါတယ်။ အခက်အခဲ တွေရှိရင်လည်း ချက်ချင်းဖြေရှင်းပေးပါတယ်။ စက်ရုံကြောင့် ကျွန်ုပ်တို့ လုပ်ငန်းတွေကော အကုန်လုံး အစစအရာရာ အဆင်ပြေတဲ့အတွက် အားလုံးကိုကျေးဇူးတင်ပါတယ်။

Dy Director ဦးကျော်စိုး (ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး)

- ၂၀၁၂ မှ ဦးစီးဌာနက ပေါ်လာတာပါ
- ဥပဒေနဲ့ နည်းဥပဒေထွက်လာပြီးတဲ့ နောက်မှာမှ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုတာကို ၂၀၁၅ ခုနှစ်မှာ စတင်ခဲ့ပြီး နောက်ပိုင်းမှာ လုပ်ငန်းတိုင်းကို ထိခိုက်မှုဆန်းစစ်ခြင်းတွေကို ဆောင်ရွက်ခဲ့ပါတယ်။
- ဒီစက်ရုံအမျိုးအစားက အဓိကကတော့ ရေဆိုးအထွက်များပါတယ်။ အထွက်များတဲ့အတွက် ဘေးပတ်ဝန်းကျင်ကို ဘယ်လိုသက်ရောက်မလဲဆိုတာကို ထည့်သွင်းစဉ်းစားပြီး တတိယအဖွဲ့အစည်းက ဆန်းစစ်ခြင်းတွေ ဆောင်ရွက် ပြီး၊ Scoping report တင်ပြရပါတယ်။ တင်ပြပြီးတဲ့အခါကြာတော့ ပထမအဆင့်အတည်ပြုပြီးရင် EIA ကို တင် ပြရပါတယ်။ EIA ကို ဌာနပေါင်းစုံ (၃၃) ဌာနကလူတွေက ဆန်းစစ်ပြီးတော့မှ ပြည့်စုံပြီဆိုမှ အတည်ပြုပြီး ၊ ပတ် ဝန်းကျင်ဆိုင်ရာသက်သေခံလက်မှတ်ကို ထုတ်ပေးတာပါ။ ဒီစာအုပ်ပါ အစီအစဉ်အတိုင်း ဆောင်ရွက်သွားမယ် ဆိုရင် ပတ်ဝန်းကျင်ထိခိုက်မှုတွေ တတ်နိုင်သမျှလျော့နည်းနိုင်မှာဖြစ်ပါတယ်။
- ဒေသခံတွေအနေနဲ့လည်း လိုအပ်ချက်တွေ စိုးရိမ်ပူပန်မှုတွေကို ဒီမှာပြောပါ။ ဆွေးနွေးပါ။ ဆွေးနွေးချက်တွေကို စာအုပ်ထဲ ထည့်မှာပါ။ company ကလည်း အတတ်နိုင်ဆုံး CSR ကိုဘယ်လောက်ရှိလည်း၊ ရှိတဲ့အထဲမှာ (၄) ရွာကို ဘယ်ရွာကို ဦးစားပေးမလဲ ဒီနှစ်မရရင် နောက်နှစ်တွေမှာ ဒါမျိုးလေးတွေရှိပါတယ်။ ဒီစာအုပ်မှာပါတဲ့ အချက်အလက်တွေက ကတိကဝတ်လိုဖြစ်သွားမှာပါ ၊ စက်ရုံကလည်း စာအုပ်ပါ အချက်အလက်လေးတွေကို အ

ကောင်အထည်ဖော်ပေးဖို့လိုပါတယ်။ (၆) လ တစ်ကြိမ် Monitoring report တင်တဲ့အခါ ဒီစက်ရုံကြောင့် ရေ ပြောင်းလဲသွားလား၊ ဘေးပတ်ဝန်းကျင် ဘာတွေပြောင်းလဲသွားလဲ အဓိကကတော့ ရေဆိုးပေါ့။ Baseline data ထက်ကျော်သွားလားဆိုတာကို (၆) လတစ်ကြိမ် သူတို့တင်လာတဲ့ အစီရင်ခံစာကို စစ်ဆေးပြီး လိုအပ်ရင် ကိုယ် တိုင်ဆင်းတိုင်းမှာပါ။ စက်ရုံကို အဓိကပြောချင်တာက (၆) လတစ်ကြိမ်မှန်မှန်ပေးဖို့ပါ။

AMH (အလုပ်သမားခေါင်းဆောင်) ကိုကျော်မင်းထိုက်

- ကျွန်တော်က တံခွန်တိုင်ကျေးရွာကပါ။ စက်ရုံစတင်ထောင်ကတည်းက အလုပ်လုပ်ခဲ့တာပါ။ အခုတော့ စက်ရုံ တဖြည်းဖြည်းကြီးလာတာနဲ့အမျှ အလုပ်သမားတွေ ပံ့ပိုးပေးရတယ် ၊ အခုဆိုရင် အယောက် (၇၀) လောက်ရှိပါ တယ်။ အလုပ်လုပ်ရတာ ကောင်းပါတယ်။ နိုင်ငံတကာအဆင့်မီစက်ရုံဆိုတော့ လုပ်ရကိုင်ရတာလည်း အဆင်ပြေ တယ် ၊ ကိုဗစ်ကာလမှာလည်း အလုပ်သမားတွေ အဆင်မပြေတဲ့ကာလတွေမှာလည်း အလုပ်သမားတွေကို ထောက်ပံ့ပေးတယ် ၊ အခါကြီးရက်ကြီးတွေမှာလည်း ဆန်၊ ဆီ၊ ဆားတွေ ထောက်ပံ့ပေးတာတွေရှိတယ်။ ကျန်း မာရေးနဲ့ ပတ်သက်ပြီး ကိုဗစ်ကာလကွယ်ဆေးတွေလည်း အလုပ်သမားတွေကိုတိုးပေးပါတယ်။

ကိုမျိုးမင်းသူ (ဝန်ထမ်း)

- လုပ်သက် (၃) နှစ်ရှိပါပြီ။ ကုန်းတလပေါင်ကပါ။ ဒီစက်ရုံကြောင့်အလုပ်မရှိတဲ့သူတွေလည်း အလုပ်အကိုင် အ ဆင်ပြေတယ်။ အလုပ်အကိုင် အခွင့်အလမ်းပိုပြီး တိုးတက်လာတယ်။ မိသားစုဝင်တွေလို့ပဲ ဆက်ဆံတယ်။

ဒေသခံ၊ ရေတလပေါင်မှ

- ရေတလပေါင်မှ တံတားကိစ္စကို တင်ပြချင်ပါတယ်။ မိုးတွင်းဆိုရင် တံတားမရှိတော့ သံဃာတော်တွေ ဆွမ်းခံတဲ့ ကိစ္စကအစ အဆင်မပြေပါဘူး။ ရေကလည်း မသန့်တော့ သုံးစွဲရတာ အဆင်မပြေပါဘူး။

ဦးကျော်စိုးဝင်း

- CSR က MIC ကိုတင်ပြီးအလုပ်လုပ်တယ်ဆိုရင် တကယ်တမ်းက အခွန်ကင်းလွတ်ခွင့် (၅) နှစ်ရပါတယ်။ အဲ့ဒီအ တွက်လည်း နှစ်စဉ်အမြတ်ငွေရဲ့ (၂) % ကို သက်မှတ်ပေးထားပါတယ်။ လုပ်ငန်းတွေက အကျိုးဖြစ်သွားပြီး ဒေ သတွေကတော့ ထိခိုက်နစ်နာသွားတာမျိုး မဖြစ်ရအောင်လို့ CSR နဲ့ ထိန်းကျောင်းထားပါတယ်။ ၁.၅ ကီလိုမီတာ အဝန်းအဝိုင်းမှာ (၄) ရွာကို သက်မှတ်ထားပြီး အဲ့ဒီရွာတွေကို စီမံကိန်းက နှစ်စဉ်အမြတ်အစွန်းရဲ့ (၂) ရာခိုင်နှုန်း ကို CSR အနေနဲ့ သုံးစွဲနိုင်အောင် စီစဉ်ပေးရပါမယ်။ ပညာရေး၊ ကျန်းမာရေး၊ လူမှုရေး၊ ဘာသာရေးလည်းပါပါတယ်။ အားလုံး တက်ရောက်တဲ့အတွက် ဝမ်းသာပါတယ်။ CSR လုပ်ငန်းမှာ စောင့်ကြည့်တဲ့အဖွဲ့ကလည်းဖွဲ့ရမယ်။ (၆) လတစ်ကြိမ် အစီရင်ခံစာတင်ပြရမှာပါ။ အဲ့အချိန်မှာ လည်း သုံးဦးသုံးဖလှယ်ပါတဲ့ အဖွဲ့နဲ့ လုပ်ရမှာပါ။ (လုပ်ငန်းရှင်၊ ဌာနဆိုင်ရာ၊ ဒေသကိုယ်စားလှယ်) စောင့်ကြည့် တဲ့စနစ်ကို ထိန်းကြောင်းရပါမယ်။ CSR (လူမှုစီးပွားတာဝန်သိရန်ပုံငွေ) ကို ဘယ်လိုသုံးစွဲမယ်ဆိုတာကို စောင့်ကြည့်ရမှာပါ။ စက်ရုံလည်ပတ်တာ (၅) နှစ် ပြည့်ပြီးနောက်ပိုင်းမှာ အဲ့ဒါတွေက အသက်ဝင်လာမှာပါ။

- အရှင်ဘုရားခုထက်တင်ပြသွားတဲ့ ရှေးဟောင်းယဉ်ကျေးမှုနဲ့ ပတ်သက်လို့ပါ။ အခြေခံအချက်အလက် တိုင်းတာရေးမှာ တပည့်တော်တို့က တုန်ခါမှုကို စိုးရိမ်တာပါ။ guide line ရှိပါတယ်။ ဘယ်လောက်တုန်ခါရင် ရှေးဟောင်းယဉ်ကျေးမှုတွေ အန္တရာယ်ရှိတာတွေကို အဆောက်အဦး ပျက်စီးနိုင်တယ် ဆိုတာ၊ အရှင်ဘုရားတို့ ဘက်ကို တုန်ခါမှုဘယ်လို သွားတယ်ဆိုတာ တပည့်တော်တို့က အပြိုင်တိုင်းတာပါတယ်။ ဒီစက်ရုံဘက်က စက်ရုံထိပ်မှာ လည်းတိုင်းတယ်။ စွန့်ပစ်ကန်နားမှာလည်းတိုင်းတယ်။ အရှင်ဘုရားတို့ဘက်မှာလည်း တိုင်းတယ်။ တပည့်တော်တို့ မှာ အဖြေတွေရှိပါတယ်။ အရှင်ဘုရားတို့ဘက်မှာ (၀.၆) တုန်ခါမှုရှိပါတယ်။ ဘာလို့ တိုင်းလည်းဆိုတော့ ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်တွေက ဘယ်လိုကြောင့်ပျက်စီးနိုင်လည်း၊ ရေထု၊ လေ ထုတွေကြောင့်လား ဆိုတာကို အပြိုင်တပည့်တော်တို့ကတိုင်းတာပါ။ အဲ့အဖြေတွေလည်း တပည့်တော် တို့ဆီမှာရှိပါတယ်။ ပါမောက္ခ ဒေါက်တာပြည့်ဖြိုးကျော်လည်း ပြောသွားပါတယ်။ အရှင်ဘုရားတို့ ဒီမှာ တည်ဆောက်ထား တဲ့စနစ်တွေကောင်း တယ်ဆိုတာလည်း ရှေးဟောင်းနဲ့ ပတ်သက်လို့ အဲ့ဒါလေးတွေ ပြောသွားပါတယ်။

- အရက်နဲ့ ဘီယာနဲ့ ဆိုင်ရင် ဘီယာဆိုတာက စိမ်ရည်ကိုသောက်တာပါ။ အရက်ဆိုရင် ဂါလံ (၁၀၀) မှာ အယ်လကိုဟော (၅) ရာခိုင်နှုန်းပဲပါတယ်ဆိုရင် ကျန်တာက (၉၅) ရာခိုင်နှုန်း အပြင်ကိုစွန့်လိုက်တာပါ။ ဘီယာကတော့ အဲ့ဒီ စိမ်ရည်တွေအကုန်လုံးကို သောက်လိုက်တဲ့အတွက် စွန့်ပစ်ရည်ထွက်တာ နည်းသွားပါတယ်။ ဒါပေမဲ့ အဲ့ဒီစွန့်ပစ် ရည်ကို သေချာစနစ်တကျနဲ့ နိုင်ငံတော် Guide line အတိုင်း စွန့်ပစ်ရင် ပတ်ဝန်းကျင်နဲ့ ပတ်သက်ပြီး ထိခိုက်မှု အနည်းဆုံးဖြစ်မှာပါ။ စောင့်ကြည့်တဲ့ အစီအစဉ်ကို ပုံမှန်လုပ်သွားမယ်။ ဒေသခံတွေပါဝင်တဲ့ စောင့်ကြည့်တဲ့ အဖွဲ့ နဲ့ ဖွဲ့ပြီးဆောင်ရွက်သွားရင် ဒါတွေအားလုံးအဆင်ပြေသွားမှာပါ။ ကျေးဇူးတင်ပါတယ်။

ဆရာတော်

- ရှေးဟောင်းစေတီတော်နဲ့ ပတ်သက်ပြီး ဒီလိုမျိုးတိုင်းထွာပြီး ဆောင်ရွက်တဲ့အတွက် လုံခြုံမယ်လို့ထင်ပါတယ်
- CSR ဆိုတဲ့ မင်္ဂလာသတင်းကြားလိုက်ရလို့ပါ။ ဥူးဇင်းကတော့ ဘာသာရေးဘက်ကဆိုတော့ ဘာသာရေးစကား ပြောချင်ပါတယ်။ ဒီအရက်ဘီယာဆိုတာက မိစ္ဆာအာဇီဝလို့ခေါ်ပါတယ်။ အဲ့တော့ ရေတဖက် မီးတဖက် ဖြစ်သွား အောင် ရှေးဟောင်းစေတီတော်ကြီးကို ဆီမီးလှူစေချင်ပါတယ်။ လျှပ်စစ်ပူဇော်နိုင်ရင်တော့ ပိုကောင်းပါတယ်။ စက်ရုံကြောင့်တော့ စေတီတော်ကြီးကို မထိခိုက်စေနိုင်ပေမဲ့ ၊ အကုသိုလ်လုပ်ငန်းဆိုတော့ တစ်ဖက်က ကုသိုလ် ယူစေချင်တယ်။
- ပတ်ဝန်းကျင်က တံတားကိုဦးစားပေးစေချင်ပါတယ်။ ပညာရေးအပိုင်းကိုလည်း နည်းနည်းလေး ကူညီစေချင်ပါ တယ်။ စက်ရုံရဲ့ အကျိုးအတွက်တောင်းဆိုတာပါ။

ဦးအောင်ချမ်းသာ

- MIC ကကျွန်တော်တို့ကို အခွန်ကင်းလွတ်ခွင့် (၅) နှစ် မပေးထားပါဘူး



- CSR ကိစ္စနဲ့ ပတ်သက်ပြီး စက်ရုံကို ဒါရိုက်တာအဖွဲ့က အုပ်ချုပ်ပါတယ် တကယ်တော့ ဒါရိုက်တာအဖွဲ့ဆိုတာလည်း ဝန်ထမ်းတွေပါပဲခင်ဗျ။ အခုတင်ပြထားတဲ့ တံတား ဒီလိုဟာတွေကို ဆက်လက်ပြီးတော့ BOD ကနေ တစ်ဆင့် Shareholder တွေကို ဆက်လက်တင်ပြပေးသွားပါမယ်။

- တကယ်တော့ တခြား company နဲ့ မတူတဲ့အချက်က အမြတ်ငွေရဲ့ (၂) ရာခိုင်နှုန်းက လိုပြောထားတော့ သူတို့က ဘယ်လိုလုပ်သလဲဆိုတော့ အမြတ်မရှိဘူးဆိုပြီးပြောကြပါတယ်။ ကျွန်တော်တို့က စက်ရုံစက်တည်းကိုက အမြတ်တစ်ပြားမှ မရခင်ကတည်းကိုက လိုအပ်တဲ့နေရာမှာ တံတား (တံခွန်တိုင်) မှာ တည်ဆောက်ပေးခဲ့ပါ တယ်။ အခုဒီဖက်က တောင်းဆိုတာ အားလုံးကိုလည်း တင်ပြပေးပါ့မယ်လို့ပြောကြားလိုပါတယ်ခင်ဗျာ။

ဦးကျော်စိုး Dy Director


- နိုင်ငံတော်ကပြဌာန်းထားတဲ့အတိုင်း စက်ရုံအနေနဲ့ ကတိကဝတ်တွေကို လိုက်နာသွားမယ်ဆိုရင် ရေရှည်ဖွံ့ဖြိုးမှုကို ရရှိသွားမှာဖြစ်ပါတယ်။ အားလုံးကို ကျေးဇူးတင်ပါတယ်။




အခမ်းအနားအစီအစဉ်

- နေ့စွဲ ။ ။ ၂၅ - ၂ - ၂၀၂၃ (စနေနေ့)
- အချိန် ။ ။ နံနက် (၉ : ၀၀) နာရီ
- နေရာ ။ ။ Emerald Brewery Myanmar Limited စက်ရုံစီမံကိန်း၊ အမှတ် (၃) လမ်းမကြီး၊

- ၁။ Emerald Brewery Myanmar Limited ၏ ဘီယာစက်ရုံစီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ အများပြည်သူနှင့်တွေ့ဆုံဆွေးနွေးပွဲအခမ်းအနား ဖွင့်လှစ်ကြောင်း ကြေငြာခြင်း
- ၂။ စီမံကိန်းလုပ်ငန်း အကြောင်းအရာနှင့်ပတ်သက်၍ Emerald Brewery Myanmar Limited ၏ တာဝန်ရှိသူ တစ်ဦးမှ ရှင်းလင်းတင်ပြခြင်း
- ၃။ စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အကြောင်းအရာများကို Green Myanmar Environmental Services Co., Ltd. မှ ဦးကျော်စိုးဝင်းမှ ရှင်းလင်းတင်ပြခြင်း
- ၄။ စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ ပတ်ဝန်းကျင်အခြေခံအချက်အလက်များတိုင်းတာခြင်းဆိုင်ရာများကို Green Myanmar Environmental Services Co., Ltd. မှ ဦးကြည်ဟန်ဘိုမှ ရှင်းလင်းတင်ပြခြင်း
- ၅။ ရေစီးရေလာနှင့် ရေအသုံးချမှုဆိုင်ရာဆန်းစစ်ခြင်း၊ ဇီဝမျိုးစုံမျိုးကွဲများလေ့လာဆန်းစစ်ခြင်းဆိုင်ရာ တို့ကို ဦးစိုင်းစိုးသန့်မှ ရှင်းလင်းတင်ပြခြင်း
- ၆။ စီမံကိန်းလုပ်ငန်းနှင့်ပတ်သက်၍ လူမှုစီးပွားဆိုင်ရာလေ့လာဆန်းစစ်ခြင်းများကို ဦးသိန်းစိုးမှ ရှင်းလင်းတင်ပြခြင်း
- ၇။ တက်ရောက်လာသူများမှ စီမံကိန်းနှင့်ပတ်သက်၍ သိရှိလိုသော အကြောင်းအရာများကို ဆွေးနွေး မေးမြန်းခြင်း
- ၈။ ဆွေးနွေးမေးမြန်းချက်များနှင့်ပတ်သက်၍ တက်ရောက်လာသည့်အဖွဲ့များမှ ပြန်လည်ရှင်းလင်း ဖြေကြားခြင်း
- ၉။ တက်ရောက်လာသူများအား Emerald Brewery Myanmar Limited တာဝန်ရှိသူတစ်ဦးမှ ကျေးဇူးတင်စကား ပြောကြားခြင်း
- ၁၀။ အခမ်းအနားအစီအစဉ်ပြီးမြောက်ကြောင်း ကြေငြာခြင်း။



“တွေ့ဆုံဆွေးနွေးပွဲဖိတ်ကြားလွှာ”



ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင် အရှေ့ကွင်းနံပါတ်(၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁+ ၂/၂ + ၂/၃+ ၁-၂) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် Emerald Brewery Myanmar Limited ၏ “ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” စက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ (EIA Report) ကို Green Myanmar Environmental Services Co., Ltd. မှ အစီရင်ခံစာရေးဆွဲပေးလျက်ရှိရာ ၎င်းအစီရင်ခံစာ ရေးဆွဲခြင်းနှင့် ပတ်သတ်၍အများပြည်သူနှင့် ဒုတိယအကြိမ်တွေ့ဆုံ ဆွေးနွေးပွဲ ပြုလုပ်မည်ဖြစ်ပါသောကြောင့် လူကြီးမင်းတို့ထံမှလမ်းညွှန်ချက်များ/ အကြံဉာဏ်များ ရယူလိုပါသဖြင့် အောက်ပါအစီအစဉ်အတိုင်း တက်ရောက်ဆွေးနွေး ပေးနိုင်ပါရန် လေးစားစွာ ဖိတ်ကြား အပ်ပါသည်။

ဆွေးနွေးပွဲအစီအစဉ်

နေ့ရက်	-	၂၅/၀၂/၂၀၂၃ (စနေနေ့)
အချိန်	-	(၉ : ၀၀) နာရီ မှ (၁၁ : ၀၀) နာရီထိ
နေရာ	-	Emerald Brewery Myanmar Limited စက်ရုံ၊ အမှတ် (၃) လမ်းမကြီး။



The Second Public Consultation Meeting for
Manufacturing and Distribution of Beer Project
Environmental Impact Assessment- EIA Report

Emerald Brewery Myanmar Limited



ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ်(၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁+ ၂/၂ + ၂/၃+ ၁-၂) တွင်ဆောင်ရွက်လျက်ရှိသော

ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း

စီမံကိန်းအတွက် ရေးဆွဲပေးနေသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာနှင့် ပတ်သတ်၍

အများပြည်သူ နှင့် ဒုတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲ

၂၅/၂/၂၀၂၃ (စနေနေ့)

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited

2nd Public Consultation Meeting

Attendees

25th February 2023

No	Name	Designation	Department/ Organization
1	U Kyaw Soe Win	MD	Green Myanmar Environmental Services Co., Ltd
2	U Myo Myint	Director	Green Myanmar Environmental Services Co., Ltd
3	U Sai Soe Thant	Consultant	Green Myanmar Environmental Services Co., Ltd
4	U Kyi Han Bo	QE	Green Myanmar Environmental Services Co., Ltd
5	U Nay Win Htet		Green Myanmar Environmental Services Co., Ltd
6	U Thiha Zaw		Green Myanmar Environmental Services Co., Ltd
7	U Thein Soe	Consultant	Green Myanmar Environmental Services Co., Ltd
8	U Myat Linn	Project Assistant	Green Myanmar Environmental Services Co., Ltd
9	U Pyae Soe Thant		Green Myanmar Environmental Services Co., Ltd
10	Ma Shar Thaihuan		Green Myanmar Environmental Services Co.,



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

			Ltd
11	U Thet Naing Htun		Green Myanmar Environmental Services Co., Ltd
12	Daw Phyو Thaw Thaw Htun	Consultant	Green Myanmar Environmental Services Co., Ltd
13	Daw Noe Noe Hnin Nu Htwe	Consultant	Green Myanmar Environmental Services Co., Ltd
14	U Saw Wanna Htun	Project Assistant	Green Myanmar Environmental Services Co., Ltd
15	Daw Hnin Htet Htet Hlaing	Consultant	Green Myanmar Environmental Services Co., Ltd
16	Dr Pyae Phyو Kyaw	Professor	Green Myanmar Environmental Services Co., Ltd
17	Se Thu Htun Bo	Freelance Researcher	Green Myanmar Environmental Services Co., Ltd
			Local Residents
18	Daw Tin Yee		Ta Kone Taking villages
19	Daw Win Win Maw		Ta Kone Taking villages
20	U Kyaw Lwi		
21	U Kyaw Kyaw		
22	U Thaung Myint		
23	U Kan Myint		
24	U Mya Thaung		Ta Kone Taking villages
25	U Aye Myint		
26	U Min Min		
27	U Khin Myo Zaw		



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28	U Tin Zaw		Ywa Thit
29	U Mya Hlaing		Ta Kone Taking villages
30	U Myint Than		Ta Kone Taking villages
31	U Win Nyunt		Yay Ta La Baung Village
32	U Than Aung		Yay Ta La Baung Village
33	U Win Maung		Yay Ta La Baung Village
34	Ko Nay Lin Oo		Yay Ta La Baung Village
35	Myo Min Lwin		Ywar Thit
36	Thant Zin Oo		Ywar Thit
37	U Myint Aye	Ywar Thit	
38	Ma Kyawt Yamin Lwin	Kone Ta La Baung Village	
			Department/ Organization
39	Daw Su Su Mon	Deputy Head	Helgu City Development Committee
40	Daw Yin Nwe Zin Nyein	Junior Engineer (2)	
41	U Mya Maung	Myittar Lwan Chone	Kone Ta La Baung Village
42	U Aung Thu	Myittar Mon	Shwe Nanthar Sanpya
43	U Nay Htet Lin	Myittar Mon	Shwe Nanthar Sanpya
44	U San Myint	Myittar Lwan Chone	Shwe Nanthar Sanpya
45	U Kyaw Soe	District Head	ECD, Yangon
46	U Kyaw Min Htet	K.M.H	K.M.H
47	Kyaw Min Tha	K.M.H	K.M.H



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

48	Mg Yin Htwe	Staff	K.M.H
49	Nyunt Nyunt Sein	Owner	MOP Co., Ltd
50	U San Myint	Volunteer	Myittar Lwan Chone
51	Daw Aye Aye Phyo		Kone Ta La Baung Village
52	Daw Aye Mya Mya Moe		Kone Ta La Baung Village
53	U Aung Mya	Administrator	
54	U Tin Nyunt	Village incharge	
55	May Pyone Khaing		Kone Ta La Baung Village
56	U Ottama	Principal	Ahmayawadi Thai Monastery
57	Daw Pyae Phyo Khaing	Teacher	Ahmayawadi Thai Monastery
58	Daw Khin Zar Zar Wint	Teacher	Ahmayawadi Thai Monastery
59	U Tin Myint		Ta Kone Taking villages
60	U Than Htike		Ta Kone Taking villages
61	Zaw Min Htun		Ta Kone Taking villages
62	Naing Lin Oo		Ta Kone Taking villages
63	U San Myint		Ta Kone Taking villages
64	U Khin Mg Yin		Yay Ta La Baung Village
65	U Aye Han		Yay Ta La Baung Village
66	U Myint Kyi		Yay Ta La Baung Village
67	U Htun Htun Win		Yay Ta La Baung Village



68	Saw Lay Htoo		Yay Ta La Baung Village
69	U Kyaw Tin		Yay Ta La Baung Village
70	Ko San Naing		Yay Ta La Baung Village
71	U Phyo Lone		Yay Ta La Baung Village

Suggestion and Comments

No	Suggestion and comments	Suggested persons
1	<p>It should be disposed the waste water; its parameters are within the limit of National Environmental Quality (Emission) Guideline.</p> <p>To be followed the points that described in the EIA report.</p>	<p>U Kyaw Soe</p> <p>District Head, Yangon North District, Yangon Region</p>
2	<p>Regarding about EIA report, it should be improved more for boiler and firefighting service. It is encouraged to raise the living standards of local residents. Mitigation measures are practiced to minimize the environment impacts. To implement the project in accordance with the EIA report.</p>	<p>Daw Su Su Mon</p> <p>09-957197281</p>
3	<p>The Kone Ta La Baung is the closest village to the factory. The Bar Lar creek that exists between village and factory keeps flowing in the raining season. It produces the bad smell and suggested that to minimize it.</p> <p>It was thankful that the factory has conserved to improve the air, water, and earth for environment.</p>	<p>U Mya Maung (09-77997170)</p> <p>Kone Ta La Baung Village</p>
4	<p>It was nice to see the entrance of the factory is pleasant and greenery. Wish the factory all the best services more in the future.</p>	<p>Nyunt Nyunt Sein (09-5116295)</p> <p>Htauk Kant</p>
5	<p>There is not inconvenient for utilization of water in Yay Ta La Baung Village. It is not easy to go everywhere without bridge. It is required to fulfil the health care.</p>	<p>U Aye Han, U Win Maung</p>
6	<p>There has no comment for international recognized and quality beer factory built in Yangon Region. We are encouraged to produce with health standard.</p>	<p>U Aung Mya</p> <p>Administrater</p>



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7	I am pleased the factory has implemented the mitigation measures for environment. I want to request to appoint the appropriate job for Ta Kone Taking villagers.	U Myint Than Ta Kone Taking villages
8	As an administrator of Yay Ta La Baung Village, I want to inform the GMES that the mitigation measures of bad smell to explain the in front of U Than Aung (ward leader) and U Chit Phue (ward leader) Yay Ta La Baung Village	U Khin Myo Zaw Administrator Yay Ta La Baung Village
9	The emission of bad smell can sense seldomly. The rest is quite OK. Want to get more job opportunities. The bridge between Yay Ta La Baung Village and Kone Ta La Baung Village is required.	Daw Aye Aye Phyo Kone Ta La Baung Village
10	I am Ma May Pyone Khaing from Myit Htar Hlwan Chone voluntary organization. Ours is social organization. I want to attend the training of social organization in the factory. In case of any emergency, it will help.	Ma May Pyone Khaing Kone Ta La Baung Village
11	Please maintain the mitigation measures, especially disposal of waste water. Please conserve the existing water treatment system.	Yin New Zin Nyein
12	It is good and take care of disposal of waste water to Bar Lar creek	U Nay Htet Lin
13	Our voluntary organization can help if accidents happen in the factory and its environs.	U Aung Thu Shwe Nantthar , Mingalardon Township.
14	I am happy to attend this meeting. Our social organization can help if accidents happen around area.	Ma Kyawt Yamin Lwin
15	All are convenient.	U San Myint Chairman, Myit Htar Hlwan Chone voluntary organization, Kone Ta La Baung Village

**Production of Emerald Brewery Myanmar Limited
Environmental Impact Assessment
Meeting minutes for 2nd Public Consultation Meeting**

Day: 25th February, 2023

Time: 9:00 am to 11:00 am

Venue: Factory's main building hall

1. The meeting was held in accordance with the disciplines of Covid 19. Masks and hand gel were provided at the entrance of the meeting.

2. The 15% of women out of 71 participants were attended in the meeting. The 4 villages were designated in the scoping of project by the "Third Party Organisation". According to the attendance, 9 participants from Ta Kone Taking (Insein) village, 12 participants from Yay Ta La Baung Village, and 9 participants from Kone Ta La Baung Village. Some attendees had not filled up the name of their villages.



(The attendee lists with signature were in the attachment separately)



3. It was learnt that the 10 repetitive attendees from Ta Kone Taking (Insein) villages were in the meeting.

4. The significant persons among the attendees are as follows.



No	Name	Township/Village	Organization	Responsibility	Contact No
1	U Kyaw Soe	Shwe Pyi Thar	Environment Conservation Department (Northern District)	District In-Charge	
2	U Khin Myo Zaw	Ta Kone Taking (Insein) villages	Administration	Administrator	09-450638163
4	U San Myint	Kone Ta La Baung Village	Myittar Lwan Chone	Chairman	09-777787017
5	U Ottama	Kone Ta La Baung Village	Amarawadi Thai Temple	In-Charge	
6	U Than Aung	Yay Ta La Baung Village	Administration	Group Leader	
7	U Chit Phyu	Yay Ta La Baung Village	Administration	Group Leader	

5. The meeting was held as two parts.

(A) The explanation of responsible personnel from factory and the third party organization

(B) The open talk discussion with attendees in person

(The agenda was attached in the Appendix (A))

6. The Engineer in charge U Aung Chan Tha explained about the actions based on previous first public consultation meeting.

(a) Job opportunities

(b) Action plan not to be polluted the environment by the waste

(c) Bar lar creek and waste water treatment system of factory

(d) Boil chimney matters

(e) Fire hazard

(f) the switch of water supply drains due to the excavation of construction activities.

(g) Traffic jam caused by vehicals from site

(Above complete discussions is attched in Appendix B)

7. Then, the leader Engr. Kyaw Soe Win from third party team



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explained widely about the activities of project in the past and in future as per following headings.

- (a) The points to be studied for the project.
 - (b) What all about for third party organization
 - (c) The process of environment impact assessment
 - (d) The assessment on project
 - (e) The based line data for scoping and environment, cultural heritages, traffic situation, biodiversity, water utilization, hydrology study and surveys for socio-economic.
 - (f) Scoping report submitted to the Environment Conservation Department(ECD) and reply letter by ECD with comments
 - (g) Impacts on environment by the project
 - (h) Environment Impact Assessment and Mitigation measures
 - (i) Corporate Social Responsibility and budget to use for mitigation measures
 - (j) Review upon project and Conclusion
- (The complete discussion are attached in the appendix (C)

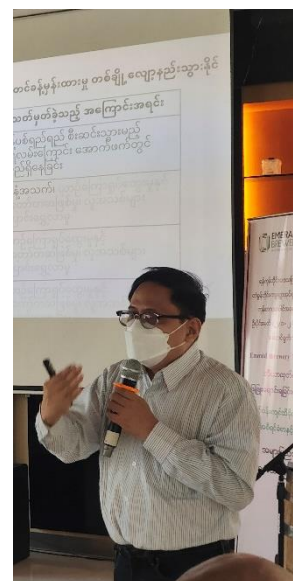


(8) Then, U Thein Soe ,the social consultant, presented the findings as a first stage based on the scope and asked for the comments from attendees. Moreover, he suggested to organize the team proposed to the following persons to settle the disputes between factory and local residents if happened.

- The responsible persons from township level
- The responsible persons from village tract level
- The elderly from villages

- The representatives from civil social organization
- in villages
- The responsible persons from factory
- Other relevant persons

(The discussion is attached in the Appendix D)



9. The last person of the first part of the Public Consultation Meeting, U Sai Soe Thant, Hydrology Consultant, explained and discussed about the following two facts.



(a) The comments of biodiversity expert based on preliminary study.

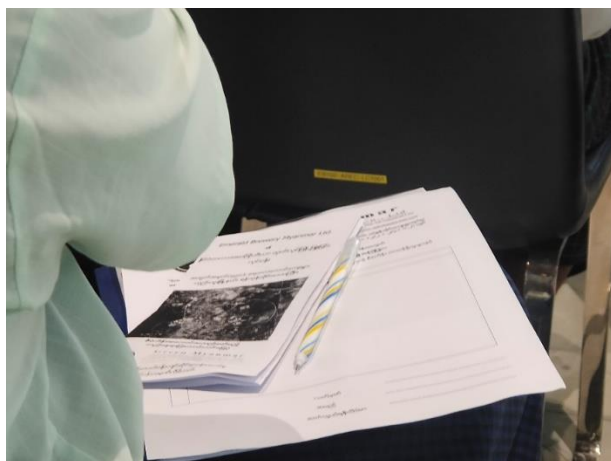
(b) The study on Bar Lar Creek current situation
(The complete discussion is attached in the Appendix (E))

10. After that, as a second part of the meeting, round table talk discussion was proceeded. The participants were Principal Abbot from Thai temple, the elderly from Yay Ta La Baung Village and Ta Kone Taking (Insein) villages, local factory staff, two relevant business partners with factory, and Head of Department(ECD North District). Furthermore, one person from Yay Ta La Baung Village, Professor Dr Pyae Phyo Kyaw,- Archaeological and cultural Heritage Expert, U Kyaw Soe Win, and U Aung Chan Tha were also discussed the related matters.



(The discussion is attached in the Appendix F)

11. After meeting, it was collected the comments from attendees for the project.



(The comments is attached in the Appendix separately)

Appendix (A)

- 8:30 a.m. Visitors come and take the place
- 9:00 a.m. The meeting has started and explanation about the emergency exits.
- 9:30 a.m. U Aung Chan Tha has explained about factory, comments of 1st PCM, and carried out works of it.
- 9:20 a.m. U Kyaw Soe Win has explained the carried-out works upon EIA/EMP report and the plans to move onwards
- 9:40 a.m. U Soe Thein has explained the carried out works for socio-economic study and ongoing plans.
- 9:55 a.m. U Sai Soe Thant has explained about the carried-out works and ongoing plans.
- 10:10 a.m. Round table discussion on EMBL project
- 10:50 a.m. The announcement of end of the meeting

Appendix (B)

- Explained about the implementation of comments from first PCM.
- The project has implemented since 2018. The Green Myanmar Environmental Services Company has submitted the three times of scoping report. It was delay around 4 years because of Covid and other causes. In 24th November 2022, the ECD has approved the scoping report with 18 comments and to move on next steps. The carried-out works was explained in today meeting.
- The document was shown in public here.
- Our factory is situated in the Yay Ta La Baung Village, beside the No(3) High Way Express, Plot No. (498). It has been received the approval of MIC. The factory has operated on 1st October 2019. The reason why we chose this area is because of water. The production of beer, the water quality is crucial. Here the quality of water is so good.
- The ingredients of beer brewing- malt, rice, hop, yeast have shown as a sample here.
- There has 4 steps in beer brewing process. Rice and malt to be smashed, then, boil it, and separated water and smashed solid, put the hop till boil, cool it down, add yeast, make a fermentation. (Apologize to the attended monk) There have six beer factories in Myanmar.
- It is presented our activities that is different from others. The first PCM was held in 29th December 2018. Asked any persons who had attended on that day? Around 10 persons say “Yes” and majority was from Ta Kone Taking (Insein) villages.
- In the first PCM, the attendees had presented
 1. Job opportunities
 2. Want to know waste management plan not to be polluted to environment. Especially water treatment system in factory and how to dispose to Bar Lar creek
 3. Any sparks from chimney of boiler? Hazard to environment?
 4. Due to the activities of excavation for project, what will happen the drain to farms?
 5. People ask the issue of traffic jams because of the vehicles of project.



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All these are abstracted from comments.

-Want to explain the activities that we have done.

1. The company can create more than 1,000 job opportunities to the communities. the direct employees were 212, and related employees were more than 800. Meanwhile, more than 300 construction workers are assigned in the project.

2. According to factory set up, 280 employees have been working and it includes 4 expatriates and 276 local staffs. We have a list of local resident employees who work in factory. Feel free to check it.

- Want to talk about the existing plan of waste management. The wastes from the factory are:

1. Sludges of malt after boiling
2. Caps of bottles, broken bottles, damaged cans from packaging department
3. Cartoon boxes
4. Woods
5. Plastic
6. Carbondioxide gas emission
7. Methane gas from waste water treatment
8. Waste water from treatment plant
9. We call natural fertilizer that come out from waste treatment sludge.

we have shown the water sampls from factory and Bar Lar creek. You can check where the sampls were taken too.

- Let's see how we manage the waste.

1. The sludge from malt has sold to the poultry firms as an animal feed. Demand is so huge.

2. We have used the carbondioxide in process of filling the beer. And also put it in the carbondioxide cylinder and deliver to the beverage shops. All the carbondioxide gas emitted converts to the liquid. Not for sales for outsiders.

3. The broken bottles, damaged cartoon boxes, broken woods, and waste plastic have been disposed to the desiginated area with partition at the backyard of the factory. We sold out them to the recyclers once a week.

4. Regarding about waste water, there has the guidelines imposed by ECD. The status of disposed waste water has standards. The current waste water treatment plant in factory uses "Aerobic waste treatment system". After treatment, it disposes to the Bar Lar creek. Under the instruction of ECD, we have installed the "online monitoring system" in disposed line. We are the first one who fix this kind of system out of six beer factories across the country. If one disposed parameter is out of standard, the Department will know. The waste water treatment system is like our digestion system in body. At home, it likes a sewage system. We collect to use the treated waste water as fire fighting water tank and excess water has to dispose to the Bar Lar Creek. We use the residue sludge as organic fertilizer in factory gardening and the product vegetables are free distribution to the staffs once a week.



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5. The ECD said that alternative method to be used in factory so that we install one more the “Anaerobic waste treatment system” at workplace. It is a closed system and as a result, the methane gas emission will occur. We have been planning to use its gas to generate the natural gas boiler. This project will come soon.

- Regarding about boiler chimney and fire fighting system, people are worried about the sparks from chimney. Our boilers are not conventional (the names of boiler hasn't caught it). We install 5 numbers of boilers of which 2 tons capacity each. Have you seen any smoke from boilers since operation starts till now?. The attendee replied “No”

- Another point is how to conserve the water. There has two parts-conserve the natural water and manage the waste water. We haven't paved the car park fully to migrate the water into the ground. No concrete pavement in unnecessary places. We grow plants. We collect the natural water as much as possible. This is a water reservoir for fire fighting purposes. Birds and lotus flowers can be seen in it. We collect enough water for fire fighting purposes. We follow the instructions of fire fighting brigade department to be better. Last PCM, U Ohn Myint asked for one fire engine to buy for fire fighting. We save the money to buy it. We are also implementing the instructions of fire fighting brigade department.

- For emergency saving, our factory have set in place transparent roof so that we can enjoy the daylight without using the electricity. Thanks to the LED, we can save the 87% of energy. We use the lamps manufactured by Philip Company. We fix the solar lamp on the lamp-post.

- On top of the factory main building, solar system is installed. The whole building uses the electricity from it. (Today we use the projector thus we switch on the generator). In December 2022, the electricity bill was one thousand one hundred and thirty thousand MMK and in January 2023, it was only two hundred and forty thousand MMK. We save 75% MMK because of solar installation.

- In the newly constructed warehouse, we intend to install solar. The current consumption of power in factory is 4 MW. The new solar system will produce 2.2 MW and start to use in May.

- Now I explained as much as possible the comments on first PCM. As a conclusion, we really like this place so that we never destroy the environment

Appendix (C)

- Explained about the activities of Green Myanmar Environmental Services

- Explained about the activities of Emerald Brewery Myanmar Limited

The description of the project

1. Studies and assessment of project
2. Third party organization for Environment Impact Assessment
3. Process of Environment Impact Assessment
4. Assessment on project
5. Scoping and environmental base line data, cultural heritages, traffic situation, biodiversity, water utilization and study of hydrology, and survey of socio- economic situation



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6. Scoping report submitted to the Environment Conservation Department(ECD) and reply letter by ECD with comments
 7. Impacts on environment by the project
 8. Environment Impact Assessment and Mitigation measures
 9. Corporate Social Responsibility and budget to use for mitigation measures
 - 10 Review upon project and Conclusion
- (1) Assessment on project
1. Study on legal and policy
 2. Study on impact of cultural heritage
 3. Study on impact of biodiversity
 4. Study on hydrology and water utilization
 5. Study on geology and topology
 6. Study on traffic situation
 7. Assessment on socio-economic
 8. Assessment on health
 9. Above studies are done for the environment assessment process of project.

(2) The third party organization for environment impact assessment

- It was explained the activities of Green Myanmar Environmental Services Co., Ltd, inclusive consultants, licenses, and experiences.

(3) In the process of environment impact assessment

- 1 Assessment on project
- 2 Identify the scoping
3. Collection of based line data
4. Identify the environment and biodiversity system, and impacts on society
5. Inform and take the comments from local authorities, social organizations, and public for the impact of project
6. Identify the mitigation measures, laid down the plans ,and monitoring ploedures
7. Submit the report

(4) Assessment on project

- In 2018, the assessment on project have done as follows. (Documented photos)

(5) Identify the scoping areas and collection of based line data

- It was done in 2018.(Documented photos), Some activities on 2023
- The studies on archaeological and cultural heritages, activities and documented photos.



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- The studies on traffic routes and maps
- The studies on bioersity and documented photos (2018)
- The studies on bioersity and documented photos, documented photos (21.2.2023)
- The studies on utilization of water and hydrology and maps
- The survey data of socio-economic (Ta Kone Taking villages, Ngwe Khwe San Pya, Kone Ta La Baung Village, Yay Ta La Baung Village) and documented photos
- The holding of PCM , first PCM related with scoping on 23rd December 2018 and its documented photos

(6) The scoping report to ECD and its reply letters with comments

- The submission of reply letter from ECD on 24th November 2022.

(7) Environment impact on project

Environment impact on factory project

- 1.The environment impacton preparation period
- 2.The environment impacton construction period
3. The environment impact on operation period
- 4, The environment impact on discomission period

The impacts in these periods to be mitigated with plans. And monitoring procedures needs to be implemented

Environment impact on operation period

1. Emission to the air
2. Emission to the water
3. Emission to the ground
4. Noise and vibration

Production process of the factory project

Process of beer production



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- the unfavorable gases from wort kettle for boiling of hop.
- the unfavorable gases from fermentation process
- the unfavorable gases from filling of carbon dioxide into beer
- Caustic fumes and gases from CIP system
- The odor of anerobic bacteria from waste treatment plant
- The odor of aerobic bacteria from waste treatment plant
- The odor of burnt gases from boiler
- smoke and gases from carbon dioxide regeneration plant
- smoke and gases from canteen

Emission to the air

Emission to the air by Emerald Brewery Myanmar Limited

- the waste water from daily usage of employees
- the waste water from washing of machines and tanks
- the waste water from boiler blowdown
- the waste from leakage of transformer, fuel, lubricant, and gear oil
- the waste from bottle and barrel
- the waste from CPI
- the waste from bottle, barre;, and cans
- the saline water, wash water,and reject water
- the waste from water treatment plant
- the waste water from spray and condensate water from carbon dioxide plant
- the waste water frm canteen

Emission to the ground

- the emission to the waste to ground by Emerald Brewery Myanmar Limited
- the waste from employees
- the damaged pieces of office equipment
- the particulate matters from malt/rice
- the sludge of malt/rice/hop after mashing
- the rejected packing material
- the waste from bottle, barrel, tin cans
- the waste from waste water treatment plant and carbon dioxide plant
- the solid waste from canteen

Noise and vibration

The noise and vibration from Emerald Brewery Myanmar Limited are:

- the noise from transportation vehicles



- the noise from reserved generators
- the noise from machines, equipment, and its associated machines
- the noise and vibration from water treatment system

(8) Environment Management Plan and Mitigation measures

- Mitigation measures on smoke and odour

- Mitigation measures on emission of gas from transportation vehicles
- Mitigation measures on emission of gas from reserve generators
- Mitigation measures on emission of gas from leakage of gas
- Mitigation measures on emission of particulate matters from malt/rice
- Mitigation measures on emission of particulate matters from weighing of malt/rice
- Mitigation measures on emission of particulate matters from grinding rice
- Mitigation measures on emission of smoke from mashing of malt/rice/enzyme/water
- Mitigation measures on emission of smoke and odour from wort kettle
- Mitigation measures on emission of smoke and odour from fermentation
- Mitigation measures on emission of carbon dioxide from filling machine
- Mitigation measures on emission of aluminum foil and gas from bottling plant
- Mitigation measures on emission of gas and odour from CIP unit
- Mitigation measures on emission of methane gas from waste water treatment plant
- Mitigation measures on emission of smoke and odour from Aerobic waste treatment system
- Mitigation measures on emission of burnt gas from boiler
- Mitigation measures on emission of smoke and odour from regeneration of carbon dioxide plant
- Mitigation measures on emission of smoke and odour from canteen

- Mitigation measures on waste water treatment plant

- Mitigation measures on disposing of waste water from daily use of staffs
- Mitigation measures on disposing of waste water from washing of machines and tanks
- Mitigation measures on disposing of waste water from boiler blowdown
- Mitigation measures on disposing of oil and waste water from transformer, fuels, lubricants, and beer



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- Mitigation measures on disposing of waste water from bottling plant
- Mitigation measures on disposing of waste water from CIP unit
- Mitigation measures on disposing of waste water from bottling, and canning
- Mitigation measures on disposing of waste water from saline, wash water, and reject water
- Mitigation measures on reducing of waste water from treatment plant
- Mitigation measures on disposing of waste water and condensate from carbon dioxide plant
- Mitigation measures on disposing of waste water from maintenance workshop and vehicle workshop
- Mitigation measures on disposing of waste water from canteen
- **Mitigation measures on disposing of solid water from factory**
- Mitigation measures on disposing of general solid waste
- Mitigation measures on disposing of solid waste from packagind unit
- Mitigation measures on disposing of solid waste, bottle, and cans from packagind unit
- Mitigation measures on disposing of solid waste from the through of the process
- Mitigation measures on disposing of expired solid waste from warehouse
- Mitigation measures on disposing of solid waste from packagind unit
- Mitigation measures on disposing of solid waste from canteen
- **Mitigation measures on noise**
- Mitigation measures on noise by the transportation vehicles
- Mitigation measures on vibration from machines and equipment
- Mitigation measures on vibration to protect the staffs by providing personal protective equipment



- Environmental Monitorig Plan

စဉ်	ဆောင်ရွက်မှု	ဆောင်ရွက်ရန်
(က) လေထုညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	စက်ရုံအဝန်းအဝိုင်းအတွင်းရှိ ပတ်ဝန်းကျင်လေထုအား အခါအားလျော်စွာ အောက်ပါတို့ပါဝင်မှု စစ်ဆေးရန် NO ₂ , PM ₁₀ , PM _{2.5} , SO ₂ , O ₃	တစ်နှစ်(၂)ကြိမ်
၂	မီးခိုးခေါင်းတိုင်းမှ ထုတ်လွှတ်သည့် Flue gasအား အခါအားလျော်စွာ တိုင်းရန် O ₂ , CO ₂ , CO, NO ₂ , SO ₂	တစ်နှစ်(၂)ကြိမ်
၃	လုပ်ငန်းခွင်အတွင်း အလွယ်တကူ အငွေ့ပျံလွယ်သော ကာဗွန်ပါဝင်သည့် အော်ဂဲနစ်ဒြပ်ပေါင်းများ (Volatile Organic Compound – VOC) အား စစ်ဆေးရန်	တစ်နှစ်(၂)ကြိမ်
(ခ) ရေထုညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	စွန့်ပစ်ရေအား စောင့်ကြည့်စစ်ဆေးရန် pH, COD, BOD, Oil and Grease, Temperature Increase, Total Coliform Bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solids ယင်းစွန့်ပစ်ရေစစ်ဆေးစမ်းသပ်မှုများအတွက် စက်ရုံအတွင်း ဓါတ်ခွဲခန်း ထူထောင်ထားရန်	လစဉ် (၁)ကြိမ်

၂	စက်ရုံအတွင်းနှင့် အနီးဝန်းကျင်ရှိ မြေပေါ်ရေထုအား အောက်ပါအတိုင်း စောင့်ကြည့်စစ်ဆေးရန် (ဘားလား ချောင်းရေ(စက်ရုံအထက်)၊ ဘားလားချောင်းရေ(စက်ရုံအနီး)၊ ဘားလားချောင်းရေ(စက်ရုံအောက်ဘက်)) BOD, NH ₃ , Arsenic, Cadmium, COD, CL ₂ , Cr, Cu, Cyanide, Fluoride, Heavy metal (total), Iron (Fe), Pb, Hg, Nickel, Oil and Grease, pH, Phenols, Selenium, Silver, Sulfide, Temperature Increase, Total Coliform Bacteria, Total Phosphorus, Total Suspended Solids, Zn	တစ်နှစ်(၂)ကြိမ်
(ဂ) မြေထုညစ်ညမ်းမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	အခြေခံအချက်အလက် (Base line) အဖြစ်ယူထားသော မြေကြီးနမူနာနေရာမှ မြေထုအရည်အသွေးတိုင်းတာစစ်ဆေးရန် Aluminum, Arsenic, Chloride, Cu, Cyanide, Extractable Acidity, Mn, pH, P-Alkalinity, Total Iron (Fe)	တစ်နှစ်(၂)ကြိမ်
(ဃ) ဆူညံသံနှင့် တုန်ခါမှု စောင့်ကြည့်စစ်ဆေးရေး		
၁	စက်ရုံအဝန်းအတွင်းနှင့် စက်ရုံပြင်ပ၊ စက်ရုံလုပ်ငန်းခွင်အတွင်း စီမံကိန်းလုပ်ငန်းဆောင်ရွက်စဉ် အခြေခံအချက်အလက်(Base line) ကောက်ယူတိုင်းတာခဲ့သော နေရာများအား ပြန်လည်တိုင်းတာစစ်ဆေးရန်	တစ်နှစ်(၂)ကြိမ်

The plan for corporate social responsibility and funding for mitigation measures

- The project has to use 2% of net profit for Corporate Social Responsibility. According to the social impact assessment, the impact areas will be implemented by this fund.



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- Not only CSR expense, but also the expense of monitoring program has to be calculated and incurred.
- And set up the Environmental Conservation Fund and use for conservation of biodiversity, fauna, water body, and maintenance and water drains.

(9) Comments and conclusion on project

- In general, the project of production and distribution of international standard beer has impacts on environment.
- The disposal of waste water is major issue but systematic waste treatment and disposed plan help the mitigation on environment impact.
- Even though the solid waste and air pollution, if the project follows the instructions, standard and guidelines by Government and Environment Management Plan, it will be mitigated.
- Strongly believed that if the project abides by the Environment Management Plan, Monitoring plan based on studies and measurement of environment, the impacts will be reduced.
- It would be recognized and thank to the persons from relevant Government Department, local residents, and company responsible persons for attending and discussion for mutual benefits to be reduced the environmental issues

Appendix (D)

- First of all, today meeting was successful. It is significant that 70 attendees from different individuals and organizations- including Principal monk from thai monastery, civil social organizations, Government officers, local administrative organization. With that 15% of attendees are women.
- We will explain the socio-economic impact of the project and to study furthermore.
- We studied the villages around 1.5 Km. Their livelihood were related with the creek so that we asked their concerns and their desires. It is intended to support for the company's CSR program

The factory itself is interested in policy. Being international organization, they have to submit step by step for approval. They have desire to fulfill the requirement of local residents but some has limitation



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so that we have to understand for them. We have suggested the priority of the job to them. Actually it is a Win-Win-Win project for company, local resident, and country.

- It is required to form a team for negotiation for long term. I want to suggest the factory to set up this team within the period of preparing report. Please be advised that who will involve in the team. We can discuss the matters in construction period and hope to reduce the worry in operation period. It is my opinion. This is a map of 1.5 Km circle to study and please advise it was sufficient or not with reasons.

Appendix (E)

- No impact on biodiversity for this project
- The flaura area need to be developed.

The inflow of Bar Lar creek can be seen mainly in the Mingalardon Township and Mawbe Township. It is natural creek and starts from Mawbe township. We have to study the utilization of alongside of the bank. By doing so, we can study the shift of the creek.

- From 1995 to 2020, the population increase alongside of the creek. We can see the building and road. The waste water from various sources have disposed into the creek.
- Bar Lar creek has received various kind of waste water quite a long time already.
- The study shows that it can be flooded
- In the socio-economic study, a lot of waste water inflow to the Bar Lar creek so that people suffer itchy because of dirty water. We can see a lot of hyacinth and solid waste in the creek. In this yar, the crowded population alongside the creek, disposed chemicals, and dropping of poultry firm were found clearly in the creek. Aung Tagon water supply project blocks the water and no in- flow water to the creek.



Appendix (F)

Sayadaw

I heard one word today. After construction here, the assessment matters have followed. I think, it is understandable in accordance with current situation. There has no blame because it is implementing the project in line with environmental regulations. I believe that the survey team had spent 4 to 5 days in my compound, thus, it will be better to sustain the cultural heritage pagoda. The reason why I attend this meeting is that it is quite near to my monastery although it is beer factory. This is a noble job to take care of each other social benefits with mutual respect.

The elderly from Yay Ta La Baung Village

We are difficult for water and bridge. That's all I want to propose.

U Aung Chan Tha

I will inform management and to carry on.

Dr Pyae Phyo Kyaw (Archaeologist)

Based on Sayadaw worry, we studied the 13 places on 4 villages. According to cultural, historical, and literary aspects, we can find 10



pagodas inclusive of Eait Sar Ponena pagoda. One is the pagoda built for villagers to worship and another is situated in your compound. I'm satisfied for conservation of pagoda.

I found that all the renovation works are in line with standards. I've recorded it and give lecture to the students in my teaching. Now we survey it and the impact on pagoda is very rare.

U Tin Myint (The elderly from Ta Kone Taking villages)

The survey has done in the construction period. Till now, no pollution on ground, air, and water. I insist it to be better.

Transportation (Ngwe Oo Paing Company) Daw Nyunt Nyunt Sein

- I've involved the transportation works since the factory starts. (Pyae and Magwe route) It is very convenient working with factory. The factory emerges with beauty day by day. The relationship of all staffs is very warm. If I have a difficulty, they settle the problem straight away. Because of factory, my business is beneficial. Thanks for that.



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Dy Director U Kyaw Soe (ECD)

- The ECD has set up in 2012.
- After regulation law, the environment impact assessment has been carried out
- This type of factory produces the waste water much. Thus third party organization has assessed and reported to ECD. After approval of the report, continue to EIA. This report is reviewed by members of various 33 departments and then issued the certificate. If it is carried out according to the report, the environment impacts will be reduced.
- I encourage the local residents to express their concerns and discuss. It will be put in the report. The company has also prioritized the distribution of CSR for 4 villages. The facts in the report will be a commitment. The factory also submits the monitoring report every six months.

According to monitoring report, if the results are out of the baseline data, ECD will come to the factory and check the results. Thus regular submission of monitoring is required.

AMH (Labor leader) KO Kyaw Min Htike

- I am from Ta Kone Taking villages. I have been working since the factory started running. The factory needs more workers so that I provide around 70 workers to it. Being an international standard factory, it is convenient to work. In the Covid period, they support the workers. And on significant days they give rice, edible oil, salt to the workers. They arranged for Covid vaccination.

Ko Myo Min Thu (Staff)

- I have 3 years working experience. I am from Kone Ta La Baung Village. Due to the factory, it is convenient to work and more job opportunities can be expected. They treat us like a family member.

Local resident, Yay Ta La Baung village

- There is no bridge in the village, thus, the monks are not convenient for travel. The water purity is poor too.

U Kyaw Soe Win

- If the company submits the application to MIC, the tax exemption can get 5 years. As CSR fund, it allocates 2% of the total profit. It controls to use the benefit for local residents. The 4 villages around the 1.5 Km will enjoy that benefit that can be used in education, health and social matters. Happy to see all the attendees. The CSR team has formed with persons from the company, government department, and local residents and reports every six months to ECD. It will activate after 5 years of operation of the factory.



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-Regarding about cultural heritage, we worried about the vibration. There has a guideline for vibration. We measure the relevant points. Near the monastery, it has 0.6 vibration. Not only vibration but also the quality of air and water, it can happen to damage the cultural heritage. We have results. Professor Dr Pyae Phyo Kyaw also said that the construction system here are good.

-People drink the fermented solution of alcohol and beer. In alcohol, 100 gallons of fermented solution consists of 5% alcohol so that 95% waste water were disposed to environment. Nevertheless, in beer, all the fermented solution are drinkable so that the disposed water is less. If it disposes in accordance with guideline, the impact will be very less. If monitoring team checkup regularly, things will be better. Thank you.

Sayadaw

- Regarding about pagoda, it will be safe because of the measures.

- It is good to hear about the CSR. I am in a religious domain so that the earning from beer and alcohol making is bad livelihood. Therefore, to be one hand in fire and another in water, it would be better to donate electric power to pagoda. Even though it doesn't effect the pagoda because of factory, as wrong livelihood, on the other hand, it should take the meritorious deed.

- The construction of bridge should be first priority. More help to the education sector. Its demand is for the sake of factory.

- U Aung Chan Thar

-MIC never give us tax exemption for 5 years.

- Talking about CSR, the factory is managed by Board of Director (BOD). Actually, BOD themselves are staffs. The matter of construction of bridge needs to be submitted to the shareholders and we will carry on that.

- Other Company said that they haven't gain the profit to be shun away for giving 2% CSR contribution. Ours is different. Since we set up the factory, no profit, but we built the bridge in Ta Kone Taking village. We will submit the demands of current meeting to the shareholders.

U Kyaw Soe Dy Director

- If company follow the commitment laid down by Government, the long term sustainable development will be perceived. Thanks for all.



APPENDIX (13) 3rd Public Meeting

Photos of Meeting, Attendant List, Meeting Minutes (English-Myanmar)

Documented photos of 3rd Public Consultation Meeting on 27th August 2023



Presentation and discussion of U Kyaw Soe Win (MD, Green Myanmar Environmental Services Co., Ltd)



Presentation and discussion of U Aung Chan Thar (Emerald Brewery Myanmar Co., Ltd)



Presentation and discussion of U Thein Soe
(Social Consultant)

Presentation and discussion of U Sai Soe Thant
(Hydrology Consultant)



Discussion and suggestion of U Kyaw Soe
(Head of District Environmental Conservation Department, Yangon Region)



Registration and attendees to the meeting

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3rd Public Consultation Meeting

Attendees

27th August 2023

No	Name	Designation	Department/ Organization
1	U Myo Myint	Consultant	Green Myanmar Environmental Services Co., Ltd
2	U Kyaw Soe Win	MD	Green Myanmar Environmental Services Co., Ltd
3	U Khin Aung	Consultant	Green Myanmar Environmental Services Co., Ltd
4	U Sai Soe Thant	Consultant	Green Myanmar Environmental Services Co., Ltd
5	U Thein Soe	Consultant	Green Myanmar Environmental Services Co., Ltd
6	U Thet Naing Htun	Consultant	Green Myanmar Environmental Services Co., Ltd
			Local Residents
1	Ma Win Maw		Ta Kone Taking villages
2	Kyaw Htet Aung		Ta Kone Taking villages
3	Ko Than Aye		Ta Kone Taking villages
4	Daw Aye Mon		Ta Kone Taking villages
5	Daw Nge Pu		Ta Kone Taking villages
6	Khin Shwe		Kan Gyi Kone
7	U Myint Swe		Ta Kone Taking villages
8	Daw Than Shwe		Ta Kone Taking villages



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9	Daw Khin Htwe Kyi		Ta Kone Taking villages
10	Mg Myo Kyaw Thu		Ywa Thit
11	U Ye Myint		Ywa Thit
12	Than Thida Myint		Ywa Thit
			Department/ Organization
1	U Than Htay	Administration member	Yargyi Kone Ywar
2	U Win Naing	Administration member	Yargyi Kone Ywar
3	U Kyaw Kyaw	Ward Leader	Ta Kone Taking villages
4	U Aye Myint	Ward Leader	Ta Kone Taking villages
5	Ma Maw Maw		
6	Phyo Ei Naing		
7	Aung Min	Ward Leader	Ywar Thit
8	Yin Aung	Clerk (1)	Ywar Thit
9	U Soe Moe Thu	Clerk (1)	Ywar Thit
10	U Than Aung		
11	U Aye Han	Clerk (1)	Ywar Thit
			Local Residents
1	Ma Htay		Ta Kone Taking villages
2	Naing Thandar Lin		Ta Kone Taking villages
3	U Thaung Myint		Ta Kone Taking villages
4	U Tin Shein		Ta Kone Taking villages



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5	Chit Wai		Ta Kone Taking villages
6	Win Ko Oo		Ta Kone Taking villages
7	U Mya Thaung		Ta Kone Taking villages
	U Weet		Ta Kone Taking villages
8	Mya Nyo		Ta Kone Taking villages
9	Khin Hla Oo		Ta Kone Taking villages
10	Zaw Naing		Ta Kone Taking villages
11	Nyunt Shwe		Ta Kone Taking villages
12	Zaw Min Htun		Ta Kone Taking villages
13	U Aung Ko Latt		Ta Kone Taking villages
14	U Htun Lwin		Ta Kone Taking villages
15	U Than Nwe		Ta Kone Taking villages
16	U Naing Lin Oo		Ta Kone Taking villages
17	Daw Hla Hla Wai		Ta Kone Taking villages
18	Ma Thet Thet Oo		Ta Kone Taking villages
19	Daw Than Aye		Ta Kone Taking villages
20	Nay Lin Oo		Ta Kone Taking villages
21	Daw Mar Mar Aye		Ta Kone Taking villages
			Department/ Organization
1	U Tin Nyunt	Administrator office	Ngwe Khwe
2	U Lin Lin Aung	Administrator office	Ngwe Khwe
3	U Khin Myo Zaw	Administrator	Ta Kone Taking villages



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4	Daw Cherry Lwin	Deputy Head	Hlegu Township Development Committee
5	Daw Ommar Win	Senior Clerk	Hlegu Township Development Committee
6	Win Soe Aung	Member	Ta Kone Taking villages
7	U Aung Soe	Ward Leader	Ta Kone Taking villages
8	U Kyaw Soe	AO	District ECD
9	Daw Shwe Yay Aung	Officer	District ECD
10	Daw Thin Wuit Yee	Deputy Officer	District ECD
11	U Aye Soe	Ward Leader	Ku Gyi Kone
12	U Kyaw Min Naing	Ward Leader	Ku Gyi Kone
			Local Residents
1	Daw Hla May Sein		Ta Kone Taking villages
2	U Tin Myint		Ta Kone Taking villages
3	Than Htike		Ta Kone Taking villages
4	Soe Hlaing		Ta Kone Taking villages
5	U Than		Ta Kone Taking villages
6	Htay Htay Lin		Ta Kone Taking villages
7	Aye Aye Aung		Ta Kone Taking villages
8	U Kan Myint		Ta Kone Taking villages
9	U Soe Mya Aung		Ta Kone Taking villages
10	San Aung		Ta Kone Taking villages

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11	Daw khin Shein		Ta Kone Taking villages
12	U Ye Win		Ta Kone Taking villages
13	U Kyaw Lwin		Ta Kone Taking villages
14	U Aung Myint Than		Ta Kone Taking villages
15	U Kyaw Kyaw Htwe		Ta Kone Taking villages
16	Ma Thet Thet Soe		Ta Kone Taking villages
17	U Thaung Myint		Ta Kone Taking villages

Suggestion and Comments

No	Suggestion and comments	Suggested persons
1	<p>Water quality results to be sent via Township ECD</p> <p>The disposed waste water to be remitted in accordance with National Emission Guideline</p> <p>The CSR funding has to use with relevant department systematically and keeps records.</p>	<p>U Kyaw Soe</p> <p>District Head, Yangon North District ECD, Yangon Region</p>
2	<p>The result of disposed water quality- PH, BOD, COD, TSS, TDS not to be exceeded EQEG standards.</p> <p>The results of disposed water have to test in Government recognized lab and submit to department monthly.</p> <p>To submit the comparison of water quality of Bar Lar Creek with National Surface Water Quality Standard.</p>	<p>Daw Shwe Yee Aung</p> <p>Officer, District ECD</p>
3	<p>After approval from Ministry, the factory has to follow EIA report and monitoring system has done every 6 months and submitted.</p>	<p>Daw Thin Wyt Yee</p> <p>Deputy Officer, District ECD</p>
4	<p>The hyacinth to be removed with back hold for proper water flow.</p>	<p>Daw Hla Hla Wai, Ta Kone Taking villages</p>

5	Everything is OK.	Ma Thet Thet Oo, Ta Kone Taking villages
6	The disposal of waste water should be monitored more	U Aung Ko Lat
7	It would be thankful because of the job opportunity. The itchy was happened because of the waste water from upper part of the creek. The atrial bad smell has sensed and mitigation for environment. The proper waste water treatment is required not to be damaged the fish resources in creek.	U Than Htay Second in charge Ngwe Khwe village
8	It is very nice to hear the explanation of factory.	U Aye Soe, Ngwe Khwe village
9	Everything is OK.	Wee Marla, Ta Kone Taking villages
10	Everything is OK.	Daw Khin Htwe Kyi, Ta Kone Taking villages
11	We will cooperate the removal of hyacinth.	U Win Naing

Third PCM Meeting Minutes

Day 27.8.2023

Time 9:00 am

Venue Ta Kone Taking village Monastery

U Kyaw Soe Win (Managing Director) (Green Myanmar)

- Introduced to the attendees and explain about the presentation

- Presentations

- 1 The process of environment impact assessment
- 2 Assessment on project
- 3 Scoping and collection of environmental based line data
- 4 Assessment on impact of social environment



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

- 5 Scoping report to the Ministry of Natural Resources and Environmental Conservation Department and reply letter with comments
- 6 Summary of environmental impacts
- 7 Environment Management Plan and Mitigation Measures
- 8 Environment Monitoring Plan
- 9 Corporate Social Responsibility and Fund for Environment Impact Mitigation measures
- 10 Comments and conclusion on project

1 Process of Environment Impact Assessment

- Assessment on project
- Scoping
- Identify the environment and biodiversity, impact on society
- Collection of environmental based line data
- Public consultation meeting and taking the comments for local authorities, social organization and public in project areas
- Mitigation measures, plan and monitoring plan
- Reporting

2 Assessment on project

- Documented photos, assessment before the project in 2018
- Bar Lar Creek (Documented photos, comparison in February and August-2023)

3(A) Scoping

- Scoping related with project
- List of the villages nearby project area

- 1 Kone Ta La Baung Village
- 2 Yay Ta La Baung Village
- 3 Ngwe Khwe San Pya village
- 4 Ta Kone Taking villages

East Longitude 96 degree, 9 minute, 18.41 seconds North Latitude 17 degree, 01 minutes, 7.78 seconds)

Oo Paing No. (2/1 + 2/2 +2/3 + Dayinmote-2), Kone Ta La Baung East(498), Yay Ta La Baung Village, Ta Kone Taking village tract, Hlegu Township, Yangon Region



3(B) Identification of impact on environment and biodiversity, social organization

-Documented photos in 2018, before the project

-Documented photos activities in 2023

- (Air quality measurement, Underground water sampling, noise measurement in factory environment, noise measurement in Kone Ta La Baung Village, Vibration measurement, Water sampling of Bar Lar reek, sampling of waste)

4 Collection of environmental based line data

- Air quality results

No.	Parameters	Result		Unit	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
		P- 1	P - 2						
1	Nitrogen Dioxide	29.62	11.27	µg/m ³	24	hours	200 µg/m ³	1-hour	
2	Sulphur Dioxide	0.5	0	µg/m ³	24	hours	20 µg/m ³	24-hours	
3	Particulate matter PM ₁₀	44.45	23.02	µg/m ³	24	hours	50 µg/m ³	24-hours	

4	Particulate matter PM _{2.5}	24.57	10.49	µg/m ³	24	hours	25 µg/m ³	24-hours	
5	Ozone	2.36	0.81	µg/m ³	24	hours	100 µg/m ³	8-hour daily Maximum	
6	Ammonia	1.12	0.33	ppm	24	hours	NG	-	
7	Carbon Dioxide	283.79	299.76	ppm	24	hours	NG	-	
8	Carbon Monoxide	0.24	1.04	ppm	24	hours	NG	-	
9	Volatile Organic Compound	0	0	ppb	24	hours	NG	-	
10	Wind Speed	1.67	1.12	mph	24	hours	NG	-	
11	Wind Direction	SE	SW	Deg	24	hours	NG	-	

NG-No Guideline



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

The noise results of Kone Ta La Baung Village

Date	Measurement	Avg Value, dBA	NEQ(E)G Guideline Value
8 – 9.2.2023	Day Time	50.34	55
	Night Time	50.95	45

- Day time results

Point	Unit	Noise Level (Day Time)			NEQ(E)G Guideline Value
		Avg	Max	Min	
NMP -1	dBA	47.59	80.70	37.50	55
NMP -2	dBA	51.46	71.20	37.20	55
NMP-3	dBA	47.76	80.90	39.60	55
NMP-4	dBA	67.39	87.70	58.20	55
NMP-5	dBA	45.43	78.00	35.80	55

- Night time results

Point	Unit	Noise Level (Day Time)			NEQ(E)G Guideline Value
		Avg	Max	Min	
NMP -1	dBA	48.09	82.80	42.60	45
NMP -2	dBA	48.03	71.10	44.20	45
NMP-3	dBA	43.19	55.50	39.50	45
NMP-4	dBA	47.77	50.33	45.40	45
NMP-5	dBA	45.47	59.08	31.25	45

NMP – Noise Measurement Point

NEQ(E)G – National Environmental Quality (Emissions) Guideline



Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

- Summary of vibration results

Instrument ID	Date	Maximum Peak Vector Sum (mm/s)	Remark
Monastery	7/2/2023 to 8/2/2023	0.67	Max: PVS on 7 th , February 2023 11:15 AM
Near Wastewater Treatment Area/ Back side of factory Premises	7/2/2023 to 8/2/2023	0.93	Max: PVS on 7 th , February 2023 13:48 PM
Near Entrance Gate	8/2/2023 to 9/2/2023	1.53	Max: PVS on 8 th , February 2023 5:03 PM

Remark : Vibration level is less than Threshold limit **0.5 mm/sec** not recorded the data.

- Underground water quality results (2018)
- Underground water quality results (2023)
- Bar Lar Creek water quality results (2018)
- Bar Lar Creek water quality results (2023)
- Waste water treatment plant (Entrance) Laboratory results
- Waste water treatment plant (Exit) Laboratory results
- Treated waste water (Exit) laboratory results
- Treated waste water laboratory results
- Underground water results
- Documented photos of assessment for cultural heritage
- Biodiversity studies (2018) documented photos
- Biodiversity studies (2023) documented photos
- Water flow and water utilization studies documented photos
- Documented photos released to public
- Traffic route assessment (2018) documented photos
- Traffic route assessment (202) documented photos
- Survey of social impact assessment (2018) documented photos
- Public Consultation Meeting (First time) documented photos
- Public Consultation Meeting (Second time) documented photos



5 Scoping report to the Ministry of Natural Resources and Environmental Conservation Department and reply letter with comments

- Reply letter from Ministry and documented photos
- Public opinions, disclosures and documented photos
- Disclosed time -2023
- Disclosed places

1. Ta Kone Taking villages
2. Yay Ta La Baung Village
3. Kone Ta La Baung Village
4. Ngwe Khwe San Pya village

6 Summary of impacts on environment

-Impacts and causes on operation phase (Table 5.3)

သက်ရောက်မှု	အကြောင်းရင်း
ယာဉ်လမ်းကြောင်း	<ul style="list-style-type: none"> - ကုန်ကြမ်းများ၊ ကုန်ချောများ၊ စက်ကိရိယာစပါယ်ယာအပိုင်းများ၊ လောင်စာဆီ၊ ချောဆီနှင့် အလုပ်သမားများကို သယ်ယူပို့ဆောင်သည့် ယာဉ်များဝင်ထွက်မှု။ - ဧည့်သည်များ၏ မော်တော်ယာဉ်များ။ - စစ်ဆေးရေးအဖွဲ့၏ မော်တော်ယာဉ်များ။ - လုပ်ငန်းရှင်နှင့် မီဒီယာများမှ မော်တော်ယာဉ်များ။
လေအရည်အသွေး	<ul style="list-style-type: none"> - ကုန်ကြမ်းပြင်ဆင်သည့်လုပ်ငန်းများဖြစ်သည့် ကုန်ကြမ်းတင်ခြင်း၊ ကုန်ကြမ်းချခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ သန့်ရှင်းခြင်း၊ စက်ပစ္စည်း သုံးခြင်းများမှ ထွက်လာသည့် အမှုန့်အမွှားများ။ - မော်တော်ယာဉ်နှင့် မီးစက်များမှ ထွက်သည့် ဓာတ်ငွေ့နှင့် အမှုန့်အမွှားများ။ - ဘိုလ်လာမှထွက်သည့် ဓာတ်ငွေ့များ။ - ဘီယာချက်ရုံ၏လုပ်ငန်းများဖြစ်သည့် ကုန်ကြမ်းများချေခြင်း၊ ကျိုချက်ခြင်း၊ အချဉ်ဖောက်ခြင်း စသည့်လုပ်ငန်းများမှ ထွက်လာသည့် ရေငွေ့နှင့် ဓာတ်ငွေ့များ။ - ထရန်စဖော်မာဆီယိုစီမံခြင်း။ - လေအေးပေးစက်၏ အအေးပေးဓာတ်ငွေ့နှင့် အခြားစနစ်မှ ကာဗွန်ဒိုင်အောက်ဆိုဒ်ယိုစီမံခြင်း။ ဘီယာဖြည့်သည့် ဆလင်ဒါမှ ယိုစီမံခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်ယိုစီမံခြင်း၊ ဘီယာဖြည့်သည့် ဆလင်ဒါမှ ယိုစီမံခြင်း။ - စီအိုင်ပီယူနစ်မှ ကော့စတစ်ဆိုဒါ အငွေ့ထွက်ခြင်း။ - စွန့်ပစ်ရေသန့်စင်သည့်စနစ်မှ ထွက်လာသည့် ဓာတ်ငွေ့။
ဆူညံသံနှင့် တုန်ခါခြင်း	<ul style="list-style-type: none"> - မီးစက်နှင့် မော်တော်ယာဉ်များကြောင့် ဆူညံသံခြင်းနှင့် တုန်ခါခြင်း - မော့စက်ကုန်သန့်ရှင်းခြင်း၊ ကြိတ်ခြင်း၊ ခြေခြင်း၊ မော့ကျိုချက်ခြင်း၊ အချဉ်ဖောက်ခြင်းစသည့် စက်များလည်ပတ်ခြင်းကြောင့် ဖြစ်ပေါ်လာသည့် ဆူညံသံနှင့် တုန်ခါခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်များလည်ပတ်ခြင်း။ - ရေ၊ မီး၊ ဘိုလ်လာ စသည့် အသုံးဝန်ဆောင်လုပ်ငန်းများ၏ စက်များလည်ပတ်ခြင်း။ - ခြေခြင်း၊ မော့ကျိုချက်ခြင်းအတွက် သုံးရသည့် ရေခွေးငွေ့ပိုက်လှိုင်းများမှ ခေါက်သံများထွက်ပေါ်လာခြင်း။

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	- ပုလင်းဆေးစက်၊ ဘီယာဖြည့်စက်၊ အဖုံးပိတ်စက်နှင့် ထုပ်ပိုးစက်များလည်ပတ်ခြင်း။
စီမံချိုးဖိုမျိုးကွဲ	- ဓာတ်ငွေ့နှင့် ဖုန်များကြောင့် ဂေဟစနစ်ပျက်ယွင်းခြင်း - ဒေသရင်းတိရိစ္ဆာန်များ၊ ဆူညံသံနှင့် တုန်ခါမှုကြောင့် အခြားနေရာသို့ ပြောင်းရွှေ့ခြင်း။ - စွန့်ပစ်ရေကြောင့် ဂေဟစနစ်ပျက်စီးခြင်း။
ရှေးဟောင်းအဆောက်အဦ နှင့် ယဉ်ကျေးမှုအမွေအနှစ်	- ရှေးဟောင်းအဆောက်အဦများ၊ အထိမ်းအမှတ်ပစ္စည်းများ၊ ဓာတ်ငွေ့ အမှုန့်အမွှားများကြောင့်ထိခိုက်မှုရှိခြင်း။ - ဆူညံသံနှင့် တုန်ခါမှုကြောင့် ရှေးဟောင်းအဆောက်အဦများ၏ သက်တမ်းတိုစေခြင်း။
မြေအောက်ရေနှင့် မြေပေါ်ရေ	- တစ်ကိုယ်ရေသန့်ရှင်းခြင်း၊ ဆေးကြောခြင်း၊ လျှော်ဖွတ်ခြင်းမှ ထွက်လာသည့်ရေ။ - ထုတ်လုပ်မှုလုပ်ငန်းမှ ဆေးကြောသည့်ရေ။ - ဘိုလ်လာစွန့်ထုတ်ရေ။ - စက်များပြုပြင်စဉ်အတွင်း ဘက်ထရီအက်ဆစ်၊ ချောဆီ၊ လောင်စာဆီများ ယိုစိမ့်၊ ဖိတ်စင်ခြင်း။ - ပုလင်းနှင့် လက်ဆေးကြောစက်မှ ထွက်လာသည့်ရေ။ - လုပ်ငန်းခွင်အတွင်း ပုလင်းများကွဲခြင်း။ - စွန့်ပစ်ရေသန့်စင်သည့် စက်ရုံမှ ထွက်ရှိလာသည့် ရေများ။ - စီအိုင်ပီယူနစ်မှ ယိုစိမ့်ခြင်း၊ ဖိတ်စင်ခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံမှ ပေါင်းချွေးများ
စွန့်ပစ်ရေနှင့် စွန့်ပစ်အပိုင်အခဲ	- ချောဆီ၊ စက်ဆီ၊ ဘက်ထရီအက်ဆစ်များ ဖိတ်စင်ခြင်း၊ ယိုစိမ့်ခြင်း။ - မော့၊ ဟော့ဂါ၊ ဘီယာနစ် စီအိုင်ပီအရည်များဖိတ်စင်ခြင်း၊ ယိုစိမ့်ခြင်း။ - စက်များ၊ ကန်များ၊ စီအိုင်ပီမှ ထွက်သည့်ဆေးကြောရေ။ - ဘိုလ်လာစွန့်ထုတ်ရေ။ - မော့၊ ဆန်အိတ်၊ အင်ဇိုင်းထည်ပုံ၊ ယိတ်အထုပ်စည် ကုန်ကြမ်းများ၏ ထုပ်ပိုးပစ္စည်းများ။ - စပန်ဂရီနံ့များဖိတ်စင်ခြင်း။ - ယိတ်ထုသည့် ခွက် ဖိတ်စင်ခြင်း။ - ပုလင်းကွဲခြင်း။

	- ကန်ဗူးများ ပျက်စီးခြင်း။ - အဖုံးနှင့် တံဆိပ်များပျက်စီးခြင်း။ - ပြန်လည်အသုံးပြုရန် ရောက်ရှိလာသည့် ပုလင်းမှ ကျန်ရှိသည့် တံဆိပ်ခွံစဟောင်းနှင့် အဖုံးများ။ - ရုံးခန်းမှ သုံးပြီးသား စာရေးကိရိယာနှင့် အမွှက်များ
လူမှုစီးပွားနှင့် လူမှုကျန်းမာရေး	- ကူးစက်ရောဂါများပြန့်ပွားမှုဖြစ်နိုင်ခြင်း။ - ဒေသခံနှင့် ပြောင်းရွှေ့လာသည့် လုပ်သားများအကြားယဉ်ကျေးမှု ပဋိပက္ခဖြစ်နိုင်ခြင်း။ - လူဦးရေပြောင်းလဲဖြစ်ထွန်းမှုရှိ ခြင်း။ - ဘိုလ်လာ၊ မြေစက်၊ မော့ကျိုချက်ခြင်းစက်များအနီးတွင် အပူပြင်းထန်မှုများခံစားရခြင်း။ - အပူချိန်နိမ့်မိုး၊ ဖိအားမြင့်ခြင်းကြောင့်အဖိုးနီးယားအအေးစက်ရုံနှင့် ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံများတွင် စင်နိုင်ဂျင်နစ်ပြင်းထန်ရောဂါ ဖြစ်နိုင်ခြင်း။ - အဖိုးနီးယားအဆိပ်သင့်ခြင်း။ - မတော်တဆထိခိုက်ဒဏ်ရာရ (လဲကျခြင်း၊ ချော်လဲခြင်း) ခြင်း - ကွဲသွားသည့်ပုလင်းများ ကြောင့် ဒဏ်ရာရခြင်း။ - စီအိုင်ပီယူနစ်တွင် ကော့စတစ်အရည်အကြောင့် မျက်စိဒဏ်ရာရခြင်း။ - မီးအန္တရာယ် - လျှပ်စစ်ပိုင်းယာရှော့ - မတော်တဆထိခိုက်မှု အန္တရာယ် - ဘက်ထရီအက်ဆစ်၊ ကော့စတစ်ဆိုဒါ စသည့် ဓာတုပစ္စည်းများကိုင်တွယ်ခြင်းကြောင့် အရေပြား လောင်ခြင်း။

-
-
-
- Impact standard rating

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

ရှည်ကြာချိန်	သတ်မှတ်ချက်	ရမှတ်
ကာလတို	ထိခိုက်မှုသည် လည်ပတ်ရေးကာလပြီးဆုံးပြီးနောက် သဘာဝအလျောက်ပျောက်ကွယ်သွားခြင်း (သို့မဟုတ်) ကာလတိုအတွင်းတွင်သာ ပေါ်ပေါက်ခြင်း။	၂
အလယ်အလတ်	ထိခိုက်မှုသည် အချိန်ကာလတစ်ခုအထိရှည်ကြာနိုင်သည်။ (၃ လ (သို့မဟုတ်) ၁ နှစ် အထိ (သို့မဟုတ်) တည်ဆောက်ရေးကာလအတွင်း)	၃
ကာလရှည်	ထိခိုက်မှုသည် တည်ဆောက်ရေးကာလတလျှောက်လုံးဖြစ်ပေါ်နေမည်။ သို့သော် သဘာဝအတိုင်း (သို့မဟုတ်) ကုစားသည့် နည်းလမ်းများဖြင့် လျော့နည်းအောင် လုပ်နိုင်သည်။	၄
အမြဲတန်း	အပြန်အလှန်မရှိသော ထိခိုက်မှုဖြစ်သည်။ သဘာဝအလျောက် (သို့မဟုတ်) လူတို့၏ လုပ်ဆောင်ချက်ကြောင့် ပပျောက်အောင် မလုပ်နိုင်ပါ။	၅

(သိသာထင်ရှားမှု = (ရှည်ကြာချိန် + အကျယ်အဝန်း + ပြင်းထန်ခြင်း) x ဖြစ်နိုင်ချေ

သိသာထင်ရှားမှု	ရမှတ်	ဆိုးကျိုးထိခိုက်ခြင်း
လျစ်လျူရှု	၁၀ - ၃၀	ထိခိုက်မှုမရှိသဖြင့် မည့်သည့် စီမံခန့်ခွဲမှု (သို့မဟုတ်) မည်သည့် ကုစားရမည့်နည်းလမ်းမှ မလိုအပ်သဖြင့် အရေးပါမှုအဆင့်ကို လျစ်လျူရှုနိုင်ပါသည်။
နည်းပါး	၃၁ - ၆၀	ထိခိုက်မှုနှင့် အရေးပါမှုနည်းပါးခြင်းကြောင့် စီမံခန့်ခွဲမှု (သို့မဟုတ်) နောက်တွင် ကုစားရမည့် နည်းလမ်းလိုအပ် မှုရှိ (သို့မဟုတ်) မရှိခြင်း ဖြစ်နိုင်သဖြင့် အရေးပါမှု အဆင့်ကို နည်းပါးသည်ဟု သတ်မှတ်နိုင်ပါသည်။
အသင့်အတင့်	၆၁ - ၉၀	ထိခိုက်မှုသည် အလယ်အလတ်အရေးပါခြင်းကြောင့် စီမံခန့်ခွဲမှုနှင့် နောက်ထပ်ကုစားရမည့် နည်းလမ်းလိုအပ် သဖြင့် အရေးပါမှုအဆင့်ကို အသင့်အတင့်ဟု သတ်မှတ်နိုင်ပါသည်။
မြင့်မား	၉၁ - ၁၂၀	ထိခိုက်မှုသည် မြင့်မားသည့် အရေးပါခြင်းကြောင့် စီမံခန့်ခွဲမှုနှင့် နောက်ထပ်ကုစားရမည့် နည်းလမ်း လိုအပ်သဖြင့် အရေးပါမှုအဆင့်ကို မြင့်မားသည်ဟု သတ်မှတ်နိုင်ပါသည်။
အလွန်မြင့်မား	၁၂၀ - ၁၅၀	ထိခိုက်မှုသည် အလွန်မြင့်မားခြင်းကြောင့် အခြားနည်းပညာတစ်ခု လိုအပ်ပြီး ကုစားရမည့် နည်းလမ်းဖြင့် လျော့နည်းအောင် မလုပ်နိုင်ပါသဖြင့် အရေးပါမှု အဆင့်ကို အလွန်မြင့်မားသည်ဟု သတ်မှတ်နိုင်ပါသည်။

- Significant impact before mitigation measures

ထိခိုက်မှု	အကဲဖြတ်ခြင်း				အဆင့်သတ်မှတ်ချက်	
	ရှည်ကြာချိန်	အကျယ်အဝန်း	ပြင်းထန်ခြင်း	ဖြစ်နိုင်ချေ	အရေးပါမှု	
ယာဉ်ကြော	၂	၃	၃	၆	၄၈	နည်းပါး
လေညစ်ညမ်း	၂	၃	၄	၆	၅၄	နည်းပါး
အသံ	၂	၃	၄	၆	၅၄	နည်းပါး
ဇီဝမျိုးကွဲ	၂	၃	၃	၆	၄၈	နည်းပါး
ရှေးဟောင်းနှင့် ယဉ်ကျေးမှု	၂	၃	၃	၆	၄၈	နည်းပါး
မြေအောက်ရေ၊ မြေပေါ်ရေ	၂	၃	၃	၆	၄၈	နည်းပါး
စွန့်ပစ်ရေနှင့် စွန့်ပစ် အစိုင်အခဲ	၂	၃	၃	၆	၄၈	နည်းပါး
လူမှုစီးပွား	၂	၃	၃	၆	၄၈	နည်းပါး



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- Comparison of significant mitigation measures before and after (Construction Phase)

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၂.	လေထုအရည်အသွေး	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၃.	ဆူညံသံ	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၄၈	နည်းပါး	၂၈	နည်းပါး	-၂၀	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	
၈။	လူမှုစီးပွား	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	

- Significant Mitigation measures comparison before and after (Operation phase)

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၂.	လေထုအရည်အသွေး	၆၆	နည်းပါး	၅၄	နည်းပါး	-၁၂	
၃.	ဆူညံသံ	၆၀	နည်းပါး	၅၄	နည်းပါး	-၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၃၆	နည်းပါး	၃၆	နည်းပါး	-	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၆၀	နည်းပါး	၅၄	နည်းပါး	-၆	
၈။	လူမှုစီးပွား	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	



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- Comparison of significant Mitigation measures before and after (Dicommissioning phase)

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၂.	လေထုအရည်အသွေး	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၃.	ဆူညံသံ	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၈။	လူမှုစီးပွား	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	

7 Mitigation measures (Operation Phase)

သက်ရောက်မှု	လျော့နည်းသက်သာစေမည့် နည်းလမ်းများ
ယာဉ်လမ်းကြောင်း	<ul style="list-style-type: none"> လုပ်ငန်းခွင်သို့ အဝင်/အထွက်ပြုလုပ်သည့် မော်တော်ယာဉ်များ အဆင်ပြေစေရန်အတွက် လမ်းပြဝန်ထမ်းထားရှိရန် စက်ရုံအတွင်း မောင်းနှင်သော မော်တော်ယာဉ်များ၏ မြန်နှုန်းကို သတ်မှတ်ပေးရန် မြစ်နီဒေါ်က ယာဉ်ကြောကြပ်တတ်သည့် အချိန်များတွင် ကုန်ကြမ်းများ၊ ကုန်ချောများ၊ ဝန်ထမ်းများပို့ဆောင်ခြင်းကို ရှောင်ကြဉ်ရန်။
လေထုအရည်အသွေး	<ul style="list-style-type: none"> မော်တော်ယာဉ်နှင့် မီးစက်များအတွက် အရည်အသွေးကောင်းသည့် စက်သုံးဆီကို သုံးစွဲရန် ဘိုင်လာ လောင်စာအတွက်လည်း အရည်အသွေးကောင်းမွန်သည့် လောင်စာဆီကို သုံးစွဲရန်နှင့် လောင်စာဆီနှင့် လေအချိုးကို မှန်ကန်စွာ ထည့်သွင်းရန် ထရန်စဖော်မာ၊ အအေးခံစက်နှင့် လေအေးပေးစက်များကို စစ်ဆေးပြုပြင်ထိန်းသိမ်းရန် ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ ယိုစိမ့်မှု မရှိစေအောင် ထိန်းသိမ်းရန်။ ဘီယာဗူးများထဲသို့ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ဓာတ်ငွေ့ကို ယိုစိမ့်မှု မရှိအောင်ထည့်သွင်းရန် သန့်ရှင်းမှုစနစ် (Clean in Process - C.I.P) နေရာ၌ ကော့စတစ်ဆိုဒါဖျော်သည့်အခါ အပူချိန်မြင့်မားမှုမရှိစေရန် စွန့်ပစ်ရေသန့်စင်စနစ် စက်ရုံမှ ယိုစိမ့်ခြင်းမရှိအောင်ဆောင်ရွက်ရန်
ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> အသံလုံ စက်များ တပ်ဆင်ရန် မော်တော်ယာဉ်များ၊ မီးစက်များ၊ စက်များကို ကောင်းမွန်စွာ ပြုပြင်ထိန်းသိမ်းရန် ရေခွေးငွေ့ဖြင့် ခြေခြင်း၊ မော့ကျိုခြင်း၊ ရေခွေးငွေ့ဖြင့် အသုံးပြုသော လုပ်ငန်းများကို ဖြည်းဖြည်းနှင့် မှန်မှန်ဆောင်ရွက်ရန်
ဇီဝမျိုးစုံမျိုးကွဲ	<ul style="list-style-type: none"> ဓါတ်ငွေ့နှင့် ဖုန်များကြောင့် ဂေဟစနစ်ပျက်ယွင်းခြင်း။ ဒေသရင်းတိရစ္ဆာန်များ ဆူညံသံနှင့် တုန်ခါမှုများကြောင့် အခြားနေရာသို့ ပြောင်းရွှေ့ခြင်း စွန့်ပစ်ရေကြောင့် ဂေဟစနစ်ပျက်စီးခြင်း
ရှေးဟောင်းအမွေအနှစ်	<ul style="list-style-type: none"> ရှေးဟောင်းအဆောက်အအုံများ၊ အထိမ်းအမှတ်ပစ္စည်းများစာတိမ်း၊ အမှုန်အမွှားများကြောင့်ထိခိုက်မှုရှိခြင်း။ ဆူညံသံနှင့် တုန်ခါမှုကြောင့် ရှေးဟောင်းအဆောက်အအုံများ၏ သက်တမ်းကိုတိုစေခြင်းများ မဖြစ်ပေါ်စေရန် ဆောင်ရွက်ရပါမည်။
မြေအောက်ရေနှင့် မြေပေါ်ရေ	<ul style="list-style-type: none"> ကန်များ၊ စက်များဆေးကြောခြင်း၊ ဘိုင်လာမှ ရေထုတ်ခြင်း၊ တစ်ကိုယ်ရည် ရေသုံးစွဲခြင်းများအတွက် ရေသုံးစွဲမှုသည် လိုအပ်သည့် ပမာဏထက် ပိုမသုံးရန်နှင့် စွန့်ပစ်ပစ္စည်း မြေပေါ်သို့ တိုက်ရိုက်စွန့်ပစ်ခြင်းကို ထိန်းသိမ်းဆောင်ရွက်ရန် ကုန်ကြမ်းပစ္စည်း၊ ထုတ်ပိုးပစ္စည်းများအား ကောင်းမွန်သော စနစ်ဖြင့် ထားရှိရန်

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<p>စွန့်ပစ်ရေနှင့် စွန့်ပစ်အပိုင်အခဲ</p>	<ul style="list-style-type: none"> ကန်များ၊ စက်များ၊ ကိရိယာများ၊ ဘိုလ်လာများဆေးကြောခြင်းမှ ထွက်လာသည့် ရေများ။ ဖြိုဖျက်လုပ်ငန်းမှ စွန့်ပစ်ပစ္စည်းများ (အသုံးပြုပြီး လက်အိတ်များ၊ ကျောက်သွေးစက်မှ စွန့်ပစ်ပစ္စည်းများ၊ ကွန်ကရစ်စများ၊ သစ်သားနှင့် သံစများ) မော်တော်ယာဉ်နှင့် မီးစက်များ၏ ဘက်ထရီအက်ဆစ်၊ လောင်စာဆီ၊ ချောဆီများ ယိုစိမ့်ခြင်း။
<p>လူမှုစီးပွားနှင့် လူမှု ကျန်းမာရေး</p>	<ul style="list-style-type: none"> ကူးစက်ရောဂါများပြန့်ပွားမှုဖြစ်နိုင်ခြင်း။ ဒေသခံနှင့် ပြောင်းရွှေ့လာသည့် လုပ်သားများအကြားယဉ်ကျေးမှု ပဋိပက္ခဖြစ်နိုင်ခြင်း။ လူဦးရေပြောင်းလဲခြင်းထွန်းပွားမှုရှိ ခြင်း။ ဘိုလ်လာ၊ ခြေစက်၊ မော့ကျီချက်ခြင်းစက်များအနီးတွင် အပူပြင်းထန်မှုများခံစားရခြင်း။ အပူချိန်နိမ့်၊ ဖိအားမြင့်ခြင်းကြောင့်အစိုးနီးယားအအေးစက်ရုံနှင့် ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံများတွင် စင်ဒိုင်ဂျင်နစ်ပြင်းထန်ရောဂါ ဖြစ်နိုင်ခြင်း။ အစိုးနီးယားအဆိပ်သင့်ခြင်း။ မတော်တဆထိခိုက်ဒဏ်ရာရ (လဲကျခြင်း၊ ချော်လဲခြင်း) ခြင်း ကွဲသွားသည့်ပုလင်းများ ကြောင့် ဒဏ်ရာရခြင်း။ စီအိုင်ပီယူနစ်တွင် ကော့စတစ်အရည်အကြောင့် မျက်စိဒဏ်ရာရခြင်း။ မီးအန္တရာယ် လျှပ်စစ်ပိုက်ယာရှော့ မတော်တဆထိခိုက်မှု အန္တရာယ် ဘက်ထရီအက်ဆစ်၊ ကော့စတစ်ဆိုဒါ စသည့် ဓာတုပစ္စည်းများကိုင်တွယ်ခြင်းကြောင့် အရေပြားလောင်ခြင်း။

8 Environmental Monitoring Plan

ပတ်ဝန်းကျင် ဆိုင်ရာ သက်ရောက်မှု အချက်များ	စောင့်ကြပ်ကြည့်ရှုရမည့်အချက်အလက်များ	နေရာ	စောင့်ကြပ် ကြည့်ရှုမှု ပြုလုပ်ရန် အကြိမ်	တာဝန်ယူရမည့် အဖွဲ့အစည်း	နည်းလမ်း
<p>လေ အရည်အသွေး</p>	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်လေထုအရည်အသွေး တိုင်းတာခြင်း (NEQEG) [ဖုန်း၊ အမှုန်, PM₁₀, PM_{2.5} နှင့် SO₂, NO_x, O₃] လုပ်ငန်းခွင်လေထုအရည်အသွေးတိုင်းတာခြင်း PM₁₀, PM_{2.5}, SO₂, NO_x 	<p>Baseline Data တိုင်းတာခဲ့ သော နေရာများ</p> <ul style="list-style-type: none"> - Filling Area (Starting point) - Filling Area (End point) - CO₂ plant area - Brewing Area (Up) - Brewing Area (Down) - Malt milling area (Up) - Malt milling (down) 	<p>တစ်နှစ် (၂) ကြိမ်</p>	<p>ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)</p>	<p>နေရာ သတ်မှတ် တိုင်းတာခြင်း</p>
<p>ဆူညံသံ</p>	<ul style="list-style-type: none"> ဆူညံမှုနှင့် တုန်ခါမှုအဆင့်အတန်း တိုင်းတာခြင်း 	<p>စီမံကိန်းစတင်စဉ်က Baseline Data တိုင်းတာ ခဲ့သော နေရာများ</p> <ul style="list-style-type: none"> • အဝင်/ အထွက် Main Gate အနီး • စည်ကြိုဆောင်အနီး • စွန့်ပစ်ရည် သန့်စင်မှု စနစ် နေရာ • ရုံးအရှေ့နေရာ • သန့်စင်ပြီး စွန့်ပစ်ရည် ကန်နေရာ 	<p>တစ်နှစ် (၂) ကြိမ်</p>	<p>ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)</p>	<p>နေရာ သတ်မှတ် တိုင်းတာခြင်း</p>

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	<ul style="list-style-type: none"> လုပ်ငန်းခွင်ဆူညံမှု တိုင်းတာခြင်း 	<ul style="list-style-type: none"> - Filling Area (Starting point) - Filling Area (End point) - CO₂ plant area - Brewing Area (Up) - Brewing Area (Down) - Malt milling area (Up) - Malt milling (down) 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	
တုန်ခါမှု	<ul style="list-style-type: none"> တုန်ခါမှုတိုင်းတာခြင်း 	<ul style="list-style-type: none"> - စွန့်ပစ်ရည်သန့်စင်မှု စနစ် ဧရိယာအနီး - အမရပတီ ဘုန်းကြီး ကျောင်း - အဝင်/ အထွက် Main Gate အနီး 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
စွန့်ပစ်ရည် အရည်အသွေး	<ul style="list-style-type: none"> အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်၊ ဘီယာနှင့် အရက်ချက်လုပ်ငန်း BOD, active ingredients, COD, Oil & Grease, pH, Temperature Increase, Total coliform bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solid 	<ul style="list-style-type: none"> - ရေဆိုးသန့်စင် စက်ရုံ၏ အဝင်နေရာ - ရေဆိုးသန့်စင် စက်ရုံ၏ အထွက်နေရာ - စက်ရုံ၏ စွန့်ပစ်ရည် အထွက် နေရာ 	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
မြေပေါ်ရေ	<ul style="list-style-type: none"> အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်မှ သတ်မှတ်ထားသော ပါရာမီတာများအတိုင်း 	<ul style="list-style-type: none"> - ဘားလားချောင်း စီမံကိန်း အထက်ဘက်၊ - စီမံကိန်း နေရာအနီးနှင့် - စီမံကိန်း အောက်ဘက် 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း

မြေအောက်ရေ	<ul style="list-style-type: none"> အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်မှ သတ်မှတ်ထား သော ပါရာမီတာများအတိုင်း 	<ul style="list-style-type: none"> - Baseline Data တိုင်းတာခဲ့ သော နေရာများ - ကုန်းတလပေါင် - ရေတလပေါင် - တံခွန်တိုင် - နွယ်ခွေ - စက်ရုံစီမံကိန်းနေရာ 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
မြေဆီလွှာ ညစ်ညမ်းစေမှု	<ul style="list-style-type: none"> ဆီမိတ်စင်မှု၊ အဖျော်ပစ္စည်းနှင့် သုတ်ဆေး၊ စွန့်ပစ်ရည်များ မိတ်စင်မှုမှတ်တမ်း မြေအရည်အသွေးတိုင်းတာခြင်း 	<ul style="list-style-type: none"> Baseline Data တိုင်းတာခဲ့ သော နေရာများ စီမံကိန်း ဧရိယာ 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
စွန့်ပစ်အပိုင်အခဲ (အမှိုက် စွန့်ပစ်ခြင်း)	<ul style="list-style-type: none"> စွန့်ပစ်ပစ္စည်းစွန့်ပစ်ခြင်းအတွက် စွန့်ပစ်ပစ္စည်းအမျိုးအစား (ဘေးအန္တရာယ်ရှိ/ ဘေးအန္တရာယ်မရှိ၊ အစားအစာ စွန့်ပစ်ပစ္စည်း) စွန့်ပစ်ပစ္စည်းပမာဏ စွန့်ပစ်သည့် အချိန်နှင့် နေ့စွဲ 	<ul style="list-style-type: none"> စီမံကိန်းစတင်စဉ်က Baseline Data တိုင်းတာခဲ့ သော နေရာများ 	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး	<ul style="list-style-type: none"> မတော်တဆဖြစ်မှုမှတ်တမ်း အလုပ်သမားများ ကျန်းမာရေးစစ်ဆေးမှု အစီရင်ခံစာ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်း လုံခြုံရေး သင်တန်းမှတ်တမ်း ဓာတုပစ္စည်းဘေးကင်းလုံခြုံစွာ ကိုင်တွယ်ရေး သင်တန်းမှတ်တမ်း အလုပ်သမားများ၏ စောဒကတက်မှု မှတ်တမ်း 	<ul style="list-style-type: none"> စီမံကိန်းဧရိယာ တစ်ဝိုက် 	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး ပေါင်းစပ်တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း

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	<ul style="list-style-type: none"> • တစ်ကိုယ်ရေသုံးအကာအကွယ်ပစ္စည်းများ ထောက်ပံ့ပေးခြင်း • လေထုအရည်အသွေးစောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • ရေအရည်အသွေး စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • မြေအရည်အသွေး စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • ဆူညံသံနှင့်တုန်ခါမှု အဆင့်အတန်း၊ စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ 		တစ်နှစ် (၂) ကြိမ်		
ရုပ်ရွာလူထု ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး	<ul style="list-style-type: none"> • မတော်တဆဖြစ်မှုမှတ်တမ်း • အလုပ်သမား၏ တိုင်တမ်းမှု မှတ်တမ်း 	ဒေသခံပြည်သူများ	မကြာခဏ စစ်ဆေး ခြင်း	ပတ်ဝန်းကျင် စောင့်ကြည့် ကြည့်ရှုမှု အဖွဲ့ (ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံ ရေး ပေါင်းစပ်မှု တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
အခြား လူမှုရေး ဆိုင်ရာ စဉ်းစား ချက်များ	<ul style="list-style-type: none"> • လူမှုစီးပွားသိ တာဝန်ယူမှု (CSR activities) အစီအစဉ် မှတ်တမ်း • ဒေသတွင်း ဝန်ထမ်းများခန့်ထားမှု မှတ်တမ်း • ဒေသခံလူထုမှ တိုင်တမ်းမှု မှတ်တမ်း 	လူသားအရင်း အမြစ် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
အရေးပေါ်အခြေ အနေ ကြုံတွေ့ နိုင်မှု (Emergency Risks)	<ul style="list-style-type: none"> • အရေးပေါ်အခြေအနေနှင့် တုံ့ပြန်မှုအစီစဉ် မှတ်တမ်း • မီးဘေးကာကွယ်ရေး အစီအမံပစ္စည်းများ စစ်ဆေးခြင်း • မီးလောင်မှု မှတ်တမ်း/ မီးငြိမ်းသတ်မှု သင်တန်း မှတ်တမ်း • မတော်တဆယိုမိတ်မှု မှတ်တမ်း/ အရေးပေါ် ယိုမိတ်မှု ထိန်းသိမ်းရေး သင်တန်းမှတ်တမ်း • လျှပ်စစ်နှင့် လျှပ်စစ်မတော်တဆမှု မှတ်တမ်း/ လျှပ်စစ်ပိုင်းဆိုင်ရာ ဘေးကင်းလုံခြုံမှု သင်တန်း မှတ်တမ်း 	စီမံကိန်းဧရိယာ တစ်ဝိုက်	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး ပေါင်းစပ်မှု တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း

9. Corporate Social Responsibility and funding for mitigation measures

- The project has to use its 2% net profit for CSR programme. According to the environment impact assessment, it is required to implement for CSR.
- Not only CSR programme, the project has to incur the expenses for annual monitoring plan for mitigation measures
- Then set up a fund to use conservation of biodiversity, recultivation of floura, the renovation of the canal, creek, and drains that near to the factory, and new drain line.

10 Comments and Conclusion on project

- In general, the project of production and distribution of international standard beer has impacts on environment.
- The disposal of waste water is major issue but systematic waste treatment and disposed plan help the mitigation on environment impact.
- Even though the solid waste and air pollution, if the project follows the instructions, standard and guidelines by Government and Environment Management Plan, it will be mitigated.
- Strongly believed that if the project abides by the Environment Management Plan, Monitoring plan based on studies and measurement of environment, the impacts will be reduced

It would be recognized and thank to the persons from relevant Government Department, local residents, and company responsible persons for attending and discussion for mutual benefits to be reduced the environmental issues

(No response for comments and opinion)



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U Sai Soe Thant (Hydrology Consultant)

- I will explain the biodiversity and hydrology, two parts.
- I will explain on behalf of Dr Ko Myint who can't join the meeting
- We will know the fauna here before and after the project and how they are impacted in operation phase.
- These are survey photos in 2018 when the project started.
- These are photos for water quality analysis. In the Bar Lar creek, there have fishes and gones.
- We can find the shame plant, hyncinth and golden snail those are not local species.
- It can easily see that those species are here before the project.
- We also studied water bodies and its utilization such as for transportation or agricultural or household.
- Being beer brewing factory, it uses a lot of water. Thus, the study has done underground water depletion and whether it will impact to the other water body or not.
- We studied the remedy of depletion water in the area.
- We also studied the extraction of water that tendency to impact to the dug- wells nearby.
- Meanwhile, the factory uses six tube wells alternatively. And have a plan to refill them.
- We notice that the worries of local residents for the scarcity of water in future because of factory utilization.
- At he moment, the water consumption of the factory is 1:3 out of underground water.
- There have an empty large plot and Bar Lar creek beside the factory that can refill the underground water. The plantation of tree and collection of storm water will also refill the ground water.
- It will be implemented the mitigation measures for water conservation and not to worries about it.

U Thein Soe (Socio-economic Consultant)

- The studies have done from 2018 to March 2023. Within 5 years, the employment of 4 villages that I studied has changed. Tehe agricultural workforces shifted to the industrial workforce. And work pattern also changes as motorbike carrier drivers and construction workers. In Yay Ta La Baung Village alone, 15% workforce shifted to industrial sector and 35% to other jobs. Other sector workforce increment is more than the reduction of 42% in agricultural sector. It means substituted livelihood has developed.



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- At first PCM meeting, local residents expressed their concerns. But in the operation phase, some worries are diminished. In the operation phase, there has some worries- the bad smell impact in Kone Ta La Baung Village where near the factory and waste water impact in Yay Ta La Baung Village.
- In the Bar Lar creek, water and the hyacinth are changing yearly and seasonally.
- The hyacinth can be seen in February 2023 and no more in August 2023.
- Disposal of waste water to the creek makes bad smell. The malt has rich nutrients and the disposed waste water contains its some residual nutrients. It doesn't effect to human but hyacinth does. As a result, the hyacinth get multiplier effect of excessive richness of nutrient and grow better and better.
- The disposed waste water causes itchy disease. Previously it can wash away with soap and showering. Now it is more severe and needs to take injection. People scare to go down to the creek. It impacts to the growing of water cress and shame plant.
- Formerly, villagers cleared off the hyacinth but they can't afford to do it now. It results oxygen depletion and the fish cannot survive anymore.
- The growers use the hyacinth as a natural fertilizer.
- The abundant hyacinth issue is related with Beer Chan. But it is not because of Chan beer factory alone. it related with other factories alongside in creek, local residents know about it. Beer chang is among one of them.
- When local people clear the messy hyacinth, I insist, Beer Chan assists as much as they can. I advise to take the shared responsibility.
- The polluted water makes the growers and breeders income low. Thus, give priority to the affected families for job opportunities. They must have also desire and ability to work.
- The CSR has practised all over the world, therefore, encouraged the people, planet, company profit, and purpose to be harmonised.
- The bad smell can effect only monastery and one school, thus , it can assume low impact. Because of excessive richness of nutrient, the hyacinth cannot appear on all the time, disappear in some time so that intensity may be high but duration is short.



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- The intensity of storm in Rakhine is high but for the villages here, impact may be low. The bad smell released by factory may be low for distant villages so that implementation of mitigation plan will be convenient for all.

- The residential areas can get bad smell less, therefore, flora plants can plant in it. The creek can make a bad smell due to the blockage at lower part of it. Monsoon wind blows more across the country. it can bring the bad smell. The people who stay near the creek need to cooperate the conservation of creek activities. i would like to insist for cooperation in need than desires.

U Aung Chan Thar (Engineer in-charge-Emerald Beer)

- I have been one of staff since the factory sets up.

- This is a third PCM meeting

- If the project implements in our country, it can impact the environment so that Government has imposed the laws and regulations to assess the ecosystem how it can be changed by project. Thus we hired the third party organization to assess the environment impacts of the project and explain about it to the public.

- The first scoping report has approved on November 2022 and received on early 2023. It contains with 18 comments.

- In the first PCM meeting, we explain about the project and how to do it to the public and local residents.

- In the second PCM meeting, we explain about what we have done the comments of first PCM meeting. It was held on February.

- Now in the third meeting, I am going to explain about what we have already done the matters talked about in 2nd PCM.

- In the 2nd PCM, the factory has explained what it has done to mitigate the impact. In the comment, they mentioned that the alternative methods need to address. Now we will explain for that.

- We explained in the second PCM how we have done the mitigation measures. Now we will explain the alternative method that mention in the comments.

- The factory has established the solar system since 2019. The solar panels have fixed on top of the office roof and take the lighting power from it. On 24th July 2023, the out put capacity 2MW solar system has been installed in factory. The excess MW can use the public. The power generation by solar is much more reduction cost than other fuel sources.

- Some of the CSR activities are:



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- The construction of Bar Lar creek bridge was the first and foremost project in 2018 and donated in 2019. The road beside the monastery and exit to the No(3) Highway Road were paved concrete too.
- We have done a lot of CSR activities and last project is 5 Kw solar power installation in the Amarawadi monastery for lighting of pagoda.
- We made a charity for the Mocha rehabilitation. The residents from Ngwe Khwe San Pya write a letter to establish the clinic in their place and we have built up for them.
- The factory has built in 2018 and opened in October 2019. Since construction, the pool team from Myanma Investment Commission, Environment Conservation Department, Ministry of labor, and Ministry of Health came and inspected the factory. We accepted their inspection and after that run the factory.
- The persons from the fire fighting brigade Department and central narcotic drug fighting came and inspected the storage of chemicals.
- The persons from petroleum and petroleum products management department came and inspected the storage and handing system of factory.
- The district Administrative office had come and checked.
- Hlegu Township Development Committee had inspected.
- The third party organization had inspected the activities whether it was implemented in accordance with report.
- Hlegu Township Administration Office and Enviroment Conservation Department had inspected on 22 nd July 2013.
- Once in a six months, the disposed waste water qualities had measured
- Three attendees in first meeting
- Ten attendees in second meeting
- Three persons visited the factory on 22nd August 2023. We will arrange the trip to visit in future.
- It is a international standard factory so that everyone can apply the jobs with relevant qualifications and equal opportunities without discrimination. Give priority to local residents.
- Two students from Mawbe Technological University had spent on job training in factory. We appointed them because their qualification is aligned with us.
- Let us hear the expert's opinion of third party organization
- U Kyaw Soe Win said that the factory has impacts on environment.
- U Kyaw Soe Win said that the factory has impacted the environment.
- U Sai Soe Thant said that the factory water utilization needs to do watchdog.
- U Thein Soe talked about the hyacinth situation.



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- I want to ask the attendees. Does hyacinth come to the creek in summer? Isn't it? Is that shame plant growers come on that time? Is that true?
- There has Sin Pone sluice gate at the lower part of the creek. In this year, Aung Tagon water supply project is implemented at the upper part of the creek with concrete canal. It so happened that the closure of both canal locks make the creek as a closed type dead water to be accumulated. Thus the hyacinth growth rate is enormous accordingly. Now open up the canal gate, the hyacinth disappear. After raining season, if canal lock is off, it can happen again. Not because of factory. I present it in front of the public.
- Regarding about Bar Lar creek, people know that the cooperation with local residents and factory. Before summer paddy cultivation, the factory supports the excavation of canal line. The retaining wall has been constructed next to factory's fence by Company.
- We give priority for those who have cultivated before in areas to appoint the jobs in factory.
- In conclusion, I'm proud of working as a staff in this factory. Because it abides by the laws, rules, procedures, and disciplines. The excellent methods and procedures have been practised each and every steps. As local residents, they can ask the question and reach out to us via local administrator. I would like to conclude and want to say that it is a accountable and responsible business.

Questions and Answers

U Kyaw Soe(District Head of Department)(Yangon Northern District)(ECD)

I attended second PCM. According to the environment conservation law, Beer factory is a type of heavy impact on environment so that environment impact assessment needs to be done. Before that scoping area must be identified and submit to ECD about 2 times. After approval, carry on for EIA report by third party organization. Because of factory, local residents are beneficial. Moreover CSR activities are so much and it will be beneficial for local residents too. Please give advice. Some issue can solve right now but some needs to take time. Later discuss with local authority and carry on the job. Disposal of waste water must be in line with national standard and keep monitor it. We've also instructed to monitor closely for beer and alcoholic industries. Thank you.

Helgu Township Development

Helgu Sepin-(There has no break the laws in the factory. They follow exactly the disciplines)

One villager from Ngwe Khwe San Pya- (It is excellent and convenient)

One lady from the Ta Kone Taking villages- (It is great and convenient)

One man who attended 2 times PCM meeting- (Everything is good. Nothing to speak off)



I am happy to see the discussion openly. It is a good mentality. I suggest to cooperate with consultants and not to happen negative impacts in a long term and mitigation them as least as possible.

တတိယအကြိမ် PCM အစည်းအဝေးမှ မှတ်တမ်း

နေ့ရက် ၂၇.၈.၂၃

အချိန် မနက် (၉) နာရီ

နေရာ တံခွန်တိုင်ကျေးရွာ ဘုန်းတော်ကြီးကျောင်း

ဦးကျော်စိုးဝင်း(အုပ်ချုပ်မှုဒါရိုက်တာ) (Green Myanmar)

- အခမ်းအနားတက်ရောက်လာသူများကို မိတ်ဆက်ပြီးနောက် တင်ပြမည့်အကြောင်းအရာများကိုရှင်းလင်းပြောကြားပါသည်

- တင်ပြမည့်အကြောင်းအရာများ -

၁။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်

၂။ စီမံကိန်းဆိုင်ရာအချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း

၃။ နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များကောက်ယူခဲ့ခြင်း

၄။ လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ ထိခိုက်နိုင်မှုများလေ့လာဆန်းစစ်ခြင်း

၅။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့်သဘောထားမှတ်ချက်ပြန်ကြားစာ

(မူရင်း powerpoint တွင် နံပါတ် (၅) ၂ ခါဖြစ်နေပါသည်)

၆။ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများအကျဉ်းချုပ်

၇။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ

၈။ ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုရေးအစီအစဉ်

၉။ လူမှုစီးပွားတာဝန်သိမှုနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့် အစီအစဉ်

၁၀။ စီမံကိန်းအပေါ်သုံးသက်ချက်နှင့်နိဂုံး

၁၁။ ပတ်ဝန်းကျင် ထိခိုက်မှု လေ့လာဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်



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- စီမံကိန်းဆိုင်ရာ အချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း
- နယ်ပယ်အတိုင်းအတာသက်မှတ်ခြင်း
- သဘာဝပတ်ဝန်းကျင်နှင့် ဇီဝမျိုးစုံမျိုးကွဲစနစ်များ၊ လူမှုအဖွဲ့အစည်းဆိုင်ရာတို့အပေါ် သက်ရောက်နိုင်မှုများကို ဖော်ထုတ်ခြင်း
- ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များကောက်ယူခြင်း
- စီမံကိန်း၏သက်ရောက်နိုင်မှုများကို စီမံကိန်းဖော်ဆောင်မည့်ဒေသတွင်း အာဏာပိုင်အဖွဲ့အစည်းများ၊ လူမှုရေးအဖွဲ့အစည်းများနှင့် ပြည်သူလူထုအားအသိပေးခြင်းနှင့် သဘောထားရယူခြင်း
- သက်ရောက်မှုများလျော့နည်းစေရန်ဆောင်ရွက်ရမည့်အချက်များ၊ အစီအမံများချမှတ်ခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ်များသတ်မှတ်ခြင်း
- အစီရင်ခံစာပြုစုတင်ပြခြင်း

၂။ စီမံကိန်းဆိုင်ရာ အချက်အလက်များအပေါ်ဆန်းစစ်ခြင်း

- ၂၀၁၈ ခုနှစ်က စီမံကိန်းမစတင်ခင် လေ့လာဆန်းစစ်ခြင်း မှတ်တမ်းဓာတ်ပုံများ
- ဘာလာချောင်းအခြေအနေ (၂၀၂၃ ခုနှစ် ဖေဖော်ဝါရီလနှင့် ဩဂုတ်လ နှိုင်းယှဉ်ဖော်ပြထားသော မှတ်တမ်းဓာတ်ပုံများ)

၃(က)။ နယ်ပယ်အတိုင်းအတာသက်မှတ်ခြင်း

- စီမံကိန်းနှင့် ပတ်သက်သည့်နယ်ပယ်အတိုင်းအတာ
- စီမံကိန်းအနီးကျေးရွာများစာရင်း
- ၁. ကုန်းတလပေါင်းကျေးရွာ
- ၂. ရေတလပေါင်းကျေးရွာ
- ၃. နွယ်ခွေစံပြကျေးရွာ
- ၄. တံခွန်တိုင်ကျေးရွာ

(အရှေ့လောင်ဂျီတွဒ် 96° 9' 18.41'' ၊ မြောက်လတ္တီတွဒ် 17° 01' 7.78'')

ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၂-၂) ၊ ကုန်တလပေါင်းအရှေ့ကွင်းနံပါတ် (၄၉၈) ၊ ရေတလပေါင်းကျေးရွာ၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး



၃(ခ)။ သဘာဝပတ်ဝန်းကျင်နှင့် ဇီဝမျိုးစုံမျိုးကွဲစနစ်များ၊ လူမှုအဖွဲ့အစည်းဆိုင်ရာတို့အပေါ် သက်ရောက်နိုင်မှုများကို ဖော်ထုတ်ခြင်း

- ၂၀၁၈ ခုနှစ်စီမံကိန်းမစတင်ခင်ဆောင်ရွက်ခဲ့သော မှတ်တမ်းဓာတ်ပုံများ
- ၂၀၂၃ ခုနှစ်အတွင်းလုပ်ငန်းဆောင်ရွက်ခဲ့သော မှတ်တမ်းဓာတ်ပုံများ

(ပတ်ဝန်းကျင်လေထုအရည်အသွေးတိုင်းတာခြင်း၊ မြေအောက်ရေနေမှုနာကောက်ယူခြင်း၊ စက်ရုံနယ်နိမိတ် အသံဆူညံမှုတိုင်းတာခြင်း၊ ကုန်းတလပေါင်းကျေးရွာအတွင်း အသံဆူညံမှုတိုင်းတာခြင်း၊ တုန်ခါမှုတိုင်းတာခြင်း၊ ဘားလာချောင်းရေနေမှုနာကောက်ယူခြင်း၊ စွန့်ပစ်ပစ္စည်းနမူနာကောက်ယူခြင်း၊)

၄။ ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက်အလက်များကောက်ယူခြင်း

- လေအရည်အသွေးတိုင်းတာမှုရလဒ်

No.	Parameters	Result		Unit	Measuring Avg. Period		Guideline Value	Avg. Period	Remark
		P- 1	P - 2						
1	Nitrogen Dioxide	29.62	11.27	µg/m ³	24	hours	200 µg/m ³	1-hour	
2	Sulphur Dioxide	0.5	0	µg/m ³	24	hours	20 µg/m ³	24-hours	
3	Particulate matter PM ₁₀	44.45	23.02	µg/m ³	24	hours	50 µg/m ³	24-hours	
4	Particulate matter PM _{2.5}	24.57	10.49	µg/m ³	24	hours	25 µg/m ³	24-hours	
5	Ozone	2.36	0.81	µg/m ³	24	hours	100 µg/m ³	8-hour daily Maximum	
6	Ammonia	1.12	0.33	ppm	24	hours	NG	-	
7	Carbon Dioxide	283.79	299.76	ppm	24	hours	NG	-	
8	Carbon Monoxide	0.24	1.04	ppm	24	hours	NG	-	
9	Volatile Organic Compound	0	0	ppb	24	hours	NG	-	
10	Wind Speed	1.67	1.12	mph	24	hours	NG	-	
11	Wind Direction	SE	SW	Deg	24	hours	NG	-	

NG-No Guideline

- ကုန်တလပေါင်းကျေးရွာ၏ အသံတိုင်းတာခြင်းရလဒ်



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Date	Measurement	Avg Value, dBA	NEQ(E)G Guideline Value
8 – 9.2.2023	Day Time	50.34	55
	Night Time	50.95	45

- နေ့အချိန်တိုင်းတာခြင်းရလဒ်

Point	Unit	Noise Level (Day Time)			NEQ(E)G Guideline Value
		Avg	Max	Min	
NMP -1	dBA	47.59	80.70	37.50	55
NMP -2	dBA	51.46	71.20	37.20	55
NMP-3	dBA	47.76	80.90	39.60	55
NMP-4	dBA	67.39	87.70	58.20	55
NMP-5	dBA	45.43	78.00	35.80	55

- ညအချိန်တိုင်းတာခြင်းရလဒ်

Point	Unit	Noise Level (Day Time)			NEQ(E)G Guideline Value
		Avg	Max	Min	
NMP -1	dBA	48.09	82.80	42.60	45
NMP -2	dBA	48.03	71.10	44.20	45
NMP-3	dBA	43.19	55.50	39.50	45
NMP-4	dBA	47.77	50.33	45.40	45
NMP-5	dBA	45.47	59.08	31.25	45

NMP – Noise Measurement Point

NEQ(E)G – National Environmental Quality (Emissions) Guideline

- တုန်ခါမှုတိုင်းတာခြင်းရလဒ် အကျဉ်းချုပ်

Instrument ID	Date	Maximum Peak Vector Sum (mm/s)	Remark
Monastery	7/2/2023 to 8/2/2023	0.67	Max: PVS on 7 th , February 2023 11:15 AM
Near Wastewater Treatment Area/ Back side of factory Premises	7/2/2023 to 8/2/2023	0.93	Max: PVS on 7 th , February 2023 13:48 PM
Near Entrance Gate	8/2/2023 to 9/2/2023	1.53	Max: PVS on 8 th , February 2023 5:03 PM

Remark : Vibration level is less than Threshold limit 0.5 mm/sec not recorded the data.

- မြေအောက်ရေ အရည်အသွေးရလဒ်များ (၂၀၁၈)



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- မြေအောက်ရေ အရည်အသွေးရလဒ်များ (၂၀၂၃)
- ဘားလာချောင်းရေ၏ ရေအရည်အသွေး ဓာတ်ခွဲရလဒ်များ (၂၀၁၈)
- ဘားလာချောင်းရေ၏ ရေအရည်အသွေးဓာတ်ခွဲရလဒ်များ (၂၀၂၃)
- စွန့်ပစ်ရေ သန့်စင်စက်ရုံ (အဝင်) မှ ဓာတ်ခွဲခန်းရလဒ်များ
- စွန့်ပစ်ရေ သန့်စင်စက်ရုံ (အထွက်) မှ ဓာတ်ခွဲခန်းရလဒ်များ
- စက်ရုံမှ သန့်စင်ပြီး စွန့်ပစ်ရေ အထွက်၏ ဓာတ်ခွဲခန်းရလဒ်များ
- သန့်စင်ပြီး စွန့်ပစ်ရည်၏ ဓာတ်ခွဲခန်းရလဒ်များ
- မြေအရည်အသွေးရလဒ်များ
- ရှေးဟောင်းယဉ်ကျေးမှုအမွေအနှစ်ဆိုင်ရာ လေ့လာဆန်းစစ်ခြင်း မှတ်တမ်းပုံများ
- ဇီဝမျိုးစုံမျိုးကွဲများ လေ့လာဆန်းစစ်ခြင်း (၂၀၁၈ ခုနှစ်) မှတ်တမ်းပုံများ
- ဇီဝမျိုးစုံမျိုးကွဲများ လေ့လာဆန်းစစ်ခြင်း (၂၀၂၃ ခုနှစ်) မှတ်တမ်းပုံများ
- စီးဆင်းရေနှင့် ရေအသုံးချမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း မှတ်တမ်းပုံများ
- အများပြည်သူများသို့ ထုတ်ဖော်တင်ပြခြင်း မှတ်တမ်းပုံများ
- ယာဉ်လမ်းကြောင်းအသုံးပြုမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း (၂၀၁၈ ခုနှစ်) မှတ်တမ်းပုံများ
- ယာဉ်လမ်းကြောင်းအသုံးပြုမှုဆိုင်ရာလေ့လာဆန်းစစ်ခြင်း (၂၀၂၃ ခုနှစ်) မှတ်တမ်းပုံများ
- လူမှုပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်များကောက်ယူခဲ့ခြင်း (၂၀၁၈ ခုနှစ်) မှတ်တမ်းပုံများ
- လူထုတွေ့ဆုံဆွေးနွေးပွဲများကျင်းပခြင်း (ပထမအကြိမ်) မှတ်တမ်းပုံများ
- လူထုတွေ့ဆုံဆွေးနွေးပွဲများကျင်းပခြင်း (ဒုတိယအကြိမ်) မှတ်တမ်းပုံများ

၅။ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသို့ တင်ပြခဲ့သော နယ်ပယ်အတိုင်းအတာ သတ်မှတ်ခြင်းဆိုင်ရာ အစီရင်ခံစာနှင့်သဘောထားမှတ်ချက်ပြန်ကြားစာ

- ဝန်းကြီးဌာနမှ ပြန်ကြားစာနှင့် မှတ်တမ်းပုံများ
- အများပြည်သူထံမှ သဘောထားရယူခြင်းနှင့် သတင်းအချက်အလက်ထုတ်ပြန်ခြင်း မှတ်တမ်းပုံများ
- ထုတ်ဖော်သည့်အချိန် ၂၀၂၃ ခုနှစ်
- ထုတ်ဖော်သည်နေရာများ



၁. တံခွန်တိုင်ကျေးရွာ

၂. ရေတလပေါင်ကျေးရွာ

၃. ကုန်းတလပေါင်ကျေးရွာ

၄. နွယ်ခွေစံပြကျေးရွာ

၆။ ပတ်ဝန်းကျင်အပေါ်သက်ရောက်နိုင်မှုများအကျဉ်းချုပ်

- လည်ပတ်ရေးကာလအတွင်း ပတ်ဝန်းကျင်ထိခိုက်နိုင်မှုနှင့် အကြောင်းအရင်းများ (ဇယား ၅.၃)

သက်ရောက်မှု	အကြောင်းရင်း
ယာဉ်လမ်းကြောင်း	<ul style="list-style-type: none"> - ကုန်ကြမ်းများ၊ ကုန်ချောများ၊ စက်ကိရိယာစပယ်ယာအပိုင်းများ၊ လောင်စာဆီ၊ ချောဆီနှင့် အလုပ်သမားများကို သယ်ယူပို့ဆောင်သည့် ယာဉ်များဝင်ထွက်မှု။ - ဧည့်သည်များ၏ မော်တော်ယာဉ်များ။ - စစ်ဆေးရေးအဖွဲ့၏ မော်တော်ယာဉ်များ။ - လုပ်ငန်းရှင်နှင့် မီဒီယာများမှ မော်တော်ယာဉ်များ။
လေအရည်အသွေး	<ul style="list-style-type: none"> - ကုန်ကြမ်းပြင်ဆင်သည့်လုပ်ငန်းများဖြစ်သည့် ကုန်ကြမ်းတင်ခြင်း၊ ကုန်ကြမ်းချခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ သန့်ရှင်းခြင်း၊ စက်ပစ္စည်း သုံးခြင်းများမှ ထွက်လာသည့် အမှုန့်အမွှားများ။ - မော်တော်ယာဉ်နှင့် မီးစက်များမှ ထွက်သည့် ဓာတ်ငွေ့နှင့် အမှုန့်အမွှားများ။ - ဘွဲ့လဲလဲလာမှုထွက်သည့် ဓာတ်ငွေ့များ။ - ဘီယာချက်ရုံ၏လုပ်ငန်းများဖြစ်သည့် ကုန်ကြမ်းများချေခြင်း၊ ကျိုချက်ခြင်း၊ အချဉ်ဖောက်ခြင်း စသည့်လုပ်ငန်းများမှ ထွက်လာသည့် ရေငွေ့နှင့် ဓာတ်ငွေ့များ။ - ထရန်စဖော်မာဆီယိုစီမံခြင်း။ - လေအေးပေးစက်၏ အအေးပေးဓာတ်ငွေ့နှင့် အခြားစနစ်မှ ကာဗွန်ဒိုင်အောက်ဆိုဒ်ယိုစီမံခြင်း။ ဘီယာဖြည့်သည့် ဆလင်ဒါမှ ယိုစီမံခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်ယိုစီမံခြင်း။ ဘီယာဖြည့်သည့် ဆလင်ဒါမှ ယိုစီမံခြင်း။ - စီအိုင်ပီယူနစ်မှ ကေဘူစတစ်ဆိုဒါ အငွေ့ထွက်ခြင်း။ - စွန့်ပစ်ရေသန့်စင်သည့်စနစ်မှ ထွက်လာသည့် ဓာတ်ငွေ့။
ဆူညံသံနှင့် တုန်ခါခြင်း	<ul style="list-style-type: none"> - မီးစက်နှင့် မော်တော်ယာဉ်များကြောင့် ဆူညံသံခြင်းနှင့် တုန်ခါခြင်း - မော့စက်ကိုသန့်ရှင်းခြင်း၊ ကြိုတ်ခြင်း၊ ခြေခြင်း၊ မော့ကျိုချက်ခြင်း၊ အချဉ်ဖောက်ခြင်းစသည့် စက်များလည်ပတ်ခြင်းကြောင့် ဖြစ်ပေါ်လာသည့် ဆူညံသံနှင့် တုန်ခါခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်များလည်ပတ်ခြင်း။ - ရေ၊ မီး၊ ဘွဲ့လဲလဲလာ စသည့် အသုံးဝန်ဆောင်လုပ်ငန်းများ၏ စက်များလည်ပတ်ခြင်း။ - ခြေခြင်း၊ မော့ကျိုချက်ခြင်းအတွက် သုံးရသည့် ရေခွေးငွေ့ပိုက်လှိုင်းများမှ ခေါက်သံများထွက်ပေါ်လာခြင်း။

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

	- ပုလင်းဆေးစက်၊ ဘီယာဖြည့်စက်၊ အဖုံးပိတ်စက်နှင့် ထုပ်ပိုးစက်များလည်ပတ်ခြင်း။
စီမံချိုးဖိုများကွဲ	- ဓာတ်ငွေ့နှင့် ဖုန်များကြောင့် ဂေဟစနစ်ပျက်ယွင်းခြင်း - ဒေသရင်းတိရိစ္ဆာန်များ၊ ဆူညံသံနှင့် တုန်ခါမှုကြောင့် အခြားနေရာသို့ ပြောင်းရွှေ့ခြင်း။ - စွန့်ပစ်ရေကြောင့် ဂေဟစနစ်ပျက်စီးခြင်း။
ရှေးဟောင်းအဆောက်အဦနှင့် ယဉ်ကျေးမှုအမွေအနှစ်	- ရှေးဟောင်းအဆောက်အဦများ၊ အထိမ်းအမှတ်ပစ္စည်းများ၊ ဓာတ်ငွေ့ အမှုန်အမွှားများကြောင့်ထိခိုက်မှုရှိခြင်း။ - ဆူညံသံနှင့် တုန်ခါမှုကြောင့် ရှေးဟောင်းအဆောက်အဦများ၏ သက်တမ်းတိုစေခြင်း။
မြေအောက်ရေနှင့် မြေပေါ်ရေ	- တစ်ကိုယ်ရေသန့်ရှင်းခြင်း၊ ဆေးကြောခြင်း၊ လျှော်ဖွတ်ခြင်းမှ ထွက်လာသည့်ရေ။ - ထုတ်လုပ်မှုလုပ်ငန်းမှ ဆေးကြောသည့်ရေ။ - ဘိုလ်လာစွန့်ထုတ်ရေ။ - စက်များပြုပြင်စဉ်အတွင်း ဘက်ထရီအက်ဆစ်၊ ချောဆီ၊ လောင်စာဆီများ ယိုစိမ့်၊ ဖိတ်စင်ခြင်း။ - ပုလင်းနှင့် လက်ဆေးကြောစက်မှ ထွက်လာသည့်ရေ။ - လုပ်ငန်းခွင်အတွင်း ပုလင်းများကွဲခြင်း။ - စွန့်ပစ်ရေသန့်စင်သည့် စက်ရုံမှ ထွက်ရှိလာသည့် ရေများ။ - စီအိုင်ပီယူနစ်မှ ယိုစိမ့်ခြင်း၊ ဖိတ်စင်ခြင်း။ - ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံမှ ပေါင်းချွေးများ
စွန့်ပစ်ရေနှင့် စွန့်ပစ်အပိုင်အခဲ	- ချောဆီ၊ စက်ဆီ၊ ဘက်ထရီအက်ဆစ်များ ဖိတ်စင်ခြင်း၊ ယိုစိမ့်ခြင်း။ - မေ့၊ ဟော့ဂါ၊ ဘီယာနှစ် စီအိုင်ပီအရည်များဖိတ်စင်ခြင်း၊ ယိုစိမ့်ခြင်း။ - စက်များ၊ ကန်များ၊ စီအိုင်ပီမှ ထွက်လာသည့်ဆေးကြောရေ။ - ဘိုလ်လာစွန့်ထုတ်ရေ။ - မေ့၊ ဆန်အိတ်၊ အင်ဇိုင်းထည်ပုံး၊ ယိတ်အထုပ်စည် ကုန်ကြမ်းများ၏ ထုပ်ပိုးပစ္စည်းများ။ - စပန်ဂရိန်းများဖိတ်စင်ခြင်း။ - ယိတ်ထဲသည့် ခွက် ဖိတ်စင်ခြင်း။ - ပုလင်းကွဲခြင်း။

	- ကန်ဗူးများ ပျက်စီးခြင်း။ - အဖုံးနှင့် တံဆိပ်များပျက်စီးခြင်း။ - ပြန်လည်အသုံးပြုရန် ရောက်ရှိလာသည့် ပုလင်းမှ ကျန်ရှိသည့် တံဆိပ်ခွဲစတောင်းနှင့် အဖုံးများ။ - ရုံးခန်းမှ သုံးပြီးသား စာရေးကိရိယာနှင့် အမှိုက်များ
လူမှုစီးပွားနှင့် လူမှုကျန်းမာရေး	- ကူးစက်ရောဂါများပြန့်ပွားမှုဖြစ်နိုင်ခြင်း။ - ဒေသခံနှင့် ပြောင်းရွှေ့လာသည့် လုပ်သားများအကြားယဉ်ကျေးမှု ပဋိပက္ခဖြစ်နိုင်ခြင်း။ - လူဦးရေပြောင်းလဲဖြစ်ထွန်းမှုရှိ ခြင်း။ - ဘိုလ်လာ၊ မြေစက်၊ မေ့ကျိုချက်ခြင်းစက်များအနီးတွင် အပူပြင်းထန်မှုများခံစားရခြင်း။ - အပူချိန်နိမ့်၊ ဖိအားမြင့်ခြင်းကြောင့်အမိုးနီးယားအအေးစက်ရုံနှင့် ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံများတွင် စင်နိုင်ဂျင်နစ်ပြင်းထန်ရောဂါ ဖြစ်နိုင်ခြင်း။ - အမိုးနီးယားအဆိပ်သင့်ခြင်း။ - မတော်တဆထိခိုက်ဒဏ်ရာရ (လဲကျခြင်း၊ ချော်လဲခြင်း) ခြင်း - ကွဲသွားသည့်ပုလင်းများ ကြောင့် ဒဏ်ရာရခြင်း။ - စီအိုင်ပီယူနစ်တွင် ကော့စတစ်အရည်အကြောင့် မျက်စိဒဏ်ရာရခြင်း။ - မီးအန္တရာယ် - လျှပ်စစ်ဗိုလ်ယာရောဂါ - မတော်တဆထိခိုက်မှု အန္တရာယ် - ဘက်ထရီအက်ဆစ်၊ ကော့စတစ်ဆိုဒါ စသည့် ဓာတုပစ္စည်းများကိုင်တွယ်ခြင်းကြောင့် အရေပြား လောင်ခြင်း။

- အဆင့်သက်မှတ်ပြီး သက်ရောက်မှုအတွက် သက်မှတ်စံနှုန်းများ



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ရှည်ကြာချိန်	သတ်မှတ်ချက်	ရမှတ်
ကာလတို	ထိခိုက်မှုသည် လည်ပတ်ရေးကာလပြီးဆုံးပြီးနောက် သဘာဝအလျောက်ပျောက်ကွယ်သွားခြင်း (သို့မဟုတ်) ကာလတိုအတွင်းတွင်သာ ပေါ်ပေါက်ခြင်း။	၂
အလယ်အလတ်	ထိခိုက်မှုသည် အချိန်ကာလတစ်ခုအထိရှည်ကြာနိုင်သည်။ (၃ လ (သို့မဟုတ်) ၁ နှစ် အထိ (သို့မဟုတ်) တည်ဆောက်ရေးကာလအတွင်း)	၃
ကာလရှည်	ထိခိုက်မှုသည် တည်ဆောက်ရေးကာလတလျှောက်လုံးဖြစ်ပေါ်နေမည်။ သို့သော် သဘာဝအတိုင်း (သို့မဟုတ်) ကုစားသည့် နည်းလမ်းများဖြင့် လျော့နည်းအောင် လုပ်နိုင်သည်။	၄
အမြဲတန်း	အပြန်အလှန်မရှိသော ထိခိုက်မှုဖြစ်သည်။ သဘာဝအလျောက် (သို့မဟုတ်) လူတို့၏ လုပ်ဆောင်ချက်ကြောင့် ပပျောက်အောင် မလုပ်နိုင်ပါ။	၅

(သိသာထင်ရှားမှု = (ရှည်ကြာချိန် + အကျယ်အဝန်း + ပြင်းထန်ခြင်း) x ဖြစ်နိုင်ချေ

သိသာထင်ရှားမှု	ရမှတ်	ဆိုးကျိုးထိခိုက်ခြင်း
လျစ်လျူ	၁၀ - ၃၀	ထိခိုက်မှုမရှိသဖြင့် မည်သည့် စီမံခန့်ခွဲမှု (သို့မဟုတ်) မည်သည့် ကုစားရမည့်နည်းလမ်းမှ မလိုအပ်သဖြင့် အရေးပါမှုအဆင့်ကို လျစ်လျူရှုနိုင်ပါသည်။
နည်းပါး	၃၁ - ၆၀	ထိခိုက်မှုနှင့် အရေးပါမှုနည်းပါးခြင်းကြောင့် စီမံခန့်ခွဲမှု (သို့မဟုတ်) နောက်တွင် ကုစားရမည့် နည်းလမ်းလိုအပ် မှုရှိ (သို့မဟုတ်) မရှိခြင်း ဖြစ်နိုင်သဖြင့် အရေးပါမှု အဆင့်ကို နည်းပါးသည်ဟု သတ်မှတ်နိုင်ပါသည်။
အသင့်အတင့်	၆၁ - ၉၀	ထိခိုက်မှုသည် အလယ်အလတ်အရေးပါခြင်းကြောင့် စီမံခန့်ခွဲမှုနှင့် နောက်ထပ်ကုစားရမည့် နည်းလမ်းလိုအပ် သဖြင့် အရေးပါမှုအဆင့်ကို အသင့်အတင့်ဟု သတ်မှတ်နိုင်ပါသည်။
မြင့်မား	၉၁ - ၁၂၀	ထိခိုက်မှုသည် မြင့်မားသည့် အရေးပါခြင်းကြောင့် စီမံခန့်ခွဲမှုနှင့် နောက်ထပ်ကုစားရမည့် နည်းလမ်း လိုအပ်သဖြင့် အရေးပါမှုအဆင့်ကို မြင့်မားသည်ဟု သတ်မှတ်နိုင်ပါသည်။
အလွန်မြင့်မား	၁၂၀ - ၁၅၀	ထိခိုက်မှုသည် အလွန်မြင့်မားခြင်းကြောင့် အခြားနည်းပညာတစ်ခု လိုအပ်ပြီး ကုစားရမည့် နည်းလမ်းဖြင့် လျော့နည်းအောင် မလုပ်နိုင်ပါသဖြင့် အရေးပါမှု အဆင့်ကို အလွန်မြင့်မားသည်ဟု သတ်မှတ်နိုင်ပါသည်။

- ကုစားမှုမပြုမီ လုပ်ငန်းပြီးဆုံးကာလ၏ ထိခိုက်နိုင်သော သိသာထင်ရှားမှု

ထိခိုက်မှု	အကဲဖြတ်ခြင်း				အဆင့်သတ်မှတ်ချက်	
	ရှည်ကြာချိန်	အကျယ်အဝန်း	ပြင်းထန်ခြင်း	ဖြစ်နိုင်ချေ	အရေးပါမှု	
ယာဉ်ကြော	၂	၃	၃	၆	၄၈	နည်းပါး
လေညစ်ညမ်း	၂	၃	၄	၆	၅၄	နည်းပါး
အသံ	၂	၃	၄	၆	၅၄	နည်းပါး
ဇီဝမျိုးကွဲ	၂	၃	၃	၆	၄၈	နည်းပါး
ရှေးဟောင်းနှင့် ယဉ်ကျေးမှု	၂	၃	၃	၆	၄၈	နည်းပါး
မြေအောက်ရေ၊ မြေပေါ်ရေ	၂	၃	၃	၆	၄၈	နည်းပါး
စွန့်ပစ်ရေနှင့် စွန့်ပစ် အစိုင်အခဲ	၂	၃	၃	၆	၄၈	နည်းပါး
လူမှုစီးပွား	၂	၃	၃	၆	၄၈	နည်းပါး

- ပတ်ဝန်းကျင်အပေါ်သိသာထင်ရှားသော သက်ရောက်မှုများအားလျော့နည်းရေးအစီအမံများ မပြုလုပ်မီနှင့် ပြုလုပ်ပြီးကာလနှိုင်းယှဉ်ချက် (တည်ဆောက်ရေးကာလ)



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စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၂.	လေထုအရည်အသွေး	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၃.	ဆူညံသံ	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၄၈	နည်းပါး	၂၈	နည်းပါး	-၂၀	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	
၈။	လူမှုစီးပွား	၄၈	နည်းပါး	၃၂	နည်းပါး	-၁၆	

- ပတ်ဝန်းကျင်အပေါ်သိသာထင်ရှားသော သက်ရောက်မှုများအားလျော့နည်းရေးအစီအမံများ မပြုလုပ်မီနှင့် ပြုလုပ်ပြီးကာလနှိုင်းယှဉ်ချက် (လည်ပတ်ရေးကာလ)

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၂.	လေထုအရည်အသွေး	၆၆	နည်းပါး	၅၄	နည်းပါး	-၁၂	
၃.	ဆူညံသံ	၆၀	နည်းပါး	၅၄	နည်းပါး	-၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၃၆	နည်းပါး	၃၆	နည်းပါး	-	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၆၀	နည်းပါး	၅၄	နည်းပါး	-၆	
၈။	လူမှုစီးပွား	၆၀	နည်းပါး	၃၆	နည်းပါး	-၂၄	



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

- ပတ်ဝန်းကျင်အပေါ်သိသာထင်ရှားသော သက်ရောက်မှုများအားလျော့နည်းရေးအစီအမံများ မပြုလုပ်မီနှင့် ပြုလုပ်ပြီးကာလနှိုင်းယှဉ်ချက် (ပိတ်သိမ်းခြင်းကာလ)

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအချက်များ	လျော့ချရေး နည်းလမ်းများ မဆောင်ရွက်မီ သိသာထင်ရှားမှု		လျော့ချရေး နည်းလမ်းများ ဆောင်ရွက်ပြီး သိသာထင်ရှားမှု		ပိုမို/ လျော့နည်း	မှတ်ချက်
		သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်	သိသာထင်ရှားမှု သတ်မှတ်ချက်	အဆင့် သတ်မှတ်ချက်		
၁.	ယာဉ်လမ်းကြောင်း အသုံးပြုမှု	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၂.	လေထုအရည်အသွေး	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၃.	ဆူညံသံ	၅၄	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၆	
၄.	ဇီဝမျိုးစုံမျိုးကွဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၅.	ရှေးဟောင်းယဉ်ကျေးမှု အမွေအနှစ်	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၆။	မြေပေါ်ရေနှင့် မြေအောက်ရေ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၇။	စွန့်ပစ်ရည်နှင့် စွန့်ပစ် အစိုင်အခဲ	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	
၈။	လူမှုစီးပွား	၄၈	နည်းပါး	၂၈	လျစ်လျူရှု	-၂၀	

၇။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ

- ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့နည်းစေရန် ဆောက်ရွက်ရမည့် နည်းလမ်းများ (လည်ပတ်ရေးကာလ)

သက်ရောက်မှု	လျော့နည်းသက်သာစေမည့်နည်းလမ်းများ
ယာဉ်လမ်းကြောင်း	<ul style="list-style-type: none"> လုပ်ငန်းခွင်သို့ အဝင်/အထွက်ပြုလုပ်သည့် မော်တော်ယာဉ်များ အဆင်ပြေစေရန်အတွက် လမ်းပြဝန်ထမ်းထားရှိရန် စက်ရုံအတွင်း မောင်းနှင်သော မော်တော်ယာဉ်များ၏ မြန်နှုန်းကို သတ်မှတ်ပေးရန် ဖြစ်နိုင်ပါက ယာဉ်ကြောကြပ်တတ်သည့် အချိန်များတွင် ကုန်ကြမ်းများ၊ ကုန်ချောများ၊ ဝန်ထမ်းများပို့ဆောင်ခြင်းကို ရှောင်ကြဉ်ရန်။
လေထုအရည်အသွေး	<ul style="list-style-type: none"> မော်တော်ယာဉ်နှင့် မီးစက်များအတွက် အရည်အသွေးကောင်းသည့် စက်သုံးဆီကို သုံးစွဲရန် ဘျိုင်လာ လောင်စာအတွက်လည်း အရည်အသွေးကောင်းမွန်သည့် လောင်စာဆီကို သုံးစွဲရန်နှင့် လောင်စာဆီနှင့် လေအမျိုးကို မှန်ကန်စွာ ထည့်သွင်းရန် ထရန်စမော်မာ၊ အအေးခဲစက်နှင့် လေအေးပေးစက်များကို စစ်ဆေးပြုပြင်ထိန်းသိမ်းရန် ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ ယိုစိမ့်မှု မရှိစေအောင် ထိန်းသိမ်းရန်။ ဘီယာဗူးများထဲသို့ ကာဗွန်ဒိုင်အောက်ဆိုဒ် ဓာတ်ငွေ့ကို ယိုစိမ့်မှု မရှိအောင်ထည့်သွင်းရန် သန့်ရှင်းမှုစနစ် (Clean in Process - C.I.P) နေရာ၌ ကော့စတစ်ဆိုင်ဒါမျှော်သည့်အခါ အပူချိန်မြင့်မားမှုမရှိစေရန် စွန့်ပစ်ရေသန့်စင်စနစ် စက်ရုံမှ ယိုစိမ့်ခြင်းမရှိအောင်ဆောင်ရွက်ရန်
ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> အသံလိုက် စက်များ တပ်ဆင်ရန် မော်တော်ယာဉ်များ၊ မီးစက်များ၊ စက်များကို ကောင်းမွန်စွာ ပြုပြင်ထိန်းသိမ်းရန် ရေခွေးငွေ့ဖြင့် ခြေခြင်း၊ မော့ကျိုခြင်း၊ ရေခွေးငွေ့ဖြင့် အသုံးပြုသော လုပ်ငန်းများကို ဖြည်းဖြည်းနှင့် မှန်မှန်ဆောင်ရွက်ရန်
ဇီဝမျိုးစုံမျိုးကွဲ	<ul style="list-style-type: none"> ခါတ်ငွေ့နှင့် ဖုန်များကြောင့် ဂေဟစနစ်ပျက်ယွင်းခြင်း။ ဒေသရင်းတိရစ္ဆာန်များ ဆူညံသံနှင့် တုန်ခါမှုများကြောင့် အခြားနေရာသို့ ပြောင်းရွှေ့ခြင်း စွန့်ပစ်ရေကြောင့် ဂေဟစနစ်ပျက်စီးခြင်း
ရှေးဟောင်းအမွေအနှစ်	<ul style="list-style-type: none"> ရှေးဟောင်းအဆောက်အအုံများ၊ အထိမ်းအမှတ်ပစ္စည်းများစာတိငွေ့၊ အမွန်အမွှားများကြောင့် ထိခိုက်မှုရှိခြင်း။ ဆူညံသံနှင့် တုန်ခါမှုကြောင့် ရှေးဟောင်းအဆောက်အအုံများ၏ သက်တမ်းကိုတိုစေခြင်းများ မဖြစ်ပေါ်စေရန် ဆောင်ရွက်ရပါမည်။
မြေအောက်ရေနှင့် မြေပေါ်ရေ	<ul style="list-style-type: none"> ကန်များ၊ စက်များဆေးကြောခြင်း၊ ဘျိုင်လာမှ ရေထုတ်ခြင်း၊ တစ်ကိုယ်ရည် ရေသုံးစွဲခြင်းများအတွက် ရေသုံးစွဲမှုသည် လိုအပ်သည့် ပမာဏထက် ပိုမသုံးရန်နှင့် စွန့်ပစ်ပစ္စည်း မြေပေါ်သို့ တိုက်ရိုက်စွန့်ပစ်ခြင်းကို ထိန်းသိမ်းဆောင်ရွက်ရန် ကုန်ကြမ်းပစ္စည်း၊ ထုတ်ပိုးပစ္စည်းများအား ကောင်းမွန်သော စနစ်ဖြင့် ထားရှိရန်

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<p>စွန့်ပစ်ရေနှင့် စွန့်ပစ်အပိုင်အခဲ</p>	<ul style="list-style-type: none"> ကန်များ၊ စက်များ၊ ကိရိယာများ၊ ဘိုလ်လာများဆေးကြောခြင်းမှ ထွက်လာသည့် ရေများ။ ဖြိုဖျက်လုပ်ငန်းမှ စွန့်ပစ်ပစ္စည်းများ (အသုံးပြုပြီး လက်အိတ်များ၊ ကျောက်သွေးစက်မှ စွန့်ပစ်ပစ္စည်းများ၊ ကွန်ကရစ်စများ၊ သစ်သားနှင့် သံစများ) မော်တော်ယာဉ်နှင့် မီးစက်များ၏ ဘက်ထရီအက်ဆစ်၊ လောင်စာဆီ၊ ချောဆီများ ယိုစိမ့်ခြင်း။
<p>လူမှုစီးပွားနှင့် လူမှု ကျန်းမာရေး</p>	<ul style="list-style-type: none"> ကူးစက်ရောဂါများပြန့်ပွားမှုဖြစ်နိုင်ခြင်း။ ဒေသခံနှင့် ပြောင်းရွှေ့လာသည့် လုပ်သားများအကြားယဉ်ကျေးမှု ပဋိပက္ခဖြစ်နိုင်ခြင်း။ လူဦးရေပြောင်းလဲခြင်းထွန်းမှုရှိခြင်း။ ဘိုလ်လာ၊ ခြေစက်၊ မော့ကျိုချက်ခြင်းစက်များအနီးတွင် အပူပြင်းထန်မှုများခံစားရခြင်း။ အပူချိန်နိမ့်နိမ့်၊ ဖိအားမြင့်ခြင်းကြောင့် အမိုးနီးယားအအေးစက်ရုံနှင့် ကာဗွန်ဒိုင်အောက်ဆိုဒ်စက်ရုံများတွင် စင်ဒိုင်ဂျင်နစ်ပြင်းထန်ရောဂါ ဖြစ်နိုင်ခြင်း။ အမိုးနီးယားအဆိပ်သင့်ခြင်း။ မတော်တဆထိခိုက်ဒဏ်ရာရ (လဲကျခြင်း၊ ချော်လဲခြင်း) ခြင်း ကွဲသွားသည့်ပုလင်းများ ကြောင့် ဒဏ်ရာရခြင်း။ စီအိုင်ပီယူနစ်တွင် ကော့စတစ်အရည်အကြောင့် မျက်စိဒဏ်ရာရခြင်း။ မီးအန္တရာယ် လျှပ်စစ်ပိုင်းယာရှော့ မတော်တဆထိခိုက်မှု အန္တရာယ် ဘက်ထရီအက်ဆစ်၊ ကော့စတစ်ဆိုဒါ စသည့် ဓာတုပစ္စည်းများကိုင်တွယ်ခြင်းကြောင့် အရေပြားလောင်ခြင်း။

၈။ ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုရေးအစီအစဉ်

- ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုရေးစီမံချက်

ပတ်ဝန်းကျင် ဆိုင်ရာ သက်ရောက်မှု အချက်များ	စောင့်ကြပ်ကြည့်ရှုရေးအချက်အလက်များ	နေရာ	စောင့်ကြပ် ကြည့်ရှုမှု မြဲလုပ်ရန် အကြိမ်	တာဝန်ယူရမည့် အဖွဲ့အစည်း	နည်းလမ်း
လေ အရည်အသွေး	<ul style="list-style-type: none"> ပတ်ဝန်းကျင်လေထုအရည်အသွေး တိုင်းတာခြင်း (NEQEG) [ဖုန်း၊ အမှုန်, PM₁₀, PM_{2.5} နှင့် SO₂, NO_x, O₃] လုပ်ငန်းခွင်လေထုအရည်အသွေးတိုင်းတာခြင်း PM₁₀, PM_{2.5}, SO₂, NO_x စက်ရုံဘိုလ်လာရှိ အမိုးအငွေ့ထုတ် ခေါင်းတိုင်အား မှတ်တမ်းထား စစ်ဆေးခြင်း မီးစက် (Generator) ရှိ အမိုးအငွေ့ထုတ် ခေါင်းတိုင်အား မှတ်တမ်းထား စစ်ဆေးခြင်း 	<p>Baseline Data တိုင်းတာခဲ့ သော နေရာများ</p> <ul style="list-style-type: none"> - Filling Area (Starting point) - Filling Area (End point) - CO₂ plant area - Brewing Area (Up) - Brewing Area (Down) - Malt milling area (Up) - Malt milling (down) <p>- ဘိုလ်လာ</p> <p>- Generator</p>	<p>တစ်နှစ် (၂) ကြိမ်</p> <p>တစ်နှစ် (၂) ကြိမ်</p>	<p>ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)</p> <p>ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)</p>	<p>နေရာ သတ်မှတ် တိုင်းတာခြင်း</p> <p>စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း</p>
ဆူညံသံ	<ul style="list-style-type: none"> ဆူညံမှုနှင့် တုန်ခါမှုအဆင့်အတန်း တိုင်းတာခြင်း 	<p>စီမံကိန်းစတင်စဉ်က Baseline Data တိုင်းတာ ခဲ့သော နေရာများ</p> <ul style="list-style-type: none"> • အဝင်/ အထွက် Main Gate အနီး • ဧည့်ကြိုဆောင်အနီး • စွန့်ပစ်ရည် သန့်စင်မှု စနစ် နေရာ • ရုံးအရှေ့နေရာ • သန့်စင်ပြီး စွန့်ပစ်ရည် တန်နေက 	<p>တစ်နှစ် (၂) ကြိမ်</p>	<p>ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)</p>	<p>နေရာ သတ်မှတ် တိုင်းတာခြင်း</p>

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	<ul style="list-style-type: none"> လုပ်ငန်းခွင်ဆူညံမှု တိုင်းတာခြင်း 	<ul style="list-style-type: none"> - Filling Area (Starting point) - Filling Area (End point) - CO₂ plant area - Brewing Area (Up) - Brewing Area (Down) - Malt milling area (Up) - Malt milling (down) 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	
တုန်ခါမှု	<ul style="list-style-type: none"> တုန်ခါမှုတိုင်းတာခြင်း 	<ul style="list-style-type: none"> - စွန့်ပစ်ရည်သန့်စင်မှု စနစ် ဧရိယာအနီး - အမရပတီ ဘုန်းကြီး ကျောင်း - အဝင်/ အထွက် Main Gate အနီး 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
စွန့်ပစ်ရည် အရည်အသွေး	<p>အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်, ဘီယာနှင့် အရက်ချက်လုပ်ငန်း</p> <ul style="list-style-type: none"> BOD, active ingredients, COD, Oil & Grease, pH, Temperature Increase, Total coliform bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solid 	<ul style="list-style-type: none"> - ရေဆိုးသန့်စင် စက်ရုံ၏ အဝင်နေရာ - ရေဆိုးသန့်စင် စက်ရုံ၏ အထွက်နေရာ - စက်ရုံ၏ စွန့်ပစ်ရည် အထွက် နေရာ 	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
မြေပေါ်ရေ	<ul style="list-style-type: none"> အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်မှ သတ်မှတ်ထားသော ပါရာမီတာများအတိုင်း 	<ul style="list-style-type: none"> - ဘားလားချောင်း စီမံကိန်း အထက်ဘက်, - စီမံကိန်း နေရာအနီးနှင့် - စီမံကိန်း အောက်ဘက် 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း

မြေအောက်ရေ	<ul style="list-style-type: none"> အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်မှ သတ်မှတ်ထား သော ပါရာမီတာများအတိုင်း 	<ul style="list-style-type: none"> - Baseline Data တိုင်းတာခဲ့ သော နေရာများ - ကုန်းတလပေါင် - ရေတလပေါင် - တံခွန်တိုင် - နွယ်ခွေ - စက်ရုံစီမံကိန်းနေရာ 	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
မြေဆီလွှာ ညစ်ညမ်းစေမှု	<ul style="list-style-type: none"> ဆီဖိတ်စင်မှု၊ အပျော်ပစ္စည်းနှင့် သုတ်ဆေး၊ စွန့်ပစ်ရည်များ ဖိတ်စင်မှုမှတ်တမ်း မြေအရည်အသွေးတိုင်းတာခြင်း 	Baseline Data တိုင်းတာခဲ့ သော နေရာများ စီမံကိန်း ဧရိယာ	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင် ဆိုင်ရာ တာဝန်ခံ)	ဓာတ်ခွဲ စမ်းသပ် တိုင်းတာခြင်း
စွန့်ပစ်အပိုင်အခဲ (အမှိုက် စွန့်ပစ်ခြင်း)	<p>စွန့်ပစ်ပစ္စည်းစွန့်ပစ်ခြင်းအတွက်</p> <ul style="list-style-type: none"> စွန့်ပစ်ပစ္စည်းအမျိုးအစား (ဘေးအန္တရာယ်ရှိ/ ဘေးအန္တရာယ်မရှိ, အစားအစာ စွန့်ပစ်ပစ္စည်း) စွန့်ပစ်ပစ္စည်းပမာဏ စွန့်ပစ်သည့် အချိန်နှင့် နေ့စွဲ 	စီမံကိန်းစတင်စဉ်က Baseline Data တိုင်းတာခဲ့ သော နေရာများ	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ပတ်ဝန်း ကျင်ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း
လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး	<ul style="list-style-type: none"> မတော်တဆဖြစ်မှုမှတ်တမ်း အလုပ်သမားများ ကျန်းမာရေးစစ်ဆေးမှု အစီရင်ခံစာ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်း လုံခြုံရေး သင်တန်းမှတ်တမ်း ဓာတ်ပစ္စည်းဘေးကင်းလုံခြုံစွာ ကိုင်တွယ်ရေး သင်တန်းမှတ်တမ်း အလုပ်သမားများ၏ စောဒကတက်မှု မှတ်တမ်း 	စီမံကိန်းဧရိယာ တစ်ဝိုက်	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှုအဖွဲ့ (ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး ပေါင်းစပ်တာဝန်ခံ)	စစ်ဆေးမှု မှတ်တမ်း ထားရှိခြင်း



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	<ul style="list-style-type: none"> • တစ်ကိုယ်ရေသုံးအကာအကွယ်ပစ္စည်းများ ထောက်ပံ့ပေးခြင်း • လေထုအရည်အသွေးစောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • ရေအရည်အသွေး စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • မြေအရည်အသွေး စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ • ဆူညံသံနှင့်တူနံ့ခံမှု အဆင့်အတန်း စောင့်ကြည့် တိုင်းတာမှု အစီရင်ခံစာ 		တစ်နှစ် (၂) ကြိမ်		
ရုပ်ရွာလူထု ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး	<ul style="list-style-type: none"> • မတော်တဆဖြစ်မှုမှတစ်ပါး • အလုပ်သမား၏ တိုင်တမ်းမှု မှတစ်ပါး 	ဒေသခံပြည်သူများ	မကြာခဏ စစ်ဆေးခြင်း	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံ ရေး ပေါင်းစပ်မှု တာဝန်ခံ)	စစ်ဆေးမှု မှတစ်ပါး ထားရှိခြင်း
အခြား လူမှုရေး ဆိုင်ရာ စဉ်းစားချက်များ	<ul style="list-style-type: none"> • လူမှုစီးပွားသိ တာဝန်ယူမှု (CSR activities) အစီအစဉ် မှတစ်ပါး • ဒေသတွင်း ဝန်ထမ်းများခန့်ထားမှု မှတစ်ပါး • ဒေသခံလူထုမှ တိုင်တမ်းမှု မှတစ်ပါး 	လူသားအရင်း အမြစ် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့	တစ်နှစ် (၂) ကြိမ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ပတ်ဝန်းကျင်ဆိုင်ရာ တာဝန်ခံ)	စစ်ဆေးမှု မှတစ်ပါး ထားရှိခြင်း
အရေးပေါ်အခြေအနေ ကြုံတွေ့နိုင်မှု (Emergency Risks)	<ul style="list-style-type: none"> • အရေးပေါ်အခြေအနေနှင့် တွန့်ပြန်မှုအစီအစဉ် မှတစ်ပါး • မီးဘေးကာကွယ်ရေး အစီအမံပစ္စည်းများ စစ်ဆေးခြင်း • မီးလောင်မှု မှတစ်ပါး/ မီးငြိမ်းသတ်မှု သင်တန်း မှတစ်ပါး • မတော်တဆယိုဖိတ်မှု မှတစ်ပါး/ အရေးပေါ် ယိုဖိတ်မှု ထိန်းသိမ်းရေး သင်တန်းမှတစ်ပါး • လျှပ်စစ်နှင့် လျှပ်စစ်မတော်တဆမှု မှတစ်ပါး/ လျှပ်စစ်ပိုင်းဆိုင်ရာ ဘေးကင်းလုံခြုံမှု သင်တန်း မှတစ်ပါး 	စီမံကိန်းဧရိယာ တစ်ပိုက်	လစဉ်	ပတ်ဝန်းကျင် စောင့်ကြပ် ကြည့်ရှုမှု အဖွဲ့ (ကျန်းမာရေး နှင့် ဘေးကင်း လုံခြုံရေး ပေါင်းစပ်မှု တာဝန်ခံ)	စစ်ဆေးမှု မှတစ်ပါး ထားရှိခြင်း

၉။ လူမှုစီးပွားတာဝန်သိမှုနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့နည်းစေရေးအတွက် ရံပုံငွေထားရှိရမည့် အစီအစဉ်

- စီမံကိန်းအနေဖြင့် နှစ်စဉ် အသားတင်အမြတ်၏ ရာခိုင်နှုန်းတစ်ခုကို လူမှုစီးပွားရေးတာဝန်သိ အစီအစဉ်အတွက် အသုံးပြုရန်ဖြစ်ပါသည်။ လူမှုပတ်ဝန်းကျင် သက်ရောက်မှု ဆန်းစစ်ချက်အရ စီမံကိန်း၏ အနီးပတ်ဝန်းကျင်ဒေသ ဧရိယာများတွင် လူမှုစီးပွားတာဝန်သိ (Corporate Social Responsible - CSR) အစီအစဉ်များကို အကောင်အထည်ဖော် ဆောင်ရွက်ရမည်ဖြစ်ပါသည်။
- စီမံကိန်းအနေဖြင့် လူမှုစီးပွားတာဝန်သိအစီအစဉ်အပြင် ရှေ့တွင်ဖော်ပြခဲ့သော ပတ်ဝန်းကျင် ထိခိုက်မှုလျော့နည်း စေရန် နှစ်စဉ်စောင့်ကြပ်ကြည့်ရှုရမည့် အစီအစဉ်အတွက် ကုန်ကျစရိတ်များကိုပါ တွက်ချက်ဖော်ပြပေးရမည် ဖြစ်ပါသည်။
- ဆက်လက်၍လည်း ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးရံပုံငွေ တစ်ခုသတ်မှတ်ကာ ဇီဝမျိုးစုံမျိုးကွဲများ ထိန်းသိမ်းစောင့်ရှောက်ခြင်း၊ ဒေသမျိုးရင်းသစ်ပင်များ ပြန်လည်စိုက်ပျိုးပြုစုခြင်း၊ စက်ရုံစီမံကိန်း နှင့် အနီးဆုံးဖြစ်သည့် ရေအရင်းအမြစ် (မြစ်၊ ချောင်း၊ မြောင်း) များ ပြုပြင်ထိန်းသိမ်းခြင်း၊ ရေနုတ်မြောင်း အသစ်တူးဖော် ခြင်းစသည့် လုပ်ငန်းများ အတွက် ဆောင်ရွက်သွားရမည်ဖြစ်ပါသည်။

၁၀။ စီမံကိန်းအပေါ်သုံးသက်ချက်နှင့်နိဂုံး

- ယေဘုယျအားဖြင့် နိုင်ငံတကာ အဆင့်မှီ ဘီယာထုတ်လုပ်ဖြန့်ဖြူးခြင်း စက်ရုံစီမံကိန်းသည် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုရှိသော လုပ်ငန်းအမျိုးအစားဖြစ်ပါသည်။

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- စွန့်ပစ်ရည်ထွက်ရှိမှုအဓိက ဖြစ်သော်လည်း လည်းကောင်းကို သန့်စင်မှုပြုလုပ်ကာ စွန့်ပစ်မှုစနစ်စီစဉ်ထားရှိသော ကြောင့် ရေဆိုးထွက်ရှိမှုကို ထိန်းချုပ်နိုင်မည်ဖြစ်သဖြင့် စွန့်ပစ်ရည်ကြောင့် ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများကို လျော့နည်းစေမည်ဖြစ်ပါသည်
- အစိုင်အခဲနှင့် အခိုးအငွေ့အတန်အသင့်ထွက်ရှိသော်လည်း ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတိုင်း နိုင်ငံတော်၏ လမ်းညွှန်ချက် စံချိန်စံညွှန်းနှင့် ကိုက်ညီရန် ဆောင်ရွက်သွားပါက ထိခိုက်မှု လျော့နည်းစေမည်ဖြစ်ပါသည်
- ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များ တိုင်းတာတွေ့ရှိချက်များအပေါ် ဆန်းစစ်ပြီးပါက ပတ်ဝန်းကျင်စီမံ ခန့်ခွဲမှုအစီအစဉ်နှင့် စောင့်ကြပ်ကြည့်ရှုမှု အစီအစဉ်များ ရေးဆွဲလိုက်နာ ဆောင်ရွက်ခြင်းဖြင့် ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေး စီမံဆောင်ရွက်သွားနိုင်မည်ဟု ယုံကြည်ပါသည်
- ပတ်ဝန်းကျင်၊ လူမှုစီးပွားရေး ထိခိုက်မှု အနည်းဆုံးနှင့် ဖွံ့ဖြိုးရေးလုပ်ငန်းများ ပေါ်ထွက်လာစေရန် ပူးပေါင်း ဆောက်ရွက်ကြခြင်းဖြစ်၍ နှစ်ဦးနှစ်ဖက်အကျိုးအတွက် လာရောက် ဆွေးနွေးကြသော ဌာနဆိုင်ရာအသီးသီးနှင့် တကွ ဒေသခံရပ်မိရပ်ဖများ၊ ကုမ္ပဏီတာဝန်ရှိသူများ အားလုံးကို အသိအမှတ်ပြုကျေးဇူးတင်ပါသည်။

(ဝေဖန်အကြံပြုချက်များတောင်းခံသော်လည်း တုန့်ပြန်မှုမရှိခဲ့ပါ)

ဦးစိုင်းစိုးသန့် (ရေအသုံးချမှုပညာရှင်)

- ဇီဝမျိုးစုံမျိုးကွဲနှင့် ရေအသုံးချမှု (၂) ပိုင်းကို ပြောကြားသွားမှာဖြစ်ပါတယ်
- ဆရာဒေါက်တာ ကိုမြင့်မလာနိုင်တဲ့ အတွက်လာရောက်ရှင်းပြပေးတာဖြစ်ပါတယ်
- စီမံကိန်းမစတင်ခင်မှာ ရှားပါးမျိုးစေ့တွေဘာတွေရှိခဲ့လည်းဆိုတာနှင့် စီမံကိန်းလည်ပတ်နေချိန်မှာ ဘာတွေထိခိုက်မှုရှိသွား မလည်း ဆိုတာကိုသိရှိရမှာဖြစ်ပါတယ်
- ၂၀၁၈ တုန်းက စီမံကိန်းစတင်ချိန် သတ်မှတ်ခဲ့သော အဝန်းအဝိုင်းနဲ့ စစ်တမ်းကောက်ယူနေတဲ့ ပုံလေးတွေဖြစ်ပါတယ်
- ဘားလားချောင်းထဲမှာအတွင်းလေ့လာမှုမှာ ငါးတွေပုံးတွေကိုတွေ့ရှိရပါတယ်။ ရေအရည်အသွေးနမူနာကောက်ယူနေတဲ့ ပုံလေးတွေဖြစ်ပါတယ်
- ဘားလားချောင်းထဲမှာဆိုရင် ဒီဒေသက မျိုးရင်းမဟုတ်တဲ့ ရေဆူးပုတ်၊ ဗေဒါ နဲ့ ရွှေခရု လို မျိုးစေ့တွေကိုတွေ့ရှိရပါတယ်
- စီမံကိန်းမစတင်ခင်ကတည်းက ဒီဒေသမှာ တခြားမျိုးစေ့တွေရောက်ရှိနေပြီဆိုတာကို တွေ့ရှိရမှာဖြစ်ပါတယ်
- ဒီဒေသမှာရှိတဲ့ ရေအရင်းအမြစ်နဲ့ အသုံးချမှုပုံစံကို လေ့လာပါတယ်။ ဒီဒေသမှာရှိတဲ့ ရေအရင်းအမြစ်တွေကို သွားလာရေးအတွက် အသုံးပြုတာလား၊ စိုက်ပျိုးရေးအတွက်အသုံးပြုတာလား၊ ချက်ပြုတ်ရေးအတွက် အသုံးပြုတာလားဆိုတာ ကိုလေ့လာပါတယ်

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- ဒီစက်ရုံက ဘီယာစက်ရုံဖြစ်တဲ့ အတွက် ရေအမြောက်အများသုံးရပါတယ်။ ဒီဒေသမှာရှိတဲ့ ရေအရင်းအမြစ်တွေကို ထိခိုက်သွားမလားဆိုတာကို စီမံကိန်းတည်နေရာမှာရှိတဲ့ မြေအောက်ရေ ထုတ်ယူသုံးစွဲနိုင်မှုကိုလည်းလေ့လာပါတယ်။ မြေအောက်ရေ ပြန်လည်း ဖြည့်တင်းနိုင်တဲ့ အခြေအနေများကိုလည်းလေ့လာပါတယ်
- ဒီစက်ရုံက မြေအောက်ရေထုတ်ယူသုံးစွဲတဲ့ အတွက်ကြောင့်မို့လို့ ပတ်ဝန်းကျင်မှာရှိတဲ့ ရေတွင်းတွေ ရေနည်းသွားမလားဆိုတာမျိုးကိုလည်း လေ့လာပါတယ်
- လက်ရှိမှာ စက်ရုံက တွင်း (၆) တွင်းကို အလှည့်ကျ ထုတ်ယူသုံးစွဲနေပြီး မြေအောက်ရေ ပြည်လည်း ဖြည့်တင်းနိုင်ဖို့အတွက် အစီအမံများကိုလည်း ဆောင်ရွက်ထားရှိပါတယ်
- ပတ်ဝန်းကျင်မှာရှိတဲ့ သူတွေအနေနဲ့ ဒီစက်ရုံကြောင့် ရေရှားပါးမှု ကြုံတွေ့ရမလားဆိုတဲ့ စိုးရိမ်းပူပန်မှုတွေကိုလည်း တွေ့ရပါတယ်
- လက်ရှိအနေအထားရဆိုရင် စက်ရုံက ထုတ်ယူနေတဲ့ မြေအောက်ရေပမာဏနဲ့ ပြန်လည်ဖြည့်တင်းနိုင်မှု ပမာဏအရဆိုရင် စက်ရုံ က ထုတ်ယူသုံးစွဲနေတာက ပြန်ဖြည့်နိုင်တဲ့ ပမာဏရဲ့ သုံးချိုး ၁ ချိုး လောက်ပဲရှိနေသေးတာကို တွေ့ရပါတယ်
- စက်ရုံရဲဘေးမှာ ကွက်လပ်တွေအများကြီးရှိပြီး မြေအောက်ရေကို အလွယ်တကူပြန်လည်ဖြည့်တင်းနိုင်ပြီး၊ စက်ရုံးဘေးက ဘားလားချောင်းလည်းရှိနေပါတယ်။ စက်ရုံက ရေတွင်းတွေကို ပြန်လည်ဖြည့်တင်းနိုင်ဖို့ ဥပမာ အပင်စိုက်တာတို့ သူတို့ ခေါင်မိုးပေါ်က ကျတဲ့ ရေတွေကိုလည်း စနစ်တကျ မြေအောက်ထဲကို ပြန်လည်ရောက်ရှိသွားဖို့ ဆောင်ရွက်ထားပါတယ်
- ဒီစက်ရုံရောက်လာလို့ ရေအတွက်စိုးရိမ်ပူပန်ဖို့မရှိဖို့နဲ့ ထိခိုက်မှု လျော့ပါမှု အစီအမံ တွေလည်း ထည့်သွင်းဆောင်ရွက်သွားမှာဖြစ်ပါတယ်

ဦးသိန်းစိုး (လူမှုစီးပွားပညာရှင်)

- ၂၀၁၈ ခုနှစ်ကနေ ၂၀၂၃ မတ်လအထိ လေ့လာစမ်းစစ်ခဲ့ပါတယ် ၊ ဒီ (၅) နှစ်အတွင်းမှာ ကျွန်တော်တို့ လေ့လာခဲ့တဲ့ ရွာ (၄) ရွာမှာရှိတဲ့ လူတွေရဲ့ အလုပ်အကိုင် အခြေအနေတွေပြောင်းလဲလာတာကိုတွေ့ရပါတယ်။ စိုက်ပျိုးရေးကို အဓိကလုပ်ကိုင်နေတဲ့ နေရာကနေပြီတော့ စက်ရုံအလုပ်ရုံသမားတွေအဖြစ်ပြောင်းလဲလုပ်ကိုင်လာကြပါတယ်။ ပြီးတော့ တနိုင်တပိုင် ဆိုင်ကယ်ကယ်ရီဆွဲတာတွေ ဆောက်လုပ်ရေးလုပ်သားတွေအနေနဲ့ များလာတာတွေ့ရပါတယ်။ ရေတလပေါင်မှာဆိုရင် နဂိုထက်စာရင် စက်ရုံအလုပ်ဘက်ကို ကူးပြောင်းလာတဲ့ အလုပ်အကိုင်ပြောင်းလဲမှုက (၁၅%) တိုးတက်လာပြီးတော့ အခြားအလုပ်တွေကို လုပ်တဲ့သူတွေက (၃၅%) တိုးလာတာတွေ့ရပါတယ်
- စိုက်ပျိုးရေးမှာ လျော့ကျသွားတဲ့ (၄၂%) ထက် တခြားအလုပ်အကိုင် လုပ်ကိုင်လာသူတွေက ပိုတောင်များလာတဲ့ အတွက် ၊ စက်ရုံလုပ်ငန်းတွေ ဖွံ့ဖြိုးလာတာနဲ့ အမျှအလုပ်အကိုင်ပုံစံတွေပြောင်းလဲလာတဲ့ အတွက် စိုက်ပျိုးရေးလုပ်ငန်းမှာလျော့နည်းသွားတဲ့အတွက် အစားထိုးအသက်မွေးလုပ်ငန်းတွေတိုးတက်လာတယ်လို့မြင်ပါတယ်



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- ပထမအကြိမ်တွေ့ဆုံမှုမှာတုန်းက ဒေသခံတွေက သူတို့ရဲ့စိုးရိမ်ပူပန်မှုတွေကိုပြောခဲ့ပါတယ်။ ဒါပေမဲ့ လည်ပတ်ကာလာရောက်လာတဲ့ အခါမှာ တချို့စိုးရိမ်မှုတွေဟာမရှိတော့ပဲနဲ့ လည်ပတ်တဲ့ ကာလအတွင်းကျန်တဲ့ စိုးရိမ်ပူပန်မှုအနေနဲ့ စက်ရုံနဲ့ နီးကပ်တဲ့ ကုန်းတလပေါင်းဘက်မှာ အနံ့အသက်အနည်းငယ်ရရှိခြင်းနဲ့ ၊ ရေတပေါင်းဘက်မှာ ဆိုရင် စက်ရုံက စွန့်ပစ်ရေကြောင့် ရေလမ်းကြောင်းအောက်ဘက်မှာတည်ရှိနေတဲ့ ရွာအတွက် ဘာတွေများထိခိုက်လာနိုင်သလဲ ဆိုတဲ့ အချက်(၂) ဖြစ်ပါတယ်

- နှစ်အလိုက် နွေမိုးဆောင် ရာသီဥတုအလိုက်ဘားလာချောင်းထဲမှာ ရေနဲ့ ဗေဒါတွေကပြောင်းလဲနေပါတယ်

- ၂၀၂၃ ဖေဖော်ဝါရီလမှာ ချောင်းအတွင်းမှာ ဗေဒါတွေရှိခဲ့ပြီး အခု ၂၀၂၃ ဩဂုတ်လမှာဆိုရင် ချောင်းအတွင်းမှာ ဗေဒါတွေမှရှိတော့တာ တွေ့ရမှာပါ

- စွန့်ပစ်ရည်ကြောင့် အနံ့ဆိုးတွေရတာရှိမယ်၊ အာဟာကညစ်ညမ်းမှုဆိုတာက စက်ရုံက သန့်စင်ပြီးထွက်လာတဲ့ ရေတွေက မုယောစပါးကနေထွက်လာတာပါ။ အဲ့ မုယောစပါးဆိုတာက အာဟာရအရမ်းကြွယ်ဝတဲ့အတွက် ကျန်ရှိနေတဲ့ အာဟာရတွေက လူတွေအတွက်ဘာမှ မဖြစ်ပေမဲ့ ချောင်းထဲမှာရှိနေတဲ့ ဗေဒါတွေအတွက် အာဟာရဖြစ်စေပြီး သဘာဝအတိုင်းထက်ပိုမိုကြီးထွားလာနိုင်မလာဆိုတာရှိပါတယ်။ အဲ့ဒါကြောင့် ချောင်းထဲမှာရှိတဲ့ ဗေဒါတွေက ဟိုတုန်းကထက် ပိုပြီး မြန်ဆန်တဲ့ နှုန်းထက် များ ကြီးထွားလာမလာဆိုတာ ယူဆစရာတခုရှိပါတယ်

- ဒီရေကြောင့် ယားနာတွေဖြစ်တယ်တဲ့၊ အရင်တုန်းက ဆိုရင်လည်း ယားနားတွေဖြစ်ပေမဲ့ ဆပ်ပြာနဲ့ ရေပြန်ချိုးလိုက်ရင် ပြောက်သွားပေမဲ့ အခုကြတော့ ပိုပြီးပြင်းထန်လာပြီး ဆေးထိုးဆေးသောက်မှာပြောက်တယ်ဆိုတော့ ချောင်းထဲကိုမဆင်းချင်ကြတော့ဘူး၊ ကန်းစွန့်နဲ့ ရေထိကရုံးစိုက်ပျိုးရေးတွေထိခိုက်သွားတယ်

- အရင်တုန်းက ဗေဒါတွေကို ရှင်းနိုင်ပေမဲ့ အခုကြတော့ မရှင်းနိုင်တော့၊ ဗေဒါတွေများလာလို့ ချောင်းရေထဲမှာ အောက်ဆီဂျင်နည်းလာပြီး အရင်လိုငါးမရရှိတာမျိုးတွေလည်းရှိလာနိုင်တယ်

- ဗေဒါတွေကို မှီသမားတွေက မြေဩဇာအနေနဲ့ ပြန်သုံးနေတာလည်းရှိပေမဲ့ ချောင်းထဲမှာ ဗေဒါတွေအရမ်းများလာလို့ ချောင်းထဲမှာဗေဒါတွေများနေပါတယ်

- အဲ့ကိစ္စတွေက ဘီယာချမ်းနဲ့ကတော့ အထိုက်အလျောက်ပတ်သက်ပါတယ်။ သူ့တစ်ယောက်တည်း ကြောင့်ဖြစ်တာတော့ မဟုတ်ပါဘူး၊ ချောင်းတလျောက်မှာ တခြားစက်ရုံတွေရှိနေတာကို ဒေသခံတွေသိပါတယ်။ ချောင်းရဲ့ ရေစီးရေလာအခြေအနေက ဘာတွေပြောင်းလဲသွားသလဲ ဆိုတာ ဒေသခံတွေအားလုံးသိပါတယ်။ ဘီယာချမ်းနဲ့ ဆိုင်တော့ ဆိုင်ပါတယ် တိုက်ရိုက်တော့ မပတ်သက်ပါဘူး၊ သူက အများထဲက တဦးပါ။

- ဒေသခံတွေက ချောင်းထဲက ဗေဒါတွေကို ရှင်းဖို့လုပ်တဲ့ အခါမျိုးမှာ ဘီယာချမ်းဘက်ကနေပြီးတော့ တက်နိုင်သလောက်ပါဝင်ကူညီပေးဖို့ တိုက်တွန်းလိုပါတယ်။ မျှဝေပြီး တာဝန်ယူပေးဖို့ပါအကြံပေးချင်ပါတယ်

- ချောင်းအတွင်းမှာ စိုက်ပျိုးရေး မွေးမြူရေးတွေမလုပ်နိုင်ကြတော့တဲ့အတွက် ဝင်ငွေတွေကို ထိခိုက်လာတာမျိုးတွေလည်းရှိပါတယ်။ ထိခိုက်တဲ့ မိသားစုတွေက လူတွေကို စက်ရုံက လုပ်ငန်းလိုအပ်ချက်အရ လူလိုအပ်လာရင် ဦးစားပေးအလုပ်ခန့်ထားပေးဖို့ ဆောင်ရွက်ပေးစေချင်ပါတယ်။

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လုပ်ချင်တဲ့ စိတ်ရှိဖို့လည်း လိုပါတယ်။ စက်ရုံအလုပ်က စည်းကမ်းတင်းကြပ်တဲ့ လုပ်ချင်တဲ့ စိတ်ရှိဖို့လည်းလိုပါတယ်။ လိုအပ်တဲ့ အရည်အချင်းပြည့်မီဖို့လည်း လိုပါတယ်။

- လူမှုစီးပွားသိတက်မှုမှာ တကမ္ဘာလုံးမှာ ကျင့်သုံးနေတာကတော့ လူတွေ၊ ကမ္ဘာကြီးရယ်၊ ကုမ္ပဏီရဲ့အကျိုးအမြတ်အတွက်ရယ်။ လုပ်ချင်တဲ့ ဆန္ဒလေးရယ်ဆိုတဲ့ အချက် (၄) ချက်ကိုကိုင်ညီမှုအပေါ်မူတည်ပြီး ဆောင်ရွက်ပေးစေချင်ပါတယ်

- အနံ့ဆိုးကိုခံစားရတာက ဘုန်းကြီးကျောင်းရယ် စာသင်ကျောင်းတခုရယ်ပဲဆိုတော့ ထိခိုက်နိုင်မှုက အနည်းအကျဉ်းပဲရှိပါတယ်။ အာဟာရ ညစ်ညမ်းမှုကြောင့်ဗေဒါတွေရှိနေတယ်ဆိုတာလည်း တချိန်လုံးရှိနေတာမဟုတ်ဘဲနဲ့ ကာလတခုရောက်ရင် ဖြေလျော့သွားပါတယ်။ သက်ရောက်နိုင်ခြေများပေမဲ့လည်း ထိခိုက်နိုင်ခြေနည်းပါတယ်

- ရခိုင်မှာ ဖြစ်သွားတဲ့ မုန်တိုင်းက သက်ရောက်နိုင်မှုများပေမဲ့ ဒီရွာတွေအတွက်ဆိုရင်တော့ ထိခိုက်နိုင်ခြေမရှိပါဘူး။ စက်ရုံက အနံ့ဆိုးတွေထွက်တဲ့ ဆိုပေမဲ့ ဝေးတဲ့ သူတွေအတွက် ထိခိုက်နိုင်မှုက မရှိပါဘူး။ ဖြေလျော့နိုင်ဖို့ အခြားအစားထိုးအစီအစဉ်တွေနဲ့ဆောင်ရွက်သွားမယ်ဆိုရင် စက်ရုံ၊ ဒေသခံ၊ နိုင်ငံတော် အားလုံးအတွက် အဆင်ပြေသွားမှာပါ

- အနံ့ဆိုးတွေ လူနေဘက်တွေဆီကို အလာနည်းအောင်လို့ ဒေသမျိုးသစ်ပင်တွေကို စိုက်ပျိုးပေးနိုင်ပါတယ်။ ချောင်းရေက အောက်ဘက်မှာပိတ်ထားတဲ့ အတွက်လည်း အနံ့ဆိုးတွေထွက်နိုင်ပါတယ်။ အနောက်တောင်မုန်သုံလေက မြန်မာနိုင်ငံမှာ အချိန်အများဆုံးတိုက်ပါတယ်။ အဲ့လေကြောင့်အနံ့တွေပါလာတာလည်း ဖြစ်ပါတယ်။ ချောင်းလေးပတ်ဝန်းကျင်မှာနေတဲ့ သူတွေကလည်း ချောင်းကို ထိန်းသိမ်းတဲ့ လုပ်ငန်းတွေမှာ ပူးပေါင်းပါဝင်ပေးဖို့လိုပါတယ်။ လိုချင်တာတွေထက် အမှန်တကယ်လိုအပ်တာတွေကို ပူးပေါင်းပါဝင်ဆောင်ရွက်ပေးဖို့တိုက်တွန်းလိုပါတယ်

ဦးအောင်ချမ်းသာ (တာဝန်ခံအင်ဂျင်နီယာ၊ Emerald Beer)

- ကျွန်တော်က စက်ရုံစတင်ချိန်ကတည်းက စက်ရုံမှာ ဝန်ထမ်းတဦးအနေနဲ့ရှိခဲ့တာပါ

- အခုခေါ်တဲ့ အစည်းအဝေးကတော့ တတိယအကြိမ်မြောက်အစည်းအဝေးပါ

- ကျွန်တော်တို့နိုင်ငံမှာ စီမံကိန်းတွေလုပ်ရင် ဥပဒေအရ ပြဋ္ဌာန်းထားတာကတော့ စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်အပေါ်မှာ ကောင်းကျိုးဆိုးကျိုး ဘာတွေရှိမလဲ၊ လူမှုစီးပွားအခြေအနေဘာတွေပြောင်းသွားမလဲ ဘာတွေထိခိုက်နိုင်မလဲ ၊ ဂေဟစနစ်ကို ဘယ်လိုပျက်စီးနိုင်မလဲဆိုတာတွေကိုလေ့လာဖို့ တတိယအဖွဲ့အစည်းတွေကို ငှားရမ်းပြီးတော့ သူတို့ရဲ့ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ချက်ကို ဘယ်လိုလုပ်တယ်ဆိုတာရှင်းပြခဲ့တာပါ။

- ပထမအကြိမ်နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာကို ၂၀၂၂ ခုနှစ် နိုဝင်ဘာလမှာ ပြန်ကျလာပြီး ၂၀၂၃ ခုနှစ် နှစ်ဆန်းပိုင်းမှ ရရှိခဲ့ပါတယ်။ အတည်ပြုတဲ့ အကြောင်းကြားစာရပါတယ်။ အဲ့ဒီမှာ သဘောထားမှတ်ချက် (၁၈) ခုနဲ့ ပြန်ကျလာတာပါ။

- ပထမအကြိမ်အစည်းအဝေးက စီမံကိန်းကဘာတွေရှိတယ် ဘယ်လိုလုပ်မယ်ဆိုတာကို ရှိတဲ့ ရပ်မိရပ်ဖတွေ၊ ဒေသခံတွေကို ချပြခဲ့ပါတယ်



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- ဒုတိယအကြိမ်အစည်းအဝေးမှာကြတော့ ပထမအကြိမ်တုန်းက ဒေသခံတွေရဲ့ သဘောထားအမြင်တွေကို ဘာတွေလုပ်ပြီးသွားပြီလည်း ဘယ်လောက်ထိလုပ်ပြီးသွားပြီလည်းဆိုတာကို ချပြခဲ့ပါတယ်။ ၂၀၂၃ ဖေဖော်ဝါရီလမှာ ပြုလုပ်ခဲ့ပါတယ်
- အခု တတိယအကြိမ်အစည်းအဝေးမှာ ဒုတိယအကြိမ်တုန်းက ပြောထားတွေကို ဘာတွေလုပ်ပြီးပြီလည်းဆိုတာကို ဆက်လက်တင်ပြသွားမှာဖြစ်ပါတယ်
- ဒုတိယအကြိမ်တုန်းက စက်ရုံကနေပြီးတော့ ပတ်ဝန်းကျင်ထိခိုက်မှုမရှိအောင်၊ လျော့ပါးအောင် ဘာတွေလုပ်ခဲ့ပြီးသလဲဆိုတာကို ရှင်းပြခဲ့ပြီးပါပြီ။ သဘောထားမှတ်ချက်ထဲမှာပါတဲ့ အခြားဆောင်ရွက်နိုင်သော နည်းလမ်းနဲ့ ဆောင်ရွက်ရန်ဆိုတဲ့ အချက်တချက်ကိုဘယ်လိုဆောင်ရွက်ထားသလဲဆိုတာကိုရှင်းပြသွားမှာပါ
- စက်ရုံအနေနဲ့ နေရောင်ခြည်စွမ်းအင်သုံး ဓာတ်အားပေးစနစ်ကိုစက်ရုံစတင်တည်ကတည်းက ၂၀၁၉ ခုနှစ်ကတည်းက ရုံးခန်းခေါက်မိုးမှာ ဆိုလာပြားတွေကိုတပ်ဆင်ထားပြီး မီးထွန်းခဲ့ပါတယ်။ ၂၄.၇.၂၀၂၃ ခုနှစ်မှာ (၂) မီဂါဝပ်ရှိတဲ့ ဆိုလာတွေကို စက်ရုံမှာတပ်ဆင်အသုံးပြုနေပြီဖြစ်ပါတယ်။ ကျွန်တော်တို့က အဲ့လိုသုံးတဲ့အတွက် ပိုလျှံတဲ့ (၂) မီဂါဝပ်ကို ကျန်တဲ့ ပြည်သူတွေသုံးလို့ရပါတယ်။ ဆိုလာက နေလျှပ်စစ်ထုတ်လုပ်တာဖြစ်တဲ့ အတွက် တခြားစွမ်းအင်ထုတ်တဲ့ လောက်စာဆီတွေကုန်ကျစရိတ်တွေကိုလည်း လျော့ချနိုင်ပါတယ်။
- လူမှုစီးပွားတာဝန်သိစိတ်နဲ့ဆောင်ရွက်ခဲ့တဲ့ လုပ်ငန်းတွေကတော့
- ၂၀၁၈ ခုနှစ် ပထမဦးဆုံးစက်ရုံစတင်ချိန်မှာ ဆောင်ရွက်ခဲ့တဲ့ ဘားလားချောင်းကူးတံတားပါ။ ၂၀၁၉ ဖေဖော်ဝါရီလမှာ လှူခဲ့ပါတယ်။ ဘုန်းကြီးကျောင်းဘေးက လမ်းနဲ့ အမှတ်(၃) လမ်းပေါ်ထွက်တဲ့ လမ်းတွေကိုလည်း ကွန်ကရစ်ခင်းပေးခဲ့ပါတယ်
- ဒီကြားထဲမှာလည်း အများကြီးဆောင်ရွက်ထားတာရှိပါတယ် နောက်ဆုံးလုပ်ထားတဲ့ ပရောဂျက်လေးတွေကိုရှင်းပြပေးပါ မယ်။ စက်ရုံနဲ့ကပ်လျက် အမရဝတီဘုန်းကြီးကျောင်းက ဘုရားမီးလှူဖို့ဆရာတော်ကဆန္ဒပြုတဲ့ အတွက် ဆိုလာနဲ့ (၅) ကီလိုဝပ်ထွက်တဲ့ စနစ်ကို တပ်ဆင်လှူဒါန်းခဲ့ပါတယ်
- မိုခါးမုန်တိုင်းမှာလည်း လှူဒါန်းခဲ့ပါသေးတယ်။ နွယ်ခွေးရွာမှာနေထိုင်သူများ ကျန်းမာရေးစောင့်ရှောက်ဖို့အတွက် ဆေးခန်းဆောက်လုပ်ရာမှာ ကူညီဖို့ စာနဲ့ အကြောင်းကြားလာတဲ့ အတွက် ကျွန်တော်တို့တင်ပြပြီး ဆေးပေးခန်းလေး ဆောက်လုပ်ပေးနေပါတယ်။
- စောင့်ကြပ်ကြည့်ရှုစစ်ဆေးမှုခံယူရမယ်လို့ ပါပါတယ်။ ကျွန်တော်တို့က ၂၀၁၈ ခုနှစ်မှာ စက်ရုံစတင်ပြီး ၂၀၁၉ အောက်တိုဘာလမှ စတင်ဖွင့်လှစ်ခဲ့ပါတယ်။ စက်ရုံစတင်ဆောက်လုပ်စဉ်ကတည်းက မြန်မာနိုင်ငံရင်းနှီးမြုပ်နှံမှုကော်မတီရယ်။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာနက အရာရှိတွေ၊ အလုပ်သမား ဝန်ကြီးဌာန၊ ကျန်းမာရေးဝန်ကြီးဌာန ပူးပေါင်းစစ်ဆေးရေးအဖွဲ့ လူတွေက စက်ရုံမလည်ခင်ကတည်းက ကွင်းဆင်းစစ်ဆေးမှုကို ခံယူခဲ့ရပါတယ်။ အားလုံးအဆင်ပြေမှ စတင်လည်ပတ်ခဲ့ပါတယ်
- ရန်ကုန်တိုင်း မီးသတ်ဦးစီးဌာန၊
- မူးယစ်ဆေးဝါးတိုက်ဖျက်ရေးအဖွဲ့ ဗဟိုက စက်ရုံက ဓာတုပစ္စည်းတွေထားရှိမှုကိုစစ်ဆေးခဲ့ပါတယ်။



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- တိုင်ဒေသကြီး ရေနံနဲ့ ရေနံထွက်ကုန်ပစ္စည်းများ ထိန်းသိမ်းကြီးကြပ်တဲ့ ကော်မတီကနေပြီးတော့ စက်ရုံမှာရှိတဲ့ လောင်စာဆီထားသိုမှုတွေကိုလာရောက်စစ်ဆေးခဲ့ပါတယ်
- ခရိုင်ထွေအုပ်ကလည်း လာစစ်ပါတယ်
- လှည်းကူးမြို့နယ်စည်ပင်သာယာအဖွဲ့ကလည်း လာစစ်ပါတယ်
- တတိယအဖွဲ့အစည်းကလည်း စက်ရုံစတင်ကတည်းက အစီရင်ခံစာထဲမှာ ပါတဲ့ အတိုင်ဆောင်ရွက်ထားရှိမှုရှိမရှိကိုလာစစ်ပါတယ်
- သယံဇာတနဲ့ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနရဲ့ ညွှန်ကြားချက်နဲ့ စက်ရုံကထွက်တဲ့ စွန့်ပစ်ရေကို အွန်လိုင်းစနစ်နဲ့ စောင့်ကြည့်တဲ့ စနစ်ကို ၂၀၂၁ ခုနှစ်ကတည်းက စတင်တပ်ဆင်ခဲ့ပါတယ်
- ၂၂.၇.၂၃ မှာ လှည်းကူးထွေအုပ်နဲ့ ပတ်ဝန်းကျင်ထိန်းသိမ်းမှု ဌာနတို့က လာစစ်ဆေးခဲ့ပါတယ်
- ၆ လအကြိမ်လည်း ပြင်ပညာရှင်တွေကိုခေါ်ပြီး စွန့်ပစ်ရေရဲ့ အရည်အသွေးကို တိုင်းတာတွေကိုလည်း လုပ်နေပါတယ်
- ပထမအကြိမ်အစည်းအဝေးတက်ရောက်ခဲ့သူ (၃) ဦး ခန့်ရှိ
- ဒုတိယအကြိမ်အစည်းအဝေးတက်ရောက်ခဲ့သူ (၁၀) ဦးခန့်ရှိ
- ၂၂.၈.၂၃ ရက်နေ့က စက်ရုံကိုလေ့လာရေးခေါ်တဲ့အထဲပါတဲ့သူ (၃) ဦးခန့်ရှိ၊ နောက်ပိုင်းမှာ စက်ရုံလေ့လာရေးတွေကိုစဉ်ပေးသွားဖို့ရှိပါတယ်
- စက်ရုံက နိုင်ငံတကာ အဆင့်မှီစက်ရုံဖြစ်ပြီးတော့ အလုပ်အကိုင်အခွင့်အလမ်းအနေနဲ့ကတော့ လုပ်ငန်းလိုအပ်ချက်နဲ့ အရည်အချင်းနဲ့ ကိုက်ညီသူ မည်သူ့ကိုမဆိုခွဲခြားထားချင်းမရှိဘဲ လျှောက်ထားနိုင်ပါတယ်။ တူညီတဲ့အခွင့်အရေးပေးထားပါတယ်။ ဒေသခံတွေကိုဦးစားပေးထားပါတယ်
- မှော်ဘီနည်းပညာတက္ကသိုလ်က ကျောင်းသား (၂) ယောက်ကိုလည်း ကျောင်းပြီးလို့ လက်တွေ့သင်တန်းဆင်းရင်းနဲ့ စက်ရုံက လုပ်ငန်းလိုအပ်ချက်နဲ့ ကိုက်ညီလို့ အလုပ်ခန့်ထားခဲ့ပါတယ်
- တတိယအဖွဲ့အစည်းတွေက ပညာရှင်တွေရဲ့အမြင်တွေကို ဖြေကြားပေးချင်ပါတယ် ၊ ဆရာဦးကျော်စိုးဝင်းကပြောသွားပါတယ် စက်ရုံက ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုရှိနိုင်တယ်၊ ဆရာဦးစိုင်းစိုးသန့်ကလည်း စက်ရုံရဲ့ ရေအသုံးချမှုကို စောင့်ကြည့်ရမယ်၊ ဆရာဦးသိန်းစိုးကလည်း ဗေဒအကြောင်းပြောသွားပါတယ်
- တက်ရောက်လာသူများကို မေးမြန်းချင်းပါတယ် ဒီချောင်းလေးထဲမှာ နွေရာသီဆိုရင်ဗေဒတွေရောက်လာတယ်နော် ၊ ဟုတ်ပါသလား၊ အဲ့အရင် ရေထိကရုံးစိုက်တဲ့သူတွေရောက်လာတယ်နော် ၊ ဟုတ်ပါသလား၊
- ဘားလားချောင်းမှာ ဟိုအရင်ကတည်းကချောင်းအောက်ပိုင်းမှာ ဆင်ဖုံရေထိန်းတခါးရှိခဲ့ပါတယ်၊ ဒီနှစ်ကြတော့ ချောင်းအထက်ပိုင်းမှာ အောင်တံခွန်ရေပေးဝေရေးစီမံကိန်းဆိုပြီး လုပ်လာပါတယ်၊ ကွန်ဂရစ်ရေတံခါးလုပ်လိုက်ပါတယ်၊ ဗေဒတွေက အရင်ကတည်းက ရှိခဲ့ပေမဲ့ ဒီနှစ်မှာကြတော့ အပေါ်ကော အောက်ကော ရေပိတ်လိုက်သလိုဖြစ်သွားပြီး ရေသေသွားတဲ့ အတွက်ဗေဒကအရမ်းပွားလာပါတယ်။



Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

အခုရေတံခါးဖွင့်လိုက်တော့ ဗေဒတွေမရှိတော့ပါဘူး၊ မိုးကုန်သွားလို့ ရေတံခါးပြန်ပိတ်ရင် ပြန်ဖြစ်လာနိုင်ပါတယ်၊ ဒါက အရရင်ကတည်းကရှိနေခဲ့တာက ကျွန်တော်တို့ စက်ရုံကြောင်းတော့ မဟုတ်ပါဘူးလို့ အများရှေ့မှာ ရှင်းလင်းတင်ပြပေးတာပါ

- ဘားလားချောင်းနဲ့ပတ်သက်ပြီး စက်ရုံက ပူပေါင်းပါဝင်မှုအပိုင်းမှာတော့ ဒေသခံတွေသိပါတယ်၊ နွေရာသီ နွေစပါးမစိုက်ခင် ဆည်မြောင်းကနေ မြောင်းလာဆည်ရင် စက်ရုံက ပံ့ပိုးခဲ့တာရှိပါတယ်၊ စက်ရုံဘေးခြံစည်းရိုးနဲ့ ကပ်လျက်ချောင်းထဲကို မြေပြိုကျအောင်လို့ မြေထိန်းနံရံဆောက်ထားပါတယ်
- အရင်တုန်းက စိုက်ပျိုးရေးလုပ်တဲ့သူတွေကို စက်ရုံမှာဦးစားပေးခန့်ထားဖို့ဆိုတာကို ကျွန်တော်တို့အနေနဲ့ လူတိုင်းစက်ရုံမှာ အလုပ်လာလျှောက်နိုင်ပါတယ်

- နိဂုံးချုပ်အနေနဲ့ ပြောကြားလိုတာကတော့ ဒီကုမ္ပဏီမှာ ဝန်ထမ်းဖြစ်ရတာဂုဏ်ယူပါတယ်၊ ဘာလိုလည်းဆိုတော့ ဒီကုမ္ပဏီက စတင်ကတည်းက နိုင်ငံတော်ကချမှတ်ထားတဲ့ တည်ဆဲဥပဒေ၊ နည်းဥပဒေ လုပ်ထုံးလုပ်နည်း စည်းမျဉ်းစည်းကမ်းအတိုင်း အပြည့်အဝလိုက်နာဆောင်ရွက်နေတဲ့ လုပ်ငန်းဖြစ်ပါတယ်၊ လုပ်ငန်းအဆင့်ဆင့်ကိုလည်း အကောင်းဆုံးရရှိနိုင်တဲ့ နည်းလမ်းတွေ၊ နည်းပညာတွေနဲ့ ဆောင်ရွက်နေပါတယ် ဒေသခံတွေက အစည်းအဝေးတွေမှာမေး မြန်းနိုင်ပါတယ်၊ အလွယ်ဆုံးကတော့ အုပ်ချုပ်ရေးမှူးတွေကတော့ဆက်သွယ်တာပါ၊ စက်ရုံက ရေရှည်ဆောင်ရွက်မဲ့လုပ်ငန်း ဖြစ်လို့ တာဝန်ယူမှု တာဝန်ခံမှု အပြည့်နဲ့ ဆက်လက်ဆောင်ရွက်သွားမဲ့ လုပ်ငန်းဖြစ်တယ်ဆိုတာကိုပြောကြားရင်း နိဂုံးချုပ်ပါတယ်

Questions and Answers

ဦးကျော်စိုး (ခရိုင်ဦးစီးမှူး၊ ရန်ကုန်မြောက်ပိုင်းခရိုင်၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန)

- ဒုတိယအကြိမ်အစည်းအဝေးကိုလည်း ကျွန်တော်တက်ရောက်ခဲ့ပါတယ်၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေအရ ဘီယာစက်ရုံနဲ့ ပတ်သက်လို့က ပတ်ဝန်းကျင်ကို ထိခိုက်မှုများတဲ့ စက်ရုံအမျိုးအစားဖြစ်တဲ့အကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းကိုဆောင်ရွက်ရပါတယ်၊ မဆောင်ရွက်ခင်မှာ သတ်ရောက်နိုင်မှု နယ်ပယ်အတိုင်းအတာကိုသတ်မှတ်ပြီး ဆန်းစစ်ပါတယ်၊ အဲ့သတ်မှတ်ချက်ကို အတည်းပြုဖို့အတွက် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနကို (၂) ကြိမ်လောက်တင်ရပါတယ်၊ ခွင့်ပြုချင်ရပြီဆိုမှ ဆက်လက်ပြီး ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာကိုရေးရပါတယ်၊ တတိယအဖွဲ့အစည်းတွေက ဆန်းစစ်လေ့လာပြီးတော့ ဆောင်ရွက်သွားရပါတယ်၊ စက်ရုံကြောင့် နိုင်ငံတော် နဲ့ ဒေသခံတွေလည်း အကျိုးရှိမယ် နောက်ပြီး စက်ရုံက CSR လုပ်ငန်းတွေမှာ အများကြီး အသုံးပြုထားတဲ့အတွက် အများကြီးအကျိုးရှိပါတယ်၊ အကြံဉာဏ်ကောင်းလေးတွေပေးပေးကြပါ၊ လက်တလော ဖြေရှင်းနိုင်တာလည်းရှိမယ်၊ ရေရှည်ဆောင်ရွက်ရမှာတွေလည်းရှိပါတယ်၊ နောက်ပိုင်းကြာရင်တော့ အနီးစပ်ဆုံး ဒေသခံအုပ်ချုပ်ရေးအဖွဲ့တွေနဲ့ တိုင်ပင်ပြီးဆောင်ရွက်ရမှာဖြစ်ပါတယ်၊ စက်ရုံကစွန့်ပစ်ရေကိုလည်း နိုင်ငံတော်က ပြဌာန်းထားတဲ့ လမ်းညွှန်ချက်တွေကို မကျော်လွန်ဖို့အတွက် စောင့်ကြည့်ဖို့ လိုအပ်ပါတယ်၊ အရက်၊ဘီယာစက်ရုံအားလုံးရဲ့ စွန့်ပစ်ရည်တွေကို စောင့်ကြပ်ဖို့ညွှန်ကြားထားတာရှိပါတယ် ကျေးဇူးတင်ပါတယ်

Environmental Impact Assessment Report.

Manufacturing and Distribution of Beer for Emerald Brewery Myanmar Limited.

လှည်းကူးစည်ပင် - (ဒီစက်ရုံအနေနဲ့ စည်းမျဉ်းစည်းကမ်းတွေကို ဖောက်ဖျက်တာမျိုးမရှိပါဘူး၊ အချက်အလက်တွေကို အတိအကျလိုက်နာဆောင်ရွက်ပါတယ်)

နွယ်ခွေးကျေးရွာသားတဦး - (အရမ်းကောင်းပါတယ်၊ အဆင်ပြေပါတယ်)

တံခွန်တိုင်ကျေးရွာသူ (အရမ်းကောင်းပါတယ်၊ အဆင်ပြေပါတယ်)

အစည်းအဝေး (၂) ကြိမ်တက်ရောက်ဖူးသူတစ်ဦး (အားလုံးကောင်းပါတယ်၊ ဘာမှ ပြောစရာမရှိပါဘူးခင်ဗျ)

(ပွင့်ပွင့်လင်းလင်းတွေ့ဆုံဆွေးနွေးလို့အထူးဝမ်းမြောက်မိပါတယ်၊ ဒါက ကောင်းမြတ်တဲ့ စိတ်သဘောထားလေးပါ။ ရေရှည်ကိုလည်း ဆိုးကျိုးမဖြစ်ဖို့ ပညာရှင်တွေနဲ့ ပူးပေါင်းဆောင်ရွက်ပေးပြီး ဆိုးကျိုးတွေနည်းသထက်နည်းအောင် ဆောင်ရွက်ပါလို့ပဲအကြံပြုပါတယ်)



APPENDIX (14) Attendance List and Suggestion Letter of 2nd Public Meeting





Green Myanmar

Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City, Yangon, Myanmar

Tel: 09 897 978 296, 09-5081451 E-mail: gmescompany@gmail.com, info@gmes-mm.com

"Emerald Brewery Myanmar Limited" ၏ ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနယ် (၄၉၈) ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၁-၂) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့်

"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

တွေ့ဆုံဆွေးနွေးပွဲတက်ရောက်သူများစာရင်း (ဌာနဆိုင်ရာ/ အဖွဲ့အစည်း)

နေ့စွဲ - ၂၀၂၃ ခုနှစ်၊ ဇူလိုင်လ (၂၅) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁။	ဦးကျော်စိုးစင်	MD	GMEC Co., Ltd.	
၂။	ဦးမျိုးဖြူ	Director	"	
၃။	ဦးစိုင်းစိုးသန့်	Consultant	"	
၄။	ဦးဩဇာမာန်	RF	"	
၅။	ကိုဇော်စင်ထွန်း		"	
၆။	ကိုသိန်းဝင်း		"	
၇။	ဦးသိန်းစို	Consultant	"	
၈။	ဦးမြတ်စင်	Project Assistance	"	
၉။	ကိုပြည့်စိုးသိန်း		"	
၁၀။	မအူညာသဲမဂ္ဂဇီ		"	
၁၁။	ဦးသက်နိုင်ထွန်း		"	
၁၂။	ဒေါ်မြတ်စိန်စန်း	Consultant	"	
၁၃။	ဒေါ်ခိုင်စွန်းစွန်း	"	"	
၁၄။	ဦးစောဝတ္ထုစွန်း	Project Assistance	"	
၁၅။	ဒေါ်စွန်းထွန်းထွန်း	Consultant	"	
၁၆။	Dr. ဦးမြတ်စိန်	Professor VV	"	
၁၇။	မာန်အောင်အောင်	Freelance Resum	"	
၁၈။				
၁၉။				
၂၀။				



Green Myanmar

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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဒေါ်တင်စို	တံခွန်တိုင် - နားစိန်	
၂	ဒေါ်ဝင်းအေး	တံခွန်တိုင် - နားစိန်	
၃	ဒေါ်စန္ဒာလွင်		
၄	ဒေါ်အေးအေး		
၅	ဒေါ်အေးအေး		
၆	ဒေါ်အေးအေး		
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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ကျွန်း	တံခွန်တိုင်	ကျွန်း
၂			
၃	ဒေါ်အေးဖြူ		
၄	ဒေါ်မင်းမင်း		
၅			
၆	ဒေါ်အေးအေး		
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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦးတင်စိန်	၅၅၁၁	[Signature]
၂	ဒေါ်အေး	တံခွန်တိုင်	[Signature]
၃	ဦးအောင်	တံခွန်တိုင်	[Signature]
၄	ဦးစန်းမာ	ရေတလပေါင်	[Signature]
၅	ဦးသန်းဝင်း	"	[Signature]
၆	ဦးစန်းမာ	"	[Signature]
၇	အောင်ကျော်စွာ	"	[Signature]
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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦးစိုးလှိုင်	ရွာဘဏ်	
၂	ဒေါ်ခင်စုစု	။	
၃	ဦးမြင့်စော	။	
၄	မကျော့ယမင်းထွဋ်	ကုန်းတလပေါင်အရှေ့ တောင်ပိုင်း	
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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦး သေဇော်	ဗဟုသုတပြင်ပေးခြင်း	
၂	ဦး စာဇော်	ကျေးရွာအုပ်စု	
၃	မမေဇော်	ကုန်းတလပေါင်အရှေ့ကွင်း	May
၄	ဦး သိန်း	ကမာရွတ်စိုက်ရေးရေးရာဌာန	
၅	ဒေါ်မာမာ	အမည်မရှိ	Thyo
၆	ဒေါ်ခင်စာအောင်	အမည်မရှိ	
၇	ဦးစော	အမည်မရှိ	
၈	ဦးစော	အမည်မရှိ	
၉	ဒေါ်မာမာ	အမည်မရှိ	
၁၀	ဒေါ်မာမာ	အမည်မရှိ	
၁၁	ဒေါ်မာမာ	အမည်မရှိ	
၁၂	ဒေါ်မာမာ	ရေတလပေါင်ကျေးရွာ	၇၆
၁၃	ဒေါ်မာမာ	အမည်မရှိ	
၁၄	ဒေါ်မာမာ	အမည်မရှိ	
၁၅	ဒေါ်မာမာ	အမည်မရှိ	
၁၆	ဒေါ်မာမာ	အမည်မရှိ	
၁၇	ဒေါ်မာမာ	အမည်မရှိ	
၁၈	ဒေါ်မာမာ	အမည်မရှိ	

၁၉ ဦးစော



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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>“ဘိယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” အတွက် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ နှင့် ပတ်သက်၍ သို့မဟုတ် ချွင်းလှမ်းစစ်ဆေးမှုများ ပြုလုပ်ရာတွင် ကျွန်ုပ်တို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p> <p>“ဘိယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” အတွက် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ နှင့် ပတ်သက်၍ သို့မဟုတ် ချွင်းလှမ်းစစ်ဆေးမှုများ ပြုလုပ်ရာတွင် ကျွန်ုပ်တို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p>

လက်မှတ်

(Handwritten signature)

အမည်

စိန်စုစုစွန်း

ဆက်သွယ်ရန်အဖွဲ့ဝင်

၀၉၅၅၇၉၇၂၈၁



Green Myanmar

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"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

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စဉ်	ဆွေးနွေးအကြံပြုချက်
၁)	<p>ထူးခြားစွာ တလပေါင်ကျေးရွာ၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်ကျေးရွာ၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၀-၂) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့် "ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p>
၂)	<p>ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p>

လက်မှတ်

 ၀၉ ၇၇၄၄ ၇၆၇၀

အမည်

ဦး ဇော်ဝင်း

ဆက်သွယ်ရန်လိပ်စာ

ထူးခြားစွာ တလပေါင်ကျေးရွာ (၁)၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၀-၂) တွင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>မိကျွန်း မြို့နယ်၊ ရွာစာရေထက် စာရေ ဖွဲ့စည်းပုံ၊ အကျိုးအမြတ်၊ စွမ်းဆောင်ရည် စွမ်းအင်၊ ရေ၊ မြေ၊ လေ၊ အပူချိန်၊ အသံ၊ အနံ့၊ အခြားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p> <p>အကျိုးအမြတ်၊ စွမ်းဆောင်ရည် စွမ်းအင်၊ ရေ၊ မြေ၊ လေ၊ အပူချိန်၊ အသံ၊ အနံ့၊ အခြားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p> <p>အကျိုးအမြတ်၊ စွမ်းဆောင်ရည် စွမ်းအင်၊ ရေ၊ မြေ၊ လေ၊ အပူချိန်၊ အသံ၊ အနံ့၊ အခြားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p> <p>အကျိုးအမြတ်၊ စွမ်းဆောင်ရည် စွမ်းအင်၊ ရေ၊ မြေ၊ လေ၊ အပူချိန်၊ အသံ၊ အနံ့၊ အခြားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p> <p>အကျိုးအမြတ်၊ စွမ်းဆောင်ရည် စွမ်းအင်၊ ရေ၊ မြေ၊ လေ၊ အပူချိန်၊ အသံ၊ အနံ့၊ အခြားပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p>

လက်မှတ်

အမည်

Nyeunt Nyeunt Semi

ဆက်သွယ်ရန်လိပ်စာ

095116295 - ဆက်သွယ်ရန်



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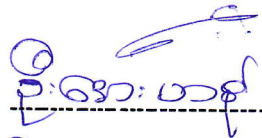
"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

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စဉ်	ဆွေးနွေးအကြံပြုချက်
၁။	ဓာတ်လမ်းပေါင်း ၆
၂။	ရေသုံး မျှအစာအိမ် မပြေ မျှ. ၅၇. ၆၃၆၆
၃။	ဆံကား - မရှိဘဲ ချွတ် အဆွတ် သွား၊ ဟာမူ အစာအိမ် မပြေ ၆၆၆၆
၄။	ကျွဲမြွဲ ရေ အဆွတ် လိုအပ်ချက် များ ရှိခြင်း -

လက်မှတ်



အမည်

ဦးဝင်း ရေဝင်း

ဆက်သွယ်ရန်လိပ်စာ



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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ရန်ကုန်တိုင်းဒေသကြီး၊ လှည်းကူးမြို့နယ်၊ တံခွန်တိုင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၀-၂) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့် "ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p>

လက်မှတ်


25.2.23

အမည်

ဦး ဖေစိစိ (ဥပဒေရေးရာပညာရှင်)

ဆက်သွယ်ရန်လိပ်စာ

09-401602076



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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ရေ၊ နေ၊ မြေ၊ လေ၊ စွမ်းအင် စသည့် သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုများကို စောင့်ကြည့်စစ်ဆေးရန်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုချက်များကို စီမံကိန်းတာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။</p>

အစီရင်ခံစာရေးဆရာ -
 ဦးကျော်စွာ
 လက်မှတ်

အမည်

ဆက်သွယ်ရန်ဖိတ်စာ



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>“ ဘီယာထုတ်လုပ်ခြင်း နှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း ” စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာနှင့်ပတ်သက်၍ ‘ဒုတိယ’ အကြိမ် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း အစီရင်ခံစာနှင့်ပတ်သက်၍ အစီရင်ခံစာများအတွက် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာအတွက် ဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့် waste water treatment များကိုလည်း ပျော်စကကျန်ပစ်စနစ်များနှင့် မှည့်ဖြားစနစ်များ system များကိုလည်းဆက်လက် ဆန်းစစ်ခြင်း ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း ပြုလုပ်ပါသည်။</p>

လက်မှတ်

အမည်

_____ ပည့်အောင်စိန်စိန်

ဆက်သွယ်ရန်လိပ်စာ



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တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၁	<p>အစိုးရဝန်ထမ်းများ၊ အလုပ်သမားများ၊ အကျွန်ုပ်တို့၏ ရေစိုက်စနစ်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို ကောင်းစွာ ဖော်ပြပါမည်။</p>

လက်မှတ်



အမည်

U Nay Htet Lin

ဆက်သွယ်ရန်လိပ်စာ

ရွှေဘို၊ အစိုးရဝန်ထမ်းများ၊ အလုပ်သမားများ၊ အကျွန်ုပ်တို့၏ ရေစိုက်စနစ်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို ကောင်းစွာ ဖော်ပြပါမည်။

၁၀၀၀



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ဤ စက်ရုံတွင်၊ နှင့် ပတ်ဝန်းကျင် ဖွာ ထိ ချိတ်ဖျါ၊ ထိ ချိတ်ဒဏ်ရာများ၊ ရရှိပါ။ Assident ဖြစ် ဖွာ၊ ဖျါ ဖျား၊ ဖြစ် ပေါ် ခဲ့ပါက လည်း၊ ဆျင်္ဂင် တို့ ပရဟိတ စေတနာ့ ဝန်ထမ်း၊ ဖျား၊ ဖက် ဖြလည်း၊ ၁၂ ဝင် ကူညီ ပေးပါမည်။</p>

လက်မှတ်

အမည်

ဦးစောင့်သူ

ဆက်သွယ်ရန်လိပ်စာ

မော်လာဒုံမြို့နယ်၊ ရွှေဘိုသာရွာ



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တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ကုန်းတလပေါင်ကျေးရွာအုပ်စု၊ ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနယ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၀-၂) တွင် အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့် "ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ</p>

လက်မှတ် _____ 

အမည် _____ ဖောင်ချိုစင်

ဆက်သွယ်ရန်လိပ်စာ _____ 



Green Myanmar Environmental Services Co., Ltd

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"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ

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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ကုန်စာလပေါင်တောင်ပိုင်း/မေတ္တာမွန်မြို့၊ Volunteer စတုဂံပေးအဖွဲ့နှင့် အကြံပြုရေး</p> <p>အဖွဲ့ဝင်တို့ကို ဝမ်းမြောက်စွာကော်ရောက်ခဲ့ပါကတင်၊ ကျွန်ုပ်တို့ လူမှုဝန်ထမ်းအဖွဲ့</p> <p>အဖွဲ့ဝင်တို့၏ အခြား စာတင်စာတင်စာကိုင်ခွင့်ပေးအဖွဲ့အစည်းများဖြင့်အကြံပြုခဲ့ပါက</p> <p>အကူအညီပေးနိုင်မည် ဖြစ်ပါကြောင်း၊ အကြံပြုချက်များကို စီမံကိန်းတာဝန်ရှိသူများနှင့်</p>

လက်မှတ်

Kyau

အမည်

မေတ္တာမွန်မြို့

ဆက်သွယ်ရန်လိပ်စာ

၀၉-၈၇၆၀

ကုန်စာလပေါင်တောင်ပိုင်း



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>ပေတ္တာလွှမ်းဖြူ (ကုန်စာလယ်စားကောင်မင်း) ဥက္ကဋ္ဌ ဦးခံဖြင့် ဆက်ပြောဆွဲ</p> <p>အလုံးစာကတ်ပြောကြားပါသည်။</p>

လက်မှတ် _____ 

အမည် _____ ဥက္ကဋ္ဌ ဦးခံဖြင့်

ဆက်သွယ်ရန်ဖိတ်စာ _____ ၀၉-၃၃၃၃၈၇၀၁၇
ကုန်စာလယ်စားကောင်မင်း
၀၉- ၃၃၃၃၈၇၀၁၇



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ် -----

အမည် -----

ဆက်သွယ်ရန်လိပ်စာ -----

APPENDIX (15) Attendance List and Suggestion Letter of 3rd Public Meeting





Green Myanmar

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တတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲတက်ရောက်သူများစာရင်း (ဌာနဆိုင်ရာ/ အဖွဲ့အစည်း)

(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

နေ့စွဲ - ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦးဗိုဇော်	consultant	GMEBS Co., Ltd	
၂	ဦးလှော်စွာစင်	ဗဟိုချုပ်ဒါရိုက်တာ	GMEBS Co., Ltd	
၃	ဦးခင်စင်	consultant	GMEBS Co., Ltd	
၄	ဦးခိုင်စိုးစိန်	consultant	GMEBS Co., Ltd	
၅	ဦးဝင်းစိုး	consultant	GMEBS	
၆	ဒုတိယအဖွဲ့	"	"	
၇				
၈				
၉				
၁၀				
၁၁				
၁၂				
၁၃				
၁၄				
၁၅				
၁၆				
၁၇				



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"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍ တတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း (ရပ်မိရပ်ဖ)

(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

ရက်စွဲ ။ ။ ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇)ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	မဝဇ္ဇာမောင်	တံခွန်တိုင်	မောင်
၂	ကျော်စက်မောင်	"	ကျော်စက်မောင်
၃	ကျော်စက်မောင်	"	ကျော်စက်မောင်
၄	ဒေါ်စန်းစွန်း	တံခွန်တိုင်	စွန်း
၅	ဒေါ်စန်းစွန်း	"	စွန်း
၆	ဦးဖြူစွန်း	တံခွန်တိုင်	ဖြူစွန်း
၇	ဦးဖြူစွန်း	တံခွန်တိုင်	ဖြူစွန်း
၈	ဒေါ်စန်းစွန်း	"	ဒေါ်စန်းစွန်း
၉	ဒေါ်စန်းစွန်း	"	ဒေါ်စန်းစွန်း
၁၀	မောင်မင်းကျော်စွန်း	ရွာသစ်	မောင်မင်းကျော်စွန်း
၁၁	ဒေါ်စန်းစွန်း	"	ဒေါ်စန်းစွန်း
၁၂	ဒေါ်စန်းစွန်း	"	ဒေါ်စန်းစွန်း
၁၃			
၁၄			
၁၅			
၁၆			
၁၇			
၁၈			



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(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

နေ့စွဲ - ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦးသန်းဇေယျ	ဂျီ.ကုန် ခွဲခြားရေး	ဟုပျံချင်စေ့၊ အဖွဲ့	
၂	ဦးဝင်းနိုင်	တက္ကသိုလ်	အဖွဲ့	
၃	ဦးကျော်ကျော်	စံချိန်စိန်	ဂျီ.ကုန်အဖွဲ့	
၄	ဦးအောင်မြင်	စံချိန်စိန်	"	
၅	အောင်မောင်			
၆	ဦးအောင်မောင်			
၇	ဦးအောင်မောင်	ဌာနဆိုင်ရာ	ဂျီ.ကုန်အဖွဲ့	
၈	ဦးသန်းဇေယျ	စာရေးလှ	ရွှေ၊ ရွှေအုပ္ပင် စာရေး	
၉	ဦးစိုးမိုးသူ	"	"	
၁၀	ဦးကျော်ကျော်			
၁၁	ဦးအောင်မောင်	"		
၁၂				
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၁၅				
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၁၇				



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(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

ရက်စွဲ ။ ။ ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇)ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	၆၄	အစာအုန်ဝါး	၆၄
၂	ဒေါ်သန္တာကလေး	တံခွန်တိုင်	၆၅
၃	ဦးဘောင်မြင့်	"	၆၆
၄	ကမ္ဘောဇ	တံခွန်တိုင်	၆၇
၅	ချစ်ဝေ	"	၆၈
၆	ဦးဝင်းလှိုင်	"	၆၉
၇	ဦးဘောင်	"	၇၀
၈	ဝိ	"	၇၁
၉	ဒေါ်ခင်မာမာ	"	၇၂
၁၀	အလှိုင်	"	၇၃
၁၁	ကျော်စွာ	"	၇၄
၁၂	အောင်စွာ	"	၇၅
၁၃	အောင်စွာ	"	၇၆
၁၄	ဒေါ်အောင်စွာ	"	၇၇
၁၅	ဒေါ်အောင်စွာ	"	၇၈
၁၆	အောင်စွာ	"	၇၉
၁၇	အောင်စွာ	"	၈၀
၁၈	ဒေါ်အောင်စွာ	"	၈၁



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(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

ရက်စွဲ ။ ။ ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇)ရက်

စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦးနိုင်လင်းဦး	တံခွန်တိုင်	
၂	ဒေါ်ဗျဗျဝေ	~	
၃	အောင်သက်ဦး	~	
၄	ဒေါ်ခင်နိုးစေ	~	
၅	ဒေါ်အေးစို	~	
၆	ဒေါ်မာမာစာ	~	
၇			
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တတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲတက်ရောက်သူများစာရင်း (ဌာနဆိုင်ရာ/ အဖွဲ့အစည်း)

(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

နေ့စွဲ - ၂၀၂၃ ခုနှစ်၊ ဩဂုတ်လ (၂၇) ရက်

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်းအမည်	လက်မှတ်
၁	ဦး တင် ဥဒ္ဓန္တ	ဈေးဈာန်ကော်မတီ	နွယ်ရွှေ - နေပြည်တော်	
၂	ဦးလင်းလင်းကောင်	ကုမ္ပဏီအဖွဲ့	"	
၃	ဦးအောင်စိန်	အထွေထွေရေးရာ	စီမံကိန်း (အင်အား) ကျေးဇူး	
၄	ဒေါ်အယ်လ်ဗွေ	ဒု-ဦးစီး ဖူး	ပြည်ထောင်စုပေး ဗဟိုဌာန	
၅	ဒေါ်အယ်လ်ဗွေ	ဦးစီး ဖူး	"	
၆	ဝင်းဦးအောင်	အဖွဲ့ဝင်	ကံ့ခိုင်စံ့ခိုင်ကျေးဇူး	
၇	ဦးကျော်စိန်	အထွေထွေရေးရာ	"	
၈	ဦးကျော်စိန်	AD	စီမံကိန်း ဖူး	
၉	ဒေါ်အယ်လ်ဗွေ	ဦးစီး ဖူး	"	
၁၀	ဒေါ်အယ်လ်ဗွေ	ဒု-ဦးစီး ဖူး	"	
၁၁	ဦးအေးစို	ဇာရူး	ကုမ္ပဏီအဖွဲ့ - နေပြည်တော်	
၁၂	ဦးကျော်စိန်	ဇာရူး	"	
၁၃				
၁၄				
၁၅				
၁၆				
၁၇				



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ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃+ ၁-၂) တွင်
အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့်

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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာရေးဆွဲခြင်းနှင့်ပတ်သက်၍
တတိယအကြိမ်တွေ့ဆုံဆွေးနွေးပွဲသို့ တက်ရောက်သူများစာရင်း (ရပ်မိရပ်ဖ)

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စဉ်	အမည်	ရပ်ကွက်/ ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဒေါ်ဗုဒ္ဓမေခေါ်	တံခွန်တိုင်	
၂	ဦးတင်ဖြူ	တံခွန်တိုင်	
၃	ဦးသန်းထွန်း	" "	
၄	ဦးလှိုင်	" "	
၅	ဦးကျော်စွာ	" "	
၆	ဦးလင်း	တံခွန်တိုင်	
၇	ဒေါ်အေးအေးအေး	တံခွန်တိုင်	
၈	ဦးကျော်စွာ	" "	
၉	ဦးကျော်စွာ	" "	
၁၀	ဦးကျော်စွာ	တံခွန်တိုင်	
၁၁	ဒေါ်ခင်စိန်	တံခွန်တိုင်	
၁၂	ဦးခင်စိန်	တံခွန်တိုင်	
၁၃	ဦးကျော်စွာ	" "	
၁၄	ဦးကျော်စွာ	" "	
၁၅	ဦးကျော်စွာ	" "	
၁၆	ဦးကျော်စွာ	" "	
၁၇	ဦးကျော်စွာ	" "	
၁၈			



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ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ (တတိယအကြိမ်)

(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့် တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
၀	<p>၁။ စက်ရုံအတွင်း အစားအသုံးပြုသည့် ရေအား ပြန်လည်သန့်စင်ပြီးနောက် အသုံးပြုနိုင်စေရန်၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း။</p>
၁)	<p>၂။ စက်ရုံအတွင်း အစားအသုံးပြုသည့် ရေအား ပြန်လည်သန့်စင်ပြီးနောက် အသုံးပြုနိုင်စေရန်၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း။</p>
၂)	<p>၃။ CSR မဏ္ဍိုင် အောက်တွင် ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း၊ ရေကန်အတွင်း ရေအား စစ်ဆေးခြင်း။</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ



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"ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း" စီမံကိန်းအတွက်

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စဉ်	ဆွေးနွေးအကြံပြုချက်
-	<p>စက်ရုံ လုပ်ငန်းခွင်တွင် ရေ၊ လေ၊ မြေ၊ အညွှန်းတမ်းများ ပြုစုပေးသော သို့မဟုတ် PH, BOD, COD, TSS, TDS ဆိုသည့် ဂရမ်များကို ပြုစုပေးသော အစီအစဉ်များကို စစ်ဆေးရန် လိုအပ်ပါသည်။ အထူးသဖြင့် ရေ၊ လေ၊ မြေ၊ အညွှန်းတမ်းများ ပြုစုပေးသော အစီအစဉ်များကို စစ်ဆေးရန် လိုအပ်ပါသည်။</p> <p>အခြားအစီအစဉ်များကို စစ်ဆေးရန် လိုအပ်ပါသည်။ အထူးသဖြင့် ရေ၊ လေ၊ မြေ၊ အညွှန်းတမ်းများ ပြုစုပေးသော အစီအစဉ်များကို စစ်ဆေးရန် လိုအပ်ပါသည်။</p>
-	<p>သားကော၊ သွားကော၊ ရေအောက် ရေအောက် အညွှန်းတမ်းများ National Surface Water Quality Standard နှင့် နှိုင်းယှဉ်ဆောင်ရွက်ရန် လိုအပ်ပါသည်။</p>

လက်မှတ် _____
 အမည် _____
 ဆက်သွယ်ရန်လိပ်စာ _____



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ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃+ ၁-၂) တွင်
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တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>စက်ရုံအနေဖြင့် နေ့စဉ် ၅၀၀၀၀ ခန့် အထုတ်ပြုချက် ရရှိပြီးပါက အစီရင်ခံစာ စာပါ ကတိကဝတ်များအား ဆိုက်နာ ဆောင်ရွက် သွားရန် နှင့် အကန့် မတင်း ငြိမ်မိ အစီအစဉ်များအား ၁၆) ၁၈) ကြိမ် တိုင်း စစ်ဆေး မှုများပြုလုပ်၍ တစ်ပြုသွားရန် လိုအပ်ပါသည်။</p>

လက်မှတ်

အမည်

ဒေါ်သင်းဝင်းစုည (ဦးစီးဌာန)

ဆက်သွယ်ရန်လိပ်စာ

ECO (စောကပိုင်ခရိုင်)



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>မေတ္တာစေတနာအတိုင်း ဆောင်ရွက်ရမည်</p> <p>မေတ္တာစေတနာအတိုင်း ဆောင်ရွက်ရမည်။</p> <p>အားလုံးက နားလည်စေရမည်။</p>

လက်မှတ်

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အမည်

----- ဒေါ်အေးအေး -----

ဆက်သွယ်ရန်လိပ်စာ

----- တံခွန်တိုင်(အရှေ့ဘက်)ရန်ကုန်တိုင်း -----

ဒေသကြီး



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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p>အတည်အဆင်ပြေပါကယ်ရှင်</p>

လက်မှတ်

အမည်

သက်သက်စို

ဆက်သွယ်ရန်လိပ်စာ

တံခွန်တိုင်ကျေးရွာအုပ်စု၊
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စဉ်	ဆွေးနွေးအကြံပြုချက်
၁	ကျော်စွာမြစ်ဖူး ဖျော် (ယူဗီထန်) စီစဉ်ပေးပါ စွမ်းအင် တစ်ပြ အဖ် ဖြစ်ပါသည်။

လက်မှတ်

အမည်

ဒေါ်စောစော နှင့် လက်

ဆက်သွယ်ရန်လိပ်စာ



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“ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” စီမံကိန်းအတွက်

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(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

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စဉ်	ဆွေးနွေးအကြံပြုချက်
၁။	ခက်လုံ့ဖြူ ဌာနလင်း ဆွေးနွေးမိမိဖြူ ဖြူ များ ကျင့်စားစားဖွဲ့ပါသည်။

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

(Handwritten signature)

ဦးစား ဦး

ရွာစွဲ ခံပြေ ကျေးရွာလုပ်ငန်း

(Handwritten signature)



Green Myanmar

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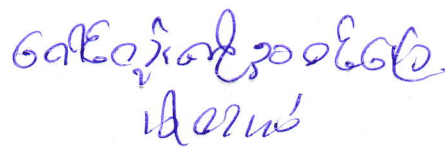
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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p style="text-align: right;">  ဒေါ်ခင်စုစု ဒါရိုက်တာ </p>

လက်မှတ်

၀

အမည်

ဒေါ်ခင်စုစု

ဆက်သွယ်ရန်လိပ်စာ

တံခွန်တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်
	<p style="text-align: center;">စာအုပ်အစီရင်ခံစာများကို</p>

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

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အမည်

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ဆက်သွယ်ရန်လိပ်စာ



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

ဦးစောဝတ်စွယ်

ဆက်သွယ်ရန်လိပ်စာ



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

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အမည်

အောင်လှစေတီ

ဆက်သွယ်ရန်လိပ်စာ

၀၉၄၄၅၄၄



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လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ

[Handwritten Signature]

ဦးကျော်ကျော်ဆွေ

တံခွန်တိုင်ကျေးရွာအုပ်စု၊ လှည်းကူးမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

----- ချစ်ဝေ

အမည်

----- ချစ်ဝေ

ဆက်သွယ်ရန်လိပ်စာ

----- စာခွန်တိုင်း



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

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အမည်

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ဆက်သွယ်ရန်လိပ်စာ

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လက်မှတ်

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24.6.2023

အမည်

(Handwritten name)

ဆက်သွယ်ရန်လိပ်စာ

(Handwritten contact information)



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လက်မှတ်

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ဆက်သွယ်ရန်လိပ်စာ



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လက်မှတ်

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ဆက်သွယ်ရန်လိပ်စာ



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လက်မှတ်

အမည်

၉-၀၈-၂၀၁၆

ဆက်သွယ်ရန်လိပ်စာ



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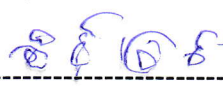
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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

ဦးအောင်ဇော်

ဆက်သွယ်ရန်လိပ်စာ

စံ ခွန်တိုင်း



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

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အမည်

----- စန်ဒေဘာဇ

ဆက်သွယ်ရန်လိပ်စာ

----- တံခွန်တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်



အမည်



ဆက်သွယ်ရန်လိပ်စာ



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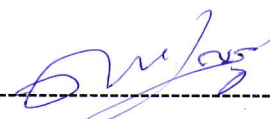
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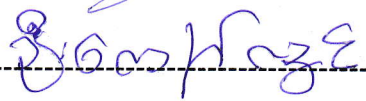
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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်



အမည်



ဆက်သွယ်ရန်လိပ်စာ



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

ဦးသာဦးစေတီ

ဆက်သွယ်ရန်လိပ်စာ

တံခွန်တိုင်ကျေးရွာ



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လက်မှတ်

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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ် _____ ၆၅:

အမည် _____ ၆၅: ၆၅: ၇၆

ဆက်သွယ်ရန်လိပ်စာ _____ တံခွန်တိုင်ကျေးရွာအုပ်စု

ဒေါ်အေး



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

၆၃၇

အမည်

၆၃၇-၆၃၇-၆၃၇၇၇

ဆက်သွယ်ရန်လိပ်စာ

တံခွန်တိုင်



Green Myanmar

Environmental Services Co., Ltd

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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အေးအိန် ၂၉

အမည်

အေးအိန်

ဆက်သွယ်ရန်လိပ်စာ

အိန်ဒို



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

မာခေအေအေအေ

ဆက်သွယ်ရန်လိပ်စာ

တံရွန်တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

.....
(Handwritten signature)

အမည်

.....
ဦးသန်းကျော်

ဆက်သွယ်ရန်လိပ်စာ

.....
တံခွန်တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

စိုး

အမည်

ဒေါ်ခွဲခွဲ၊ မျိုး

ဆက်သွယ်ရန်လိပ်စာ

စာအုပ်ခေါင်း



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

----- *(Signature)* -----

အမည်

----- *အောင်စိလှ* -----

ဆက်သွယ်ရန်လိပ်စာ

----- *တံခွန်တိုင်* -----



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

 (အောင်စွာလှိုင်လှိုင် မဂ္ဂဇင်း)

အမည်

ဒေါ်အောင်စွာလှိုင်

ဆက်သွယ်ရန်လိပ်စာ

ပြာသာဒ် နေရာ၊ ၅၇ နေရာ၊ ရန်ကင်း
၀၉၀၀၀၀၀၀၀၀၀၀



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(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)


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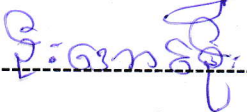
စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ





 ၀၉-၄၂၀ ၂၀၇၇၇၇



Green Myanmar

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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ် _____ *EM*

အမည် _____ *ဒေါ်ခင်သန်းလှ*

ဆက်သွယ်ရန်လိပ်စာ _____ *၁၂/၂၀၁၆*



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

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အမည်

[Handwritten name]

ဆက်သွယ်ရန်လိပ်စာ



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ် _____ 

အမည် _____ ကျော်မာမာစော

ဆက်သွယ်ရန်လိပ်စာ _____ မုတ္တမ (၇၇) ဘူလပ်လမ်းမကြီး
တံခွန်တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

..... ၁၁/၆/.....

အမည်

ကျော်စွာစိန်

ဆက်သွယ်ရန်လိပ်စာ

..... ၀၁၆၆ ၀၁၆၆



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ် _____ ဂုဏ်

အမည် _____ ငွေ: ၂ ဂုဏ်

ဆက်သွယ်ရန်လိပ်စာ _____ တံ ခွန် တိုင်



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စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

----- ဦးစိုးစိုး -----

အမည်

----- ဦးစိုးစိုး -----

ဆက်သွယ်ရန်လိပ်စာ

----- တံခွန်တိုင် -----



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ရေတလပေါင်ကျေးရွာ၊ ကုန်းတလပေါင်အရှေ့ကွင်းနံပါတ် (၄၉၈)၊ ဦးပိုင်အမှတ် (၂/၁ + ၂/၂ + ၂/၃ + ၁-၂) တွင်
အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသည့်

“ဘီယာထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းလုပ်ငန်း” စီမံကိန်းအတွက်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာနှင့်ပတ်သက်၍ အကြံပြုစာ (တတိယအကြိမ်)

(Scoping Report အတည်ပြုပြီးနောက်ပိုင်း ဒုတိယအကြိမ်)

ရင်းနှီးပွင့်လင်းစွာ အကြံပြုရေးသားနိုင်ပါကြောင်းနှင့်လူကြီးမင်းတို့၏ အကြံပြုချက်များကို စီမံကိန်း တာဝန်ရှိသူများနှင့်
တင်ပြဆွေးနွေးပေးသွားမည် ဖြစ်ပါသည်။

စဉ်	ဆွေးနွေးအကြံပြုချက်

လက်မှတ်

အမည်

ဆက်သွယ်ရန်လိပ်စာ
